# COMMUNICATIONS/INFORMATION SYSTEMS

**for**

CANADIAN EXPO 86 PAVILION

CANADA PLACE

VANCOUVER CRUISE SHIP TERMINAL

DEPARTMENT OF REGIONAL INDUSTRIAL EXPANSION

VANCOUVER INTERNATIONAL AIRPORT

COMMUNICATIONS CANADA



Teleride

CANTEL

OCTOBER 1984

Teleride
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Limited

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October 29, 1984

Mr. William G. Leithead
Vice-President
Planning and Development
Canada Harbour Place Corporation
1660-999 West Hastings Street
Vancouver, B.C.
V6C 2W2



Teleride

Dear Mr. Leithead:

**COMMUNICATIONS/INFORMATION STUDY**

We herewith submit our report in accordance with our proposal of June 5, 1984, for a study of communications systems options for The Canadian Expo '86 Pavilion in particular, Canada Place in general, The Cruise Ship Terminal, Vancouver International Airport, Department of Regional and Industrial Expansion, and the Department of Communications. The study was authorized by your letter of June 22, 1984. The study was carried out by Teleride Corporation in association with Cantel Engineering Associates Limited of Vancouver.

REPORT SEQUENCE

The original draft of this report was organized mainly in terms of information and communications technologies, i.e., remote displays, videotex, telephony, etc. Following a review of this original draft with the participating agencies, it became clear that it would serve the agencies better to have in fact a report chapter geared to the needs of each agency separately. Accordingly, the report has been completely reorganized so that Chapters 3 to 7 inclusive constitute in fact separate reports, one for each of the following agencies:

Chapter 3 - Canadian Expo '86 Pavilion

Chapter 4 - Canada Place Convention Centre - Post Expo '86

Chapter 5 - The Cruise Ship Terminal

Chapter 6 - Business Development Centre of the Department of Regional Industrial Expansion

Chapter 7 - Vancouver International Airport

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Each of these chapters contains a table summarizing the proposed installations together with suggested priorities, and "ballpark costs" and cross references to more detailed discussions and exhibits.

Since each of these chapters contain their own short executive report, no overall executive report has been included.

Chapter 8 draws attention to the desirability of taking a common approach at Canada Place and the Airport to the provision of Information Kiosks, large remotely controlled signs, videotex and videodisk systems.

Chapter 9 is a reference chapter which discusses videotex in more detail.

CANADIAN AND EXPO '86 FOCUS

Our recommendations focus particularly on the desirability of demonstrating unique and Canadian developments by including:

- Remotely controlled signs which can be sourced in British Columbia.
- Videotex directory and information systems developed in Canada, but coupled with video disk systems developed in the U.S.A. and Japan.
- Use of business data services developed by the Canadian Government.
- Various communications facilities which can be sourced locally.
- Application of special status information, reservations, electronic data and voice E-mail services to facilitate the activities of visitors to Expo '86.
- Demonstration of advanced Canadian Transportation Information, Communications and Control Systems for all modes of transport, if possible, in action.
- A systematic exhibit of Canadian Computer-communications developments and their impact on society, home, office, industry, recreation and urban form.

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## VIDEOTEX DEVELOPMENTS

IBM has recently made a videotex/video-disk proposal to Expo '86. The report recommends that the Federal Agencies discuss with Expo '86 and IBM the feasibility, requirements and costs of extending this system to Canada Place and the Airport.

## SUGGESTED FOLLOW-UP

We suggest that each of the agencies consider the following steps:

1. Decide on the policy and scope for information/communications systems and improvements.

2. Determine whether they agree or wish to vary the suggested priorities.

3. Proceed to more detail designs, specifications and invitations for proposals for the selected systems.

4. Re-evaluate their information/communications programs and budgets in response to the more detailed cost estimates or proposals.

5. Determine the extent to which they wish to participate with common and/or interconnected systems as proposed in Chapter 8, and on a lead agency or organization to develop or coordinate such common systems.

We would be pleased to provide further assistance as required.

## STUDY ORGANIZATION

The study was directed by Josef Kates. Mark Lopianowski, a principal of Cantel Engineering was the Associate Project Director. Brian Cooper, Glenn James, Louis Kates, Bob Martin and Dean Thompson carried out the bulk of the study. A number of CANTEL and Teleride engineers carried out special tasks for the main study team.

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We very much appreciated the fine assistance and co-operation of all the Agency Officials.

Respectfully submitted,

TELERIDE CORPORATION

Josef Kates
President

CANTEL ENGINEERING

Mark Lopianowski
Principal

JK/ML:zb

COMMUNICATIONS/INFORMATION STUDY

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# 1. BACKGROUND OF THE STUDY

## 1.1 FEDERAL DEVELOPMENTS

The Federal Government is involved in a number of very large activities and developments in Vancouver including the following:

- Canada Place Vancouver - A very large multi-purpose project including:

  ° The Canadian Pavilion for Expo 86
  ° A Cruise Ship Terminal
  ° A Trade and Convention Centre
  ° A World Trade Centre
  ° A Hotel
  ° A private sector development, an IMAX theatre, and related public amenities, parking and other facilities.
  ° The Business Development Centre of the Department of Regional Industrial Expansion

- Vancouver International Airport - A large and complex intermodal terminal facility.

- Multi-facetted communications activities under the Department of Communications and various Crown Corporations.

## 1.2 REQUIREMENTS

The new Canada Place Development will require a number of information/communications systems to inform the public and employees of various organizations, to provide visual or audio information and communications via telephones, P.A. systems, radio, visual displays of various types and a variety of security, alarm and operational communications.

The Canadian Pavilion of Expo 86 will also require comprehensive electronic information and communications facilities. Since the theme of Expo 86 is "Transportation and Communications" it is important that the information and communications systems provided by Expo 86 as well as by all the other organizations above be of first class quality, represent the state-of-the-art, be very easy to use by the public and be impressive. Consideration should also be given to providing attractive special common and innovative information and communications facilities for the public to facilitate their use of Canada Place, the airport and Expo 86.

The Port of Vancouver Cruise Ship facility will require information for the users (travellers, greeters and well-wishers, visitors) of this facility.

The Department of Regional Industrial Expansion provides various informational and communications facilities for visiting businessmen.

Vancouver International Airport is interested in various visual (and possibly telephone) directories which may provide information and possibly also transaction capabilities linked to the major users of the airport such as Air Canada, Canadian Pacific, etc.

## 1.2 REQUIREMENTS (Continued)

Finally, the Department of Communications is interested in the development, and exhibition of Canadian communications and information technologies in the context of the above including videotex, fibre optics, cellular radio and satellite communications systems.

## 1.3 CONSTRAINTS

The two chief constraints for this project as always are time and budgets and these will eventually determine the extent of information/communications systems which can be implemented.

The systems required need to be installed by November 1985 in time for the exhibition. However, these systems will have to provide continuing services beyond the exhibition for all participants with the exception of the Canadian Expo 86 Pavilion which is a temporary event.

## 1.4 OBJECTIVES

The objective of the information/communications project will be to meet all communications and information requirements of the participating organizations safely and cost-effectively by November 1985, utilizing state-of-the-art components and systems, to provide the highest practical level of communications and information service, and to impress visitors to Expo 86 and users and operators of Canada Place, the cruise ship facility, the airport, business development centre with (where possible Canadian) advances in communications and information technology.

## 1.5 TECHNOLOGICAL DEVELOPMENTS

The state-of-the-art of information and communications technology has rapidly advanced during recent years and Canada is a leader in these developments. A wide range of displays are available ranging from small individual LED, LCD, incandescent display, through CRTs of various sizes and definitions using various videotex and colourgraphic protocols to large scale remotely controlled illuminated or projection displays.

A number of recent developments such as automatic passive or interactive visual and telephone systems, electronic text and voice mail, annunciator and display systems of many types could be arranged to provide extremely useful and impressive services for the public and at the same time, exhibit Canadian advances in communications and information technologies.

Computer communications systems providing visual and audio communications between individuals or groups and using various switching and communications systems so as to provide a wide range of electronic data and voice mail, conferencing, people-to-people, people-to-computer, and computer-to-computer communications are available and computer literacy is advancing rapidly.

In particular remotely controlled video and voice information directory systems utilizing large CRTs as well as console desk or wall mounted interactive inquiry and transaction terminals of many types have greatly improved the quality, availability, accessibility and cost of information and transaction availability. These provide information on the location and time of places and events, and enable the public or employees to quickly search out information, make reservations or buy tickets, etc.

## 1.6 OPPORTUNITIES

Therefore, a wide range of components and systems are available for the participating organizations some "off-the-shelf", some in various stages of development. One of the key requirements of this study was, therefore, to select and integrate or synthesize components and systems to provide very advanced and attractive state-of-the-art communications systems and ensure that these systems can be selected with absolute confidence that they will provide reliable, satisfactory and attractive information and communications services for all participants.

EXHIBIT 2.1

Kick-Off Meeting - June 25, 1984

Agenda

- Introductions to key client and consultant participants - Day 1
- Client and consultant study organizations
- Overall client organization
- Review and modification of study proposal
- Finalization of terms of reference
- Identification of available background information and materials
- Identification of key resource individuals and organizations including potential supplier and service organizations
- Review of objectives and evaluation criteria
- Timing and location of initial individual consultant/client meetings
- Provisional schedule of meetings of steering committee (three to four meetings in total including the kick-off and final report presentation meetings)
- Additional agenda items
- Other business.

## 2.0 THE STUDY SEQUENCE

As proposed, the study was initiated with a "kick-off" meeting, which followed the agenda shown in Exhibit 2.1.

The proposed study approach was reviewed and confirmed during the "kick-off" meeting.

Thereafter the study was divided into three stages as follows:

| | |
|---|---|
| Study of functional and performance requirements for each of the participating organizations | June 25-July 10, 1984 |
| Study of applicable components and systems | July 9 -July 31, 1984 |
| Discussion of draft report | August 23, 1984 |
| Reorganization of Report into independent chapters for each agency | Sept. 1-Oct. 15, 1984 |
| Submission of final report draft | October 19, 1984 |
| Final Report | October 30, 1984 |

The initial meeting with the entire client group was followed immediately by individual meetings with the participating agencies and Expo '86.

After ascertaining the requirements of the participating agencies, the requirements were organized into relatively independent communications and information systems.

2.0 THE STUDY SEQUENCE (Continued)

These relatively independent systems were grouped in accordance with the major technology involved, i.e., voice telephone, or cable signalling, visual displays, computer communications, etc.

Groups of systems were assigned to the appropriate consultant specialists whose work was coordinated by the consultants project managers.

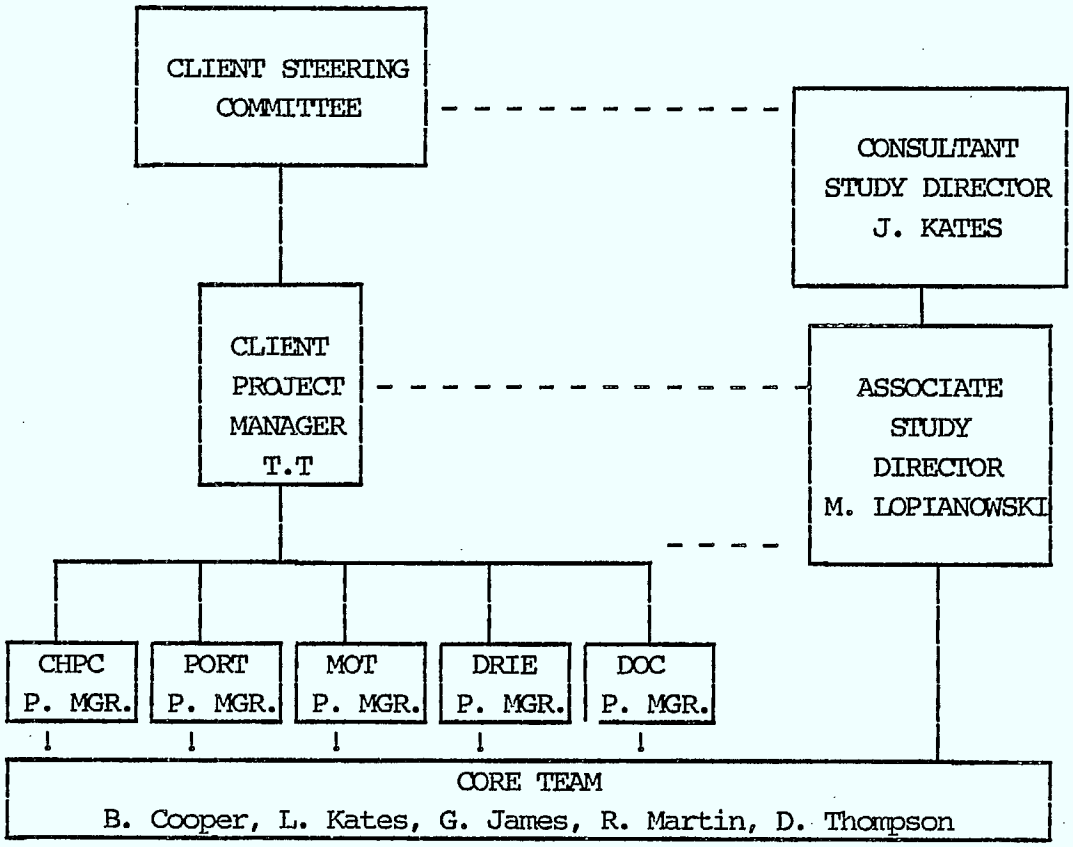
During the following Phase II of the study applicable systems and components were reviewed by the assigned specialists and evaluated for the preparation of a preliminary draft report, followed by a major review on August 23, 1984. This draft report was oriented to technologies rather than to the Agencies.

The August 23rd review indicated the desirability of reorganizing the report into relatively independent chapters each of which would address the requirements of one of the participating agencies, so as to avoid the need of extensive cross referencing of what had become a rather long report.

Accordingly, during the last Phase III of the study the report was reorganized and reviewed in draft form during the week of October 22nd, 1984 with most of the participating Agencies.

EXHIBIT 2.2

STUDY ORGANIZATION




_____ Reporting Lines

- - - - - - - - Client-Consultant Communications

## 2.1 STUDY ORGANIZATION

Exhibit 2.2 outlines the study organization.

As proposed, the client organized a steering committee with participants from each of the five participating organizations. The overall project coordination for the client was carried out by T. Tetreault of Communications Canada.

The Consultant Study Director and Associate Director and four core consultants participated at the initial client Steering Committee meetings as well as at key individual client meetings. During the conduct of the study, contact was maintained with the client project managers or coordinators.

The initial requirements phase of this study was carried out in parallel by the seven member core team to ensure that the requirements and desires of all agencies were quickly ascertained.

At the end of Phase I, requirements were identified common to 2 or more of the sponsoring agencies. Following this requirements phase various specialists were assigned to identify, review, and evaluate applicable components and systems for the specific system grouping.

During the last Phase III of this study the consultant team filled in gaps left from Phase II, made revisions as necessitated by the comments and suggestions from the client or third-party feedback, reorganized refined and finalized the report, prepared and presented the final review.

INFORMATION/COMMUNICATIONS STUDY

CHAPTER 3

# INFORMATION AND COMMUNICATIONS SYSTEMS

for

# THE CANADIAN EXPO 86 PAVILION

October 1984

Teleride
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Limited

6477 Knight Drive
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October 29, 1984

Mr. William G. Leithead
Vice-President
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Canada Harbour Place Corporation
1660-999 West Hastings Street
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Dear Mr. Leithead:

Teleride

## CHAPTER 3
## INFORMATION AND COMMUNICATIONS SYSTEMS

This Chapter 3 of the study addresses Information and Communications Systems for the Canadian Expo '86 Pavilion and other possible Federal contributions to Expo '86.

### RECOMMENDATIONS

The recommended systems together with "ballpark costs" and suggested priorities are listed in Exhibit 3.1 on Page 3.1A. Numerous contacts with various suppliers have indicated that until more formal quotes or proposals in response to invitations are obtained, cost estimates for large displays have to remain very approximate. However, costs for various technologies vary by approximately one or two orders of magnitude as follows:

| | | |
|---|---|---|
| Videotext CRTs | - | Thousands of Dollars |
| Video Disks | - | Tens of Thousands |
| Large Variable Text (Flip Disks or LED) Signs | - | Hundreds of Thousands |
| Large full Video Signs | - | Millions of Dollars |

Budgetary constraints will readily dictate the technologies to be considered further for the various locations indicated in Exhibit 3.1 and discussed in this report.

However, it should be noted that the attractiveness of the various technologies also tends to vary by an order of magnitude, i.e., large full video signs costing millions are much more attractive than large flip disk signs costing hundreds of thousands of dollars, and so on.

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SUGGESTED STEPS

The Canadian contribution to Expo '86 probably operates within reasonably firm overall budgets. If this assumption is correct, these budgets could be divided up among the various locations and technologies in order to provide a very approximate budgetary allocation and you could then proceed to the more detailed design and purchase decisions.

Conversely if no firm budgetary limits have been set yet, you could choose from this report the most attractive proposals and determine whether the "order of magnitude budgets" which would result from this choice would be acceptable to the Federal sponsors.

Therefore, we suggest that if the budgets for Information and Communications Systems and exhibits have already been fixed that a "balanced" selection be made from Exhibit 3.1 so that all levels of information are reasonably well served rather than allowing one information system to "crowd out" all the others. On the other hand, if budgets are still open the most attractive and also most costly proposals should be submitted to the financial decision makers to determine their willingness to support the most attractive systems for the Federal Expo '86 Pavilion. These proposals can then be "downscaled" if necessary to meet budget restrictions.

We will be pleased to discuss this chapter with you and your Associates at your convenience and to assist in further implementation steps if required.

Respectfully submitted

TELERIDE CORPORATION

CANTEL ENGINEERING ASSOC. LTD.

J. Kates.

Josef Kates
President

Mark Lopianowski
Principal

JK/ML:zb

cc: Terry Tetreault

CHAPTER 3
INFORMATION AND COMMUNICATIONS SYSTEMS
for
THE CANADIAN EXPO 86 PAVILION

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CHAPTER 3

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EXHIBIT 3.1

INFORMATION SYSTEMS FOR CANADIAN EXPO '86 PAVILION

| LOCATION | ITEM | REFERENCE PAGE | REFERENCE EXHIBIT | COST (1) ESTIMATE | PRIORITY | NEEDS |
|---|---|---|---|---|---|---|
| | | | | $(000) | | |
| Expo Site ALRT Station | Electronic Portal | 3.8 | 3.6 | 200-500 | | |
| | Flip Disk or mechanical block | 3.5 | 3.3 | | High | Main sign for Canadian Pavilion |
| | Large Video Sign | 3.6 | 3.4 | 2000-5000 | Medium | Very attractive, but Costly |
| Other Locations on Expo 86 Site | 24" monitors connected to Portal per installed and connected monitor | 3.14 | - | 5-10 | Medium | Reinforces portal at several locations |
| | Interactive Videotex consoles per | 3.16 | - | 10-20 | High | May use Expo 86 or third party units |
| | Add video disk to above per | 3.17 | - | 10-20 | High | Greatly increases attractiveness |
| Waterfront Station | Electronic portal | 3.12 | 3.10 | 200+ | High | Local entrance sign |
| Airport, Hotels, other Locations | 15" - 24" monitors to Electronic portal per monitor | 3.14 | - | 5 | Medium | Can reinforce Canadian Pavilion at many Locations |
| | | | | | | |
| Entrance to Holding Area in Canada Place | Projection unit | | | 50 | High | To inform and entertain visitors waiting to enter |
| | Large video display | 3.12 | 3.11 | 1000-2000 | High | |
| Exit from Canada Place | Interactive Viodeotex/ video disks for above | 3.16 | - | 10-20<br>10-20 | Medium<br>Medium | May use Expo 86 or third party units |
| Control or Information Centre | Videotex frame preparation | CH.4 | - | 50 | High | To prepare videotex frames |
| | Video materials preparation | - | - | 100-200 | High | To prepare video sequences |
| Control Centre | Control Computers | - | - | 100-250 | High | To control above systems |
| Canada Place & Expo '86 | Special Communications Services | 3.28 | 3.12 | Based on available Budget | Medium | To facilitate visitors Communications |
| Main Exhibition areas in Canada Place | Computer/ Communications Exhibits | 3.19 | 3.14 | Based on available Budget | High | To demonstrate advances in computer communications |

(1) Note: Improved estimates should be based on actual quotes or proposals in response to Requests for Proposals or [illegible]ds.

# 3.0 INFORMATION SYSTEMS FOR CANADIAN EXPO '86 PAVILION

## 3.1 EXECUTIVE SUMMARY

Canada Place will house the Canadian Expo '86 Pavilion during 1986 in the location which will subsequently become the convention centre. Consequently, the following information systems listed in Exhibit 3.1 were considered in this study:

(1) Large "Portals" located on the main Expo '86 site as well as in front of Canada Place to mark the entrance to the Federal Pavilion as well as provide information about the Federal Pavilion. These signs would at least have a monochrome remotely actuated capability, most likely by using flip disk technology.

Videotex colour signs could be provided by using the Fujitsu-mechanical block technology.

A much more costly large monochrome or colour video screen could be installed at the main Expo site which would very substantially enhance the attractiveness of that Portal and most likely materially increase the number of visitors to Canada Place.

(2) Smaller "Passive" Color Monitors driven by the same system which drives the main portal(s) and showing the same information. These monitors could be distributed through the main Expo '86 site, and they could also be located at the airport, in other public places, Federal Offices, hotels, etc. These monitors could increase the "reach" of the main portals at a relatively moderate additional cost.

3.1 EXECUTIVE SUMMARY (Continued)

Alternatively, the large portal sign(s) could provide videotex only, while the smaller monitors could provide full video functionality.

(3) Interactive Videotex/Disk Consoles which would provide information about Canada Place, other Expo '86 events. These would be located in Canada Place, on the main Expo '86 site, as well as at the airport and, hotels and in other locations. It is possible that these interactive consoles will form part of the system provided by Expo '86 or a third party supplier. Also, the Airport Chapter 7 recommends a development program to ensure that these interactive videotex consoles and the information provided by them would be as effective as possible, whether these consoles are provided by the Federal Agencies or some other party.

(4) A system of Fixed Signs within Canada Place which would be in accordance with Federal guidelines and possibly also be co-ordinated with the guidelines being developed by Expo '86.

(5) A number of innovative communication services including:

- waiting status of the Federal Pavilion for Specific events (IMAX) or exhibits, possibly using the above signs and monitors

- reservation system for the Federal Pavilion and exhibit

- rental of "Walkie-Talkies" or beepers

3.1 EXECUTIVE SUMMARY (Continued)

- voice and data E-mail for Expo visitors

- electronic tagging of children and other persons requiring supervision

(6) Computer Communications oriented exhibits including:

- advanced air, rail and marine surveillance, control and training centres or simulators;

- advanced control concepts for automobile traffic, guidance and safety;

- advanced computer applications for office, factory, education, resource industries, exploration, research and various professions.

These proposals are discussed below.

## 3.2 VARIABLE DISPLAYS

### 3.2.1 Introduction

Variable programmable signs are signs which can be programmed to display different information at different times of the day and/or cycle through various programmed sequences to provide more information than would fit on the sign at any one time. Variable signs can generally be updated from a remote central site facilitating timely displays of information.

### 3.2.2 Purpose

They are primarly useful for:

1. information that changes relatively frequently;

2. information that must be quickly displayed on short notice; and

3. displaying more information than can reasonably be stored in the same space using a fixed sign.

### 3.2.3 Uses

Canada Place will require a number of variable programmable signs for displaying various types of information including event information, news, transportation schedules, directions, possibly advertising and other similar types of information.

## 3.3 TECHNOLOGIES

### 3.3.1 Introduction

A number of technologies are currently in use. In general, the display is composed of a number of dots each of which can assume one of two colours (e.g., black vs some contrasting colour) to produce text and graphics. In the case of text, each letter is typically made up of a 7 x 5 matrix of dots. The following discusses these possibilities.

EXHIBIT 3.2
LED DISPLAY

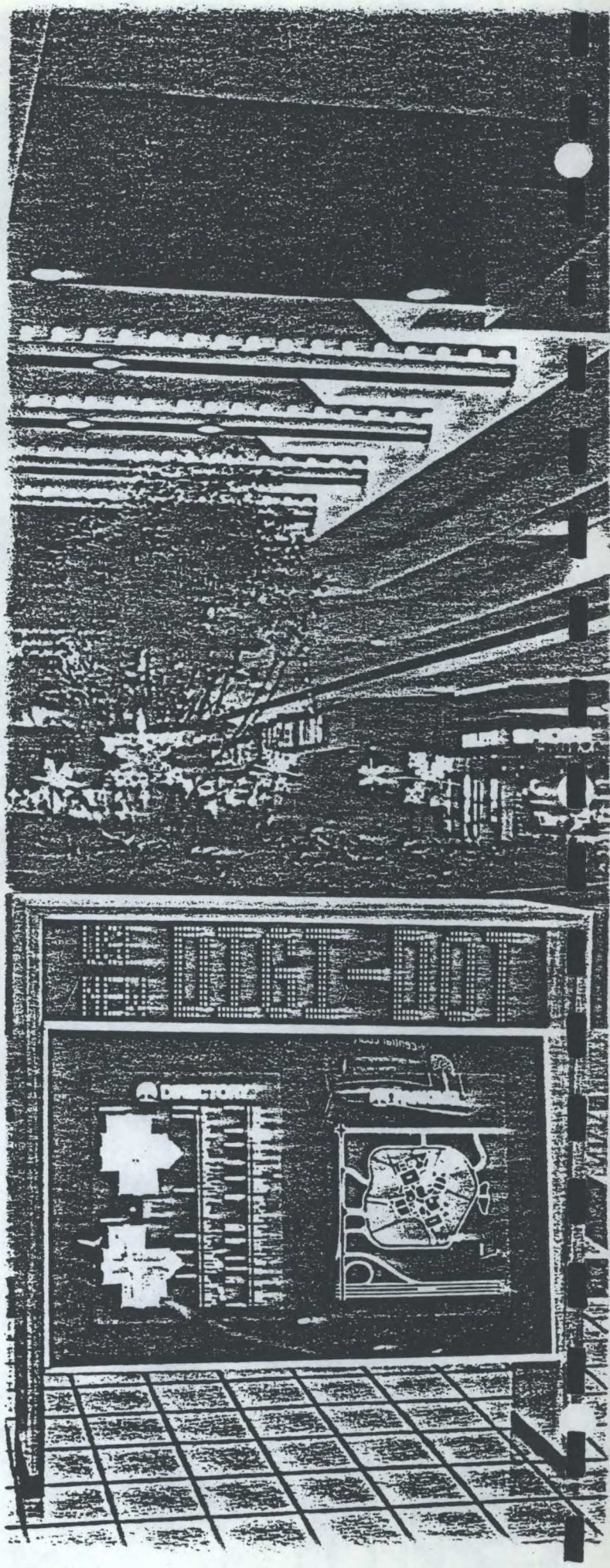


EXHIBIT 3.3
FLIP DOT DISPLAY

### 3.3.2 Flip Disks

Flip disk displays (see Exhibit 3.3) consist of disks which are mechanically rotated or flipped by means of small magnets. One side of the disk has the same colour as the background and the other side has a contrasting colour. Flip disk displays require an external source of illumination which may simply be the ambient light or may be a specially provided source of illumination. The disk may either entirely flip or be hinged in the middle so that half flips over onto the other half. Because the signs are mechanical in nature, they typically cannot change fast enough to provide for animation.

### 3.3.3 Incandescent Lights

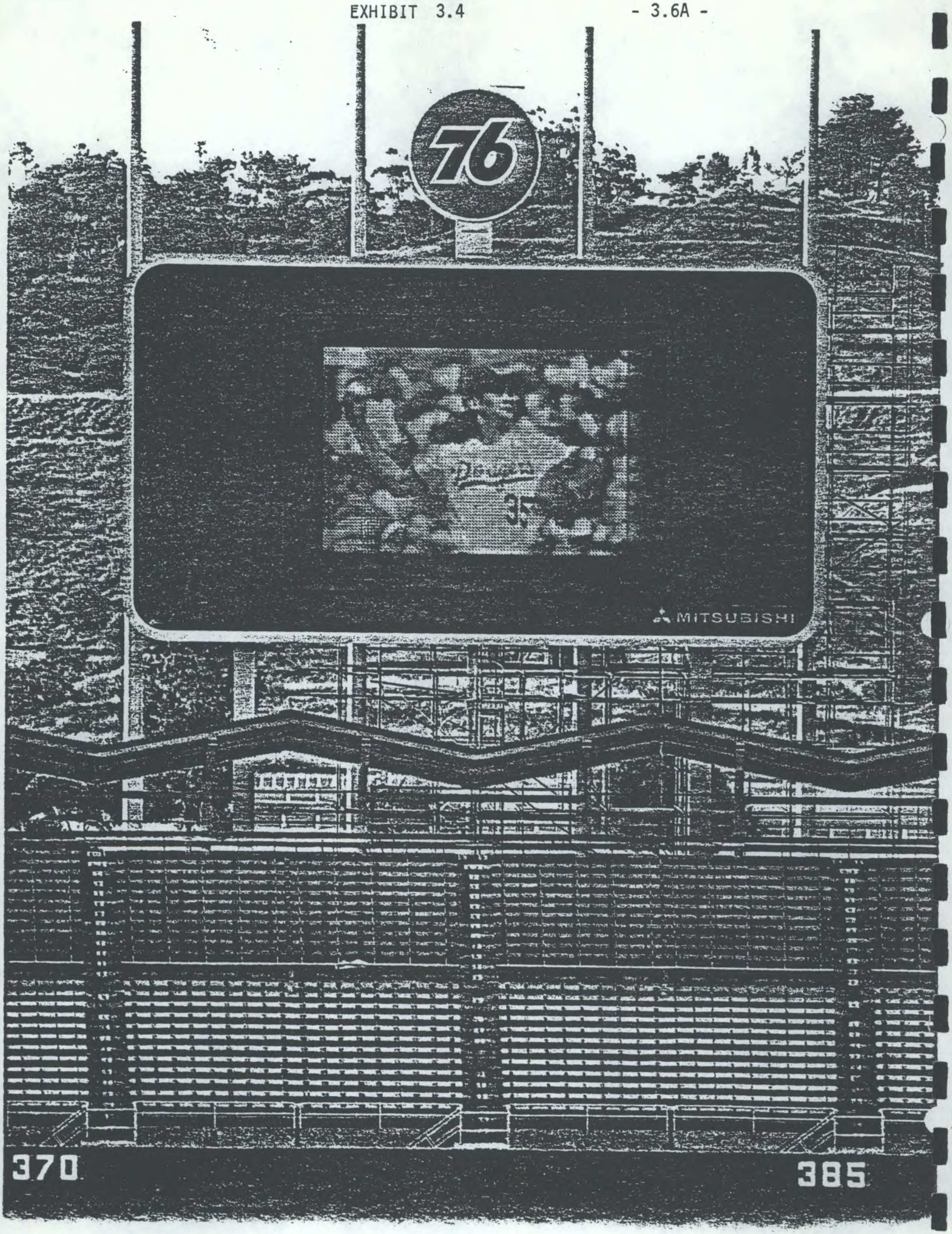
These displays are similar to the LED displays but use larger incandescent lights rather than LEDs. A coloured screen can be placed over them if desired. Some displays are arranged in sets of three closely spaced red, green and blue lights so that colour images and even animated video images may be displayed.

### 3.3.4 Light Emitting Diodes (LEDs)

These displays (see Exhibit 3.2) consist of rows of small lights which may be individually turned on and off. They generally come in either red, yellow or green colours.

### 3.3.5 Coloured Blocks

This type of display uses blocks whose sides move to reveal different colours.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### 3.3.6 Liquid Crystal Displays

These displays are similar to those found on many hand calculators. They have the property of changing their reflectance on a dot by dot basis. They require external illumination to be seen.

### 3.3.7 Gas Plasma Displays

These are somewhat similar in appearance to CRTs but use a different underlying technology. They are typically no larger than 14". Their main advantage is that unlike CRTs, they are flat.

### 3.3.8 Cathode Ray Tubes (CRTs)

These displays include ordinary television and the arrival/departure screens typically seen at many airports. They can be in colour or black and white and provide their own illumination. They may be only large enough for one person to look at at a time or large enough to be visible throughout an area as large as a stadium. (Exhibit 3.4)

### 3.3.9 Projection TV

Projection TV could be used in rear or forward mounted configuration with a high contrast screen. Both colour and black and white systems are available. Visibility depends on the letter height and ambient lighting but should typically be between 60 feet and 100 feet.

## 3.4 SUPPLIERS

1. Flip Disks

| | |
|---|---|
| Ferranti Packard | (416) 624-3020 |
| Vultron | (313) 583-1736 |

2. LEDs

| | |
|---|---|
| Hamilton Digital Designs | (416) 634-4812 |
| Metrotech Communications | (718) 767-7689 |
| Neonex (telephone Transad for Vancouver telephone number) | (604) |
| Nu Media | (416) 677-1010 |

3. Flip Block

| | |
|---|---|
| Fujitsu-Kiden | (604) 682-0666 |

4. Large Screen CRT

| | |
|---|---|
| Mitsubishi | (604) 682-0666 |

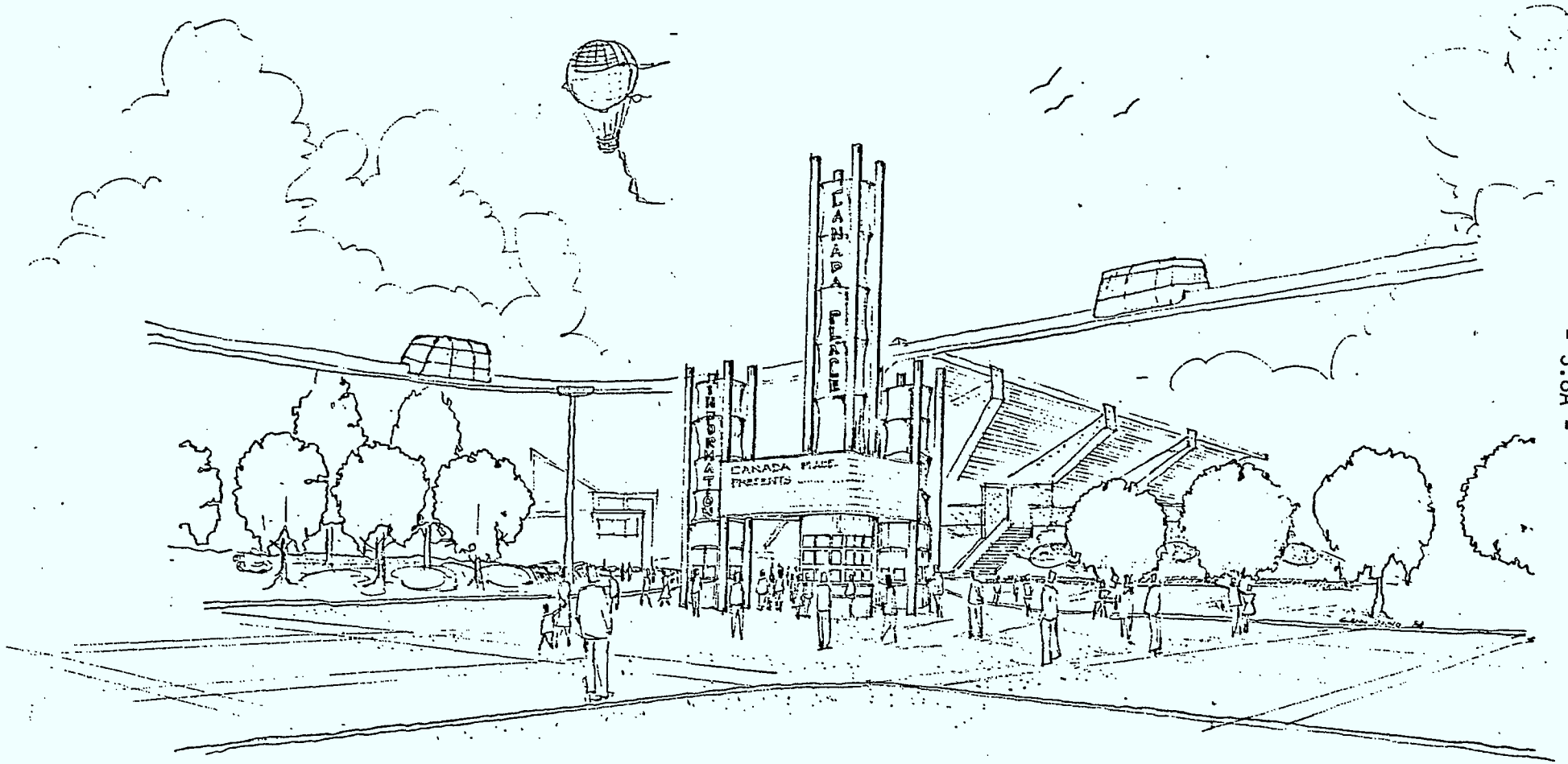
5. Projection TV

| | |
|---|---|
| Electrohome (projection unit) | (519) 744-7111 |
| Applied Electronics (dealer) | (416) 252-3761 |
| Maya Video (high contrast screens) | (212) 532-6206 |
| G.E. Talaria (projection T.V. unit) | (315) 456-2562 |

6. Incandescent Lights

| | |
|---|---|
| Cummings Signs | (416) 457-4180 |

EXHIBIT 3.6




East Gate Sign - Expo Site

## 3.5 COSTS

Costs are highly variable even within a particular technology depending on the degree of customization, computer facilities, studio facilities, installation, particulars of design such as letter size and number of characters on the screen, enclosure, etc. Rough estimates of costs follow.

Simple one or two line LED displays are typically about $5,000, while large displays such as arrival boards are $50,000 to $250,000 and up. Projection TV systems begin at about $7,000 for monochrome to $22,000 for colour. Large flip dot dislpays are $200,000 and up and large CRT assemblies similar to those used in football stadiums are $2,000,000 to $5,000,000. (Exhibit 3.4)

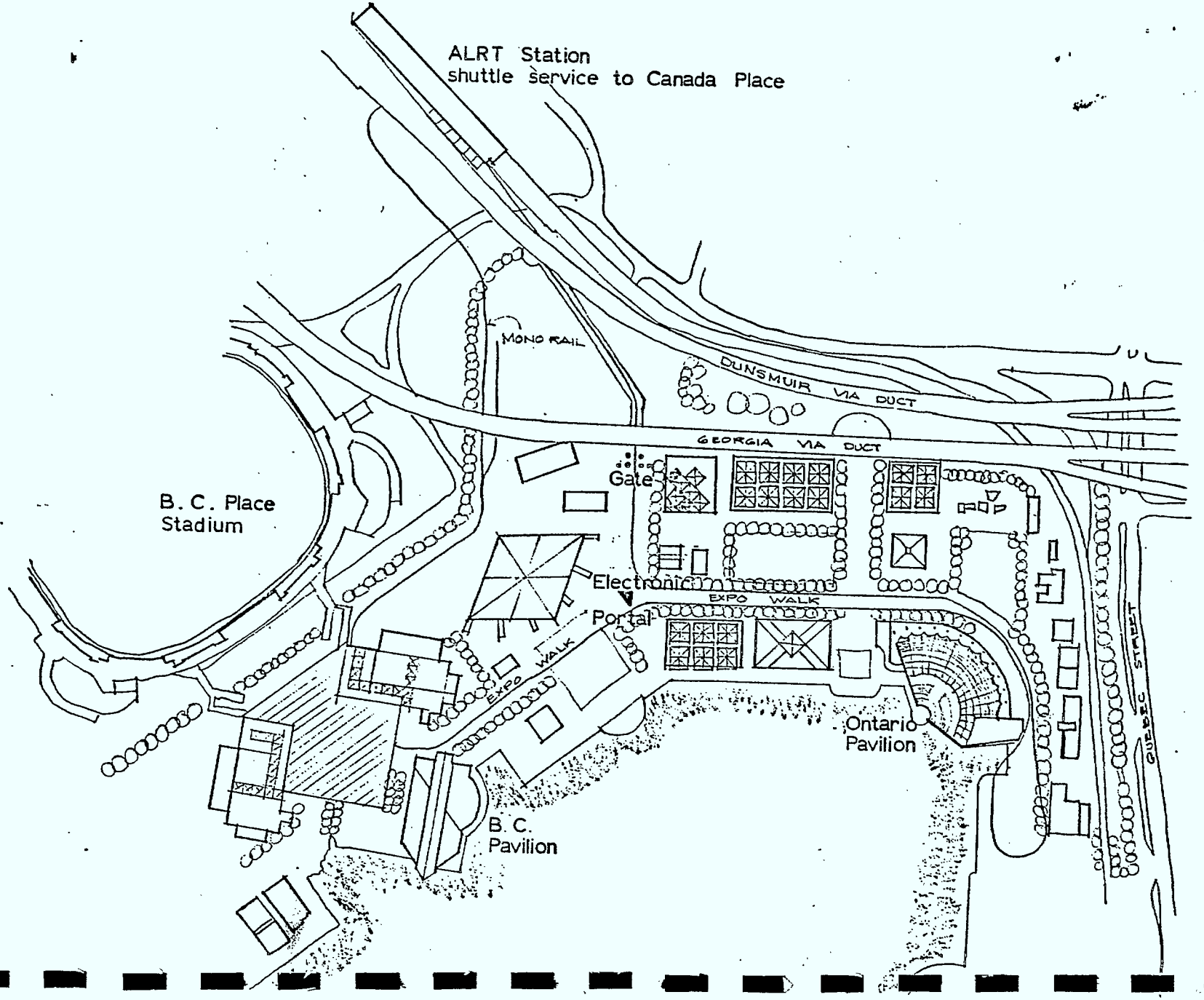
## 3.6 DECISION PROCESS

Criteria for choosing a technology include reliability, colour/monochrome, animation, indoor/outdoor use, visibility (generally there is 50 feet of visibility for every one inch that a letter is high) and cost. Detailed consideration must be given to the actual information that is to be displayed so that sizing requirements can be determined. A Request for Proposal document could be sent out to suppliers to determine detailed information specific to the Federal requirements.

## 3.7 ELECTRONIC PORTAL ON THE MAIN EXPO 86 SITE

Canada Place will house the Canadian Pavilion of Expo '86. Canada Place is approximately 2 kms from the main exhibition area which stretches for about 3 kms along False Creek.

EXHIBIT 3.7


ALRT Station
shuttle service to Canada Place
MONO RAIL
DUNSMUIR VIA DUCT
GEORGIA VIA DUCT
Gate
B. C. Place
Stadium
Electronic
Portal
EXPO WALK
EXPO WALK
Ontario
Pavilion
B. C.
Pavilion

3.7 ELECTRONIC PORTAL ON THE MAIN EXPO 86 SITE (Continued)

A new Advanced Light Rail Transit (ALRT) system will have its terminal in the former rail station adjacent to Canada Place and a station near the stadium adjacent to Expo '86. This ALRT will provide the main mass transport connection between the two sites via specially dedicated shuttle trains. Supplementary transportation may be provided by:

- regular or special buses;
- taxis and private automobiles;
- a walkway between the 2 sites.
- marine service from False Creek to the north end of Canada Place

Originally, the North Gate was proposed as the main portal to Canada Place, but this gate has been abandoned. This means that distances from the main Expo '86 gate to Canada Place will become even more extended than originally intended and this could potentially isolate the Canadian Pavilion from the main site of Expo '86.

Therefore, it is important to provide large electronic signs, near the stadium ALRT station, several or all gates of the main Expo '86 site to provide the following information for Canada Place and the Canadian Pavilion:

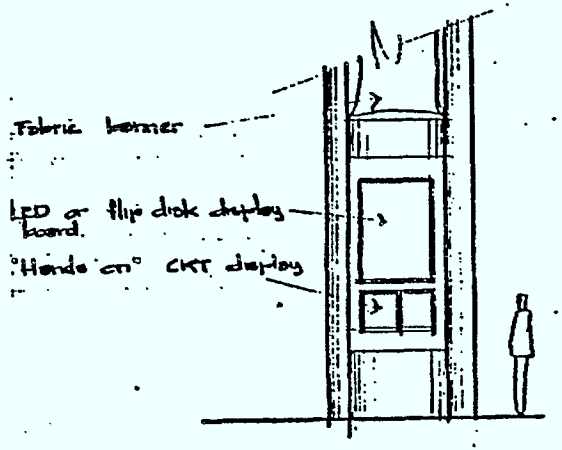
- Identification of the Federal Pavilion in Canada Place;
- Directions to Canada Place;
- Attractions and Events in Canada Place;
- Other information (time, weather, news) of general interest.

## Canada Place information displays.

DESIGN CONCEPT.

The design of the sign system is based on preliminary design of East Gate structure by Thompson, Berwick & Pratt Architects.

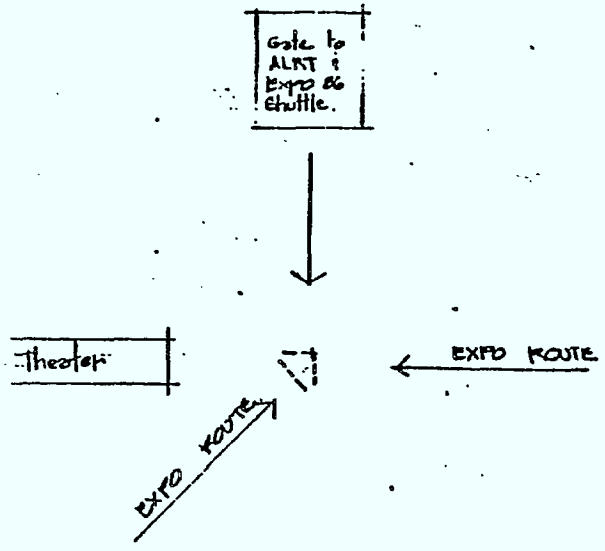
The information system relies on:
- Fabric banner for long distance
- LED, Flip Disk or Large Video screens for intemediate distance & Mass information displays.
- "Hands on" CRT Displays - using video disc or small computers with menu driven programmes.



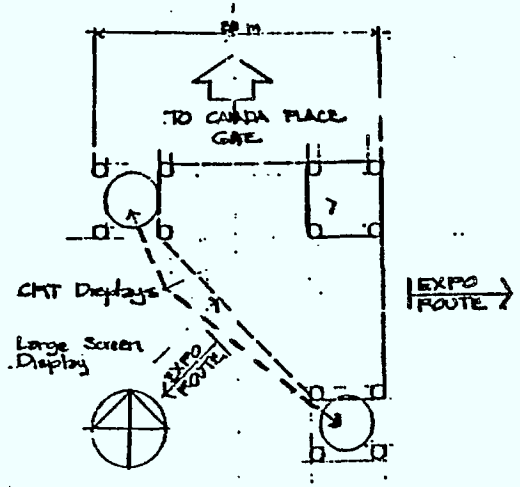

Stand alone information center.



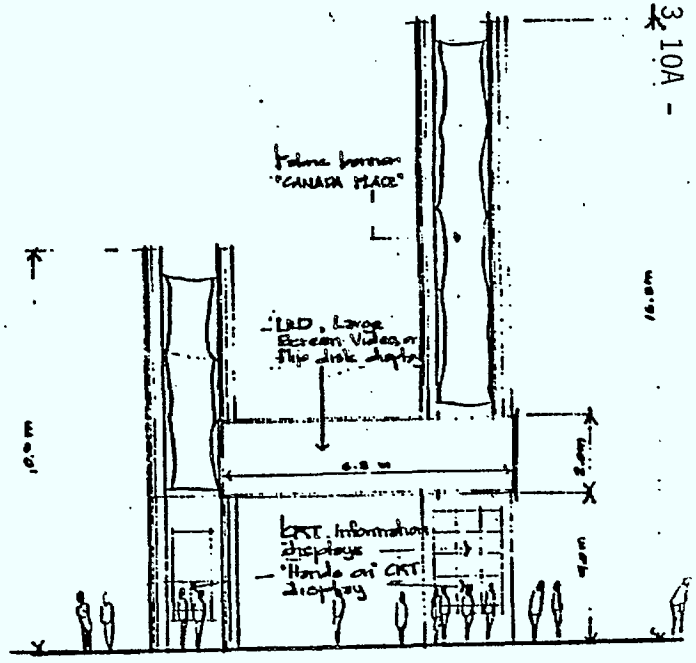
## East Gate Sign.




Schematic Site Plan.




Plan




East Elevation

## 3.7 ELECTRONIC PORTAL ON THE MAIN EXPO 86 SITE (Continued)

These signs will need to be supplemented by the other information systems provided for Expo '86 visitors. Conversely, there may be required an electronic portal(s) at Canada Place to direct visitors to the main Expo site, but this will be the responsibility of the Expo '86 organization.

An artist concept of the electronic portal is shown in Exhibit 3.6 but this may have to be adapted to fit in with the Expo '86 gate design and sign standards which are being currently developed.

As depicted in Exhibit 3.6 the sign would have the following components:

a. Heading - Canada Place

b. Subheading

Possibly a subheading above or below "Canada Place" indicating the Canadian Pavilion or alternatively Canada Place might be referred to as the "Canada" or "Canadian Expo '86 Pavilion" or just "Pavilion Canada".

c. Variable Information

A variable portion of the sign (flip disk or flip block text or full monochrome or color video capability via LED or LCD technology) would draw attention to major events in Canada Place and provide other information (time, temperature) of interest to Expo visitors. The sign

EXHIBIT 3.9

**INFORMATION ON PORTAL SIGN**

FIXED INFORMATION

Canadian Pavilion - Pavilion Canada

- Directions
- Alternative Routes
- Other fixed information

VARIABLE INFORMATION

Today's events (IMAX, shows, etc.)
List of Exhibits
Cruise ship arrivals and departures
Business development centre
Time
Weather
News

? Advertising ?

VIDEO DISPLAYS

Scenes from Canadian Pavilion exhibits and events.

3.7 ELECTRONIC PORTAL ON THE MAIN EXPO 86 SITE (Continued)

would preferably be mounted directly over the access from the main site of Expo '86 to Canada Place. At present this appears to be the "Stadium" station of the ALRT although there may be other gates from which visitors can readily travel to Canada Place.

3.8 THE STADIUM ALRT STATION

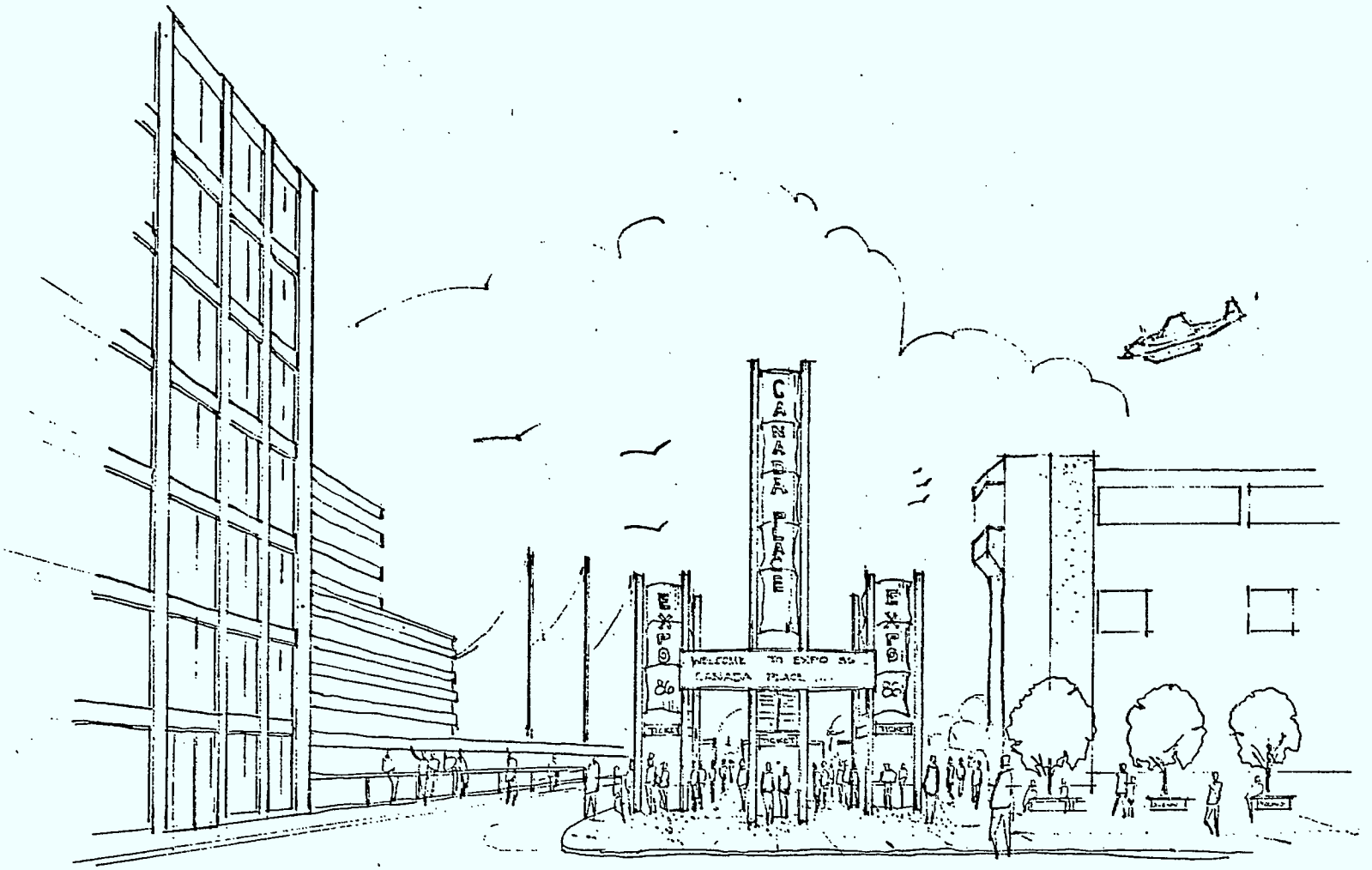
Exhibit 3.7 shows a plan of Expo '86 in the vicinity of the stadium station. It will be noted that the station entrance can be approached mainly from the south from an intersection with the Expo walk and, therefore, the portal should be visible over an arch of 120 degrees. Exhibit 3.8 includes a schematic of how a Canada Place Portal might be located with respect to this station and provides details about this concept.

3.9 THE SIGN

There would be a rectangle of the maximum size permitted by Expo '86. The ALRT portal should be visible over a distance of 50 meters and, therefore, the dot size should be 100 millimeters. The minimum display would, therefore, be one metre by 14 metres which could provide for one line of 20 characters or numbers. However, a larger sign would be preferable perhaps 4 - 6 by 15 - 20 metres in order to provide more space for variable information and to increase its visibility and reach.

Exhibit 3.9 lists the informaton to be provided by this sign(s).

A fixed or variable portion of the sign will give directions to Canada Place, i.e., via ALRT, bus, pedestrian or bicycle path, etc.




West Gate - Waterfront Station

3.9 THE SIGN (Continued)

The variable information space would be used to provide information about attractions or events at Canada Place such as shows in the Imax Theatre, other shows and exhibits, cruise ship arrivals, etc.

This space could also be used to indicate the waiting time and crowding conditions at Canada Place, perhaps with a note indicating the likely next time when there will be less waiting.

In order to attract attention the variable portion of the sign might also show time, temperature, weather forecasts, sports results, and news.

These signs could also be used for advertising. Considering the numbers of visitors expected it is likely that such signs could be provided entirely by an advertising company for advertising rights subject to Canada Place and Expo '86 regulations. However, the Federal Agencies may prefer to reserve the information capability of the portals solely to attract attention to Canada Place, Federal exhibits and services, etc.

Additional Canada Place portals at other Expo '86 gates could be identical to the main portal unless Expo '86 feels that they should be reduced in size in order not to over-emphasize Canada Place in relation to the other Exhibitors.

Exhibit 3.10 illustrates a secondary portal located near the Waterfront Station. However, we recommend that the sign on this portal be a monochrome flip disk sign only in the event that a full video sign is used for the main portal, since the extra cost of a video sign near Canada Place can hardly be justified.

3.9 THE SIGN (Continued)

If the Federal Agencies wish, specific time slots could be allocated to the various agencies such as DRIE, Ports Canada, etc., which they could program with information relating to these agencies. For example, DRIE could advertise the Business Development Centre and business development services periodically, say, every 15 or 30 minutes. Similarly, Ports Canada could show periodically, cruise ship arrival and departure times. The system could provide special terminals for these agencies which they could use to program their respective time slots.

3.10 THE CONTROL CENTRE

A control centre for setting up and changing the information on the signs and monitors described in this chapter is required.

The electronic portal(s) and monitors could be driven from a microcomputer located in the control centre of Canada Place or other suitable location. If video signs are used they would have to be driven from a combined video/videotex facility. One alternative location of particular interest for the control of the portal might be in or adjacent to the stadium station, since personnel could directly observe the sign from that location. However, the reliability of these signs is such that remote control from Canada Place should not present significant risks.

## 3.11 ADDITIONAL (PASSIVE) INFORMATION MONITORS

The same control system which drives the main portal sign, whether text only or full video, could also drive any number of additional monitors which would show the same information as the Portal sign and which could be located in strategic locations around the Expo '86 site, at the airport, the Cruise Ship Terminal, other Federal facilities, hotels and other prominent places. If the main or secondary portal sign has text capabilities only, then these subsidiary monitors could be controlled via telephone circuits and appropriate modems. However, if the main portal sign had video capabilities and it was desirable to show the same video pictures via a number of distributed monitors one or more of the following would be required:

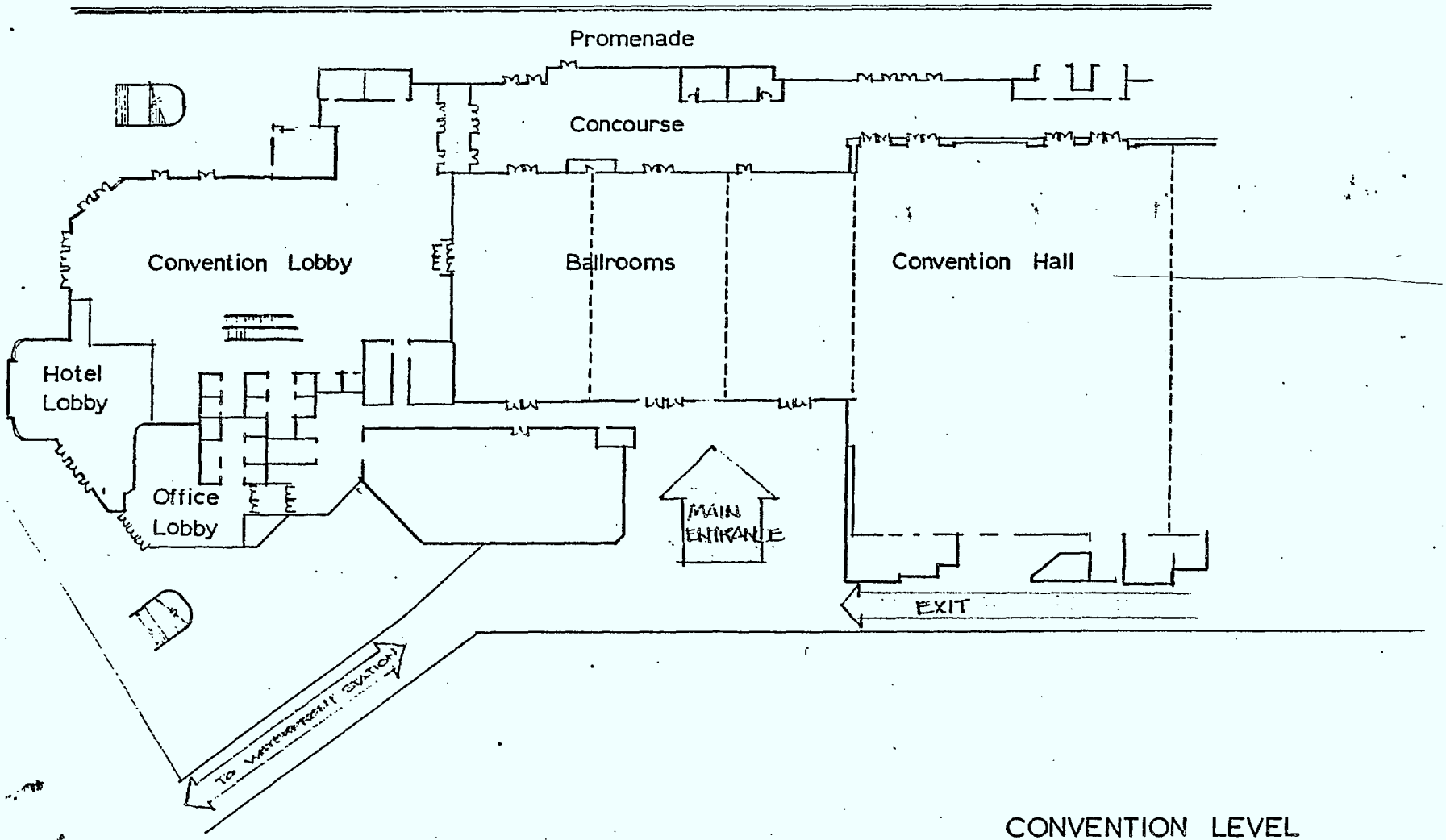
- coaxial or fibre optic cables from the main video site to all other video monitors

- microwave links

- a special T.V. channel or satellite link if this can be obtained on a temporary basis during Expo '86

- videotape (and or video disk) machines installed in the various localities. In this case, updating of the displays on the distributed monitors could be done by physically loading them with the appropriate tapes or disks. Alternatively, if the local videotapes need to be updated only relatively infrequently (say once a day) it may be possible to do this by telephone overnight using low speed transmissions, dual speed tape drives, or other speed conversion techniques.

EXHIBIT 3.11




CONVENTION LEVEL
during Expo

3.11 ADDITIONAL (PASSIVE) INFORMATION MONITORS (Continued)

Since the cost of each installed local monitor would be relatively cheap ($1,000 to /$2,000 per monitor) and since these monitors would greatly increase the "reach" of the Portal displays, these monitors should be very cost effective. If a large video sign proves too expensive a series of CRT or video projection monitors could be used instead to provide the desired video capability.

Naturally, the Federal Agencies and Expo '86 could jointly install a number of monitors which would display both information and directions about the Federal Pavilion as well as for other exhibitors on the main Expo '86 site.

3.12 LARGE VIDEO SIGN FOR HOLDING AREA OF THE CANADIAN PAVILION

As shown in Exhibit 3.11 the entrance to the Federal Pavilion during Expo '86 will be through the Waterfront Station gate and up a ramp on the southeast side and then into a holding area, which is destined to be a loading area, before entering the ballrooms. The ballroom will be a theatre, holding approximately 1,000 people. This theatre will be used to orient groups of up to 1,000 for the main Canadian Pavilion exhibits and events by means of an audio visual presentation. After this show, visitors are then guided into the main exhibition. Visitors then exit through the south side down the ramp again to the Waterfront gate.

## 3.12 LARGE VIDEO SIGN FOR HOLDING AREA OF THE CANADIAN PAVILION (Continued)

The best location for a major sign will be at the entrance of the holding area. This could act as a divider between the incoming and outgoing crowds. A large projection video screen - if possible on the site of the holding area could be used to entertain the crowd waiting to go into the show. Video systems suitable for the interior of buildings are considerably less costly than those which provide sufficient brightness for exterior applications. The screen can show activities inside the convention area, on the Expo site or in Vancouver. Interactive video consoles could provide people leaving the Canadian Pavilion with information for activities elsewhere in Expo '86 or in Vancouver.

## 3.13 VIDEOTEX, GRAPHIC AND VIDEO DISPLAYS

Particular interest exists in installing in Canada Place, as well as for the other participating agencies, colour-graphic videotex displays possibly incorporating video disk techniques as well.

Two types of applications should be considered as follows:

1. Passive and overhead (airport type) applications are appropriate for limited information to be viewed by groups or crowds. These are generally 15" to 24" (diagonal) CRTs. Section 3.10 recommends that these be used in addition to (or instead of) the electronic portal(s).

3.13 VIDEOTEX, GRAPHIC AND VIDEO DISPLAYS (Continued)

2. Interactive, console type applications using 12-15" CRTs are appropriate for accessing large amounts of information (databases) by individuals or small groups. Animated bill-boarding of these interactive terminals could attract attention to these interactive displays. User-friendly instructions and menus are essential. The actual frames have to be attractively designed and be easily understood. Interfacing with various databases, i.e. airline, ship, other transportation arrival and departure times and status, etc. should be considered. Fast response times are essential.

   At present, standard videotex techniques such as Telidon, provide only static displays with some animation features.

Recently developed video disk technology could provide full TV video capabilities with flexible access to any piece of video information in addition to animated as well as still text made available by standard videotex.

A previous videotex experiment in Vancouver failed due to the slowness of the terminals and other problems. Also, the standard Telidon videotex is becoming somewhat dated and consideration should be given to developing a broader, more attractive package which may include:

° interactive video disk;

° links to a wide variety of data bases across the continent, (local news around the globe, etc.);

3.13 VIDEOTEX, GRAPHIC AND VIDEO DISPLAYS (Continued)

- printout facilities for information such as schedules, directions, etc. which a user may wish to retain;

- transactional capabilities for reservations, ticketing (Expo and other events, transportation), banking.

Accordingly, Chapter 7 includes a proposal to develop an improved videotex/video disk system at Vancouver Airport.

IBM has recently submitted a proposal to furnish a videotex system to Expo '86. A local company, Dominion Directories is proposing to provide software, management and marketing of videotex services based on the equipment to be furnished by IBM.

One option the federal agencies may wish to consider is to expand the proposed IBM/Dominion or other local systems to meet the requirements of Canada Place, the cruise ship terminal, DRIE and the airport.

EXHIBIT 3.12

ADVANCED COMMUNICATIONS/INFORMATION SERVICES

| Item | Locations | Purpose | Remarks |
|---|---|---|---|
| Electronic Portals (details chapter 12) | At Expo 86 and Canada Place Gates. | Inform visitors about activities and events at Canada Place and guide visitors to Canada Place. Show queueing status at Canada Place | Well designed marqees with large computer-controlled L.E.D., flipdisk, or multi coloured signs are recommended. |
| Other actuated signs | On exhibition and cruise ship levels of Canada Place. | Ditto | L.E.D. or flip disk remotely controlled message boards. |
| Advanced Videotex/ Videodisk Reservation System | Airport, Canadian Pavilion, Cruise ship terminal Place, Hotels, also available by telephone | Airport, airline , tourist, other info. Canadian exhibits and queueing status, for various events, reserve tickets for specific times, purchase tickets to events. Could be extended to hotel, airline reservations and bookings. | Waiting at various exhibits can sharply decrease enjoyment for visitors. Consider two entrances, one for reserved, the other for non-reserved visitors. |
| Electronic Mail (E-Mail) System | Federal locations, Expo 86, Hotels, restaurants, other public places | Provide E-mail and bulletin facilities for groups of visitors, affinity groups, Canada Place and Expo Bulletins. | Could be an extension of the videotex/videodisk consoles. |
| Voice Mail System | Any touch tone telephone | Make E-mail more accessible by making it available over any touch tone telephone in the Vancouver area, possibly anywhere. | As part of ticket (advance ticket) or hotel reservations, assign voice E-mail box and numbers, also directory for affinity groups. |

## 3.14 FEDERAL COMMUNICATIONS INITIATIVES FOR EXPO '86 - SUMMARY

The theme for Expo '86 is "Transportation and Communications". However, it appears that Expo '86 is placing its emphasis on transportation and that communications may be dealt with relatively lightly. On the other hand it is well appreciated that modern computer-communications technology will make a much more profound impact on every aspect of society than transportation. Therefore, we recommend that the Federal Agencies consider the adoption of a policy to emphasize Canadian computer communications developments in the Canadian Pavilion as part of the Canadian contribution. Such a policy, if adopted, could be divided into three parts as follows:

1. Provision of advanced communications services to facilitate the activities of visitors to Expo '86.

2. Exhibits which illustrate the crucial interdependence of transportation and computer communications systems.

3. Canadian Pavilion Exhibitry in support of the communications theme.

For the first category, i.e., communications services, in addition to the large signs, video monitors and interactive videotex directories already outlined above, we recommend consideration of:

- a status and reservation system to advise of line-ups at exhibits and provide reservations for specific times;

## 3.14 FEDERAL COMMUNICATIONS INITIATIVES FOR EXPO '86 - SUMMARY (Continued)

- an electronic mail system (via videotex as well as via automatic telephone voice response);

- mobile radio or beeper services; and

- possibly electronic tagging of children and other persons in need of surveillance.

The feasibility of these and other proposals should be analyzed in more detail.

For the second category, we recommend exhibiting in the Canadian Pavilion systems such as interesting traffic surveillance and control systems (both the control centres and mobile cockpit, pilot cabin driver console - parts) for various modes such as satellites, aviation, rail (in particular the control system for the ALRT in Vancouver) and shipping (if there is not an interesting marine communications and control exhibit in the Vancouver area the Welland Canal Traffic Surveillance and control Centre could make an interesting exhibit).

For the third category, we recommend exhibitry which illustrates the advances and future impacts of computer communications developments on various sectors of societies, for various activities and the resulting impact on work, home, professions, urban development, etc.

To implement Categories 2 and 3 the Federal Agencies responsible for the Canadian Pavilion would undertake the following steps:

## 3.14 FEDERAL COMMUNICATIONS INITIATIVES FOR EXPO '86 - SUMMARY (Continued)

1. Review various traffic communications and control systems in the Vancouver region and elsewhere in Canada to identify those which could have high interest for visitors. Then determine how realistic an exhibit could be provided, possibly by direct interconnection of the electronics to the federal exhibit or by a reasonable simulation. The operators of the selected facilities would be approached with a view to sponsoring or co-sponsoring the corresponding exhibit.

2. An outline of computer communications exhibits would be developed which follow a logical flow so as to avoid confusion among the large number of applications of interest and to take a visitor systematically along several paths through this part of the exhibit. An introductory audio visual would be prepared to fit in with this outline and this would become part of the orientation presentation near the entrance to the Canadian Pavilion.

A brochure or prospectus would be prepared for the proposed scheme and this would be distributed to a large number of Canadian organizations which could likely contribute exhibits of interest which would fit this outline. Proposals would be invited from these organizations. This might be done in two steps as follows:

## 3.14 FEDERAL COMMUNICATIONS INITIATIVES FOR EXPO '86 - SUMMARY (Continued)

1. Initially organizations would be requested to respond only by filling in a very short form indicating that they have an exhibit of potential interest, identifying under which of a number of categories listed in the form this exhibit would fit, provide a short description or illustration indicating likely physical dimensions of the exhibit, and whether they would be interested in sponsoring such an exhibit or require financial support.

2. Based on the response to such a questionnaire, the more likely contributors to the computer communications part of the Canadian Pavilion would be visited to assess their potential contribution more thoroughly. A sufficient number of contributors would be identified so that potentially considerably more exhibits would be available than are needed so as to provide for some shrinkage. Detailed negotiations and development activities would then be undertaken with the selected potential exhibitors.

We also understand that some months ago the various Federal Departments and Crown Corporations developed lists of suggestions for Expo '86. The proposals should be reviewed to identify other possible Federal initiatives for the Expo '86 Canadian Pavilion.

## 3.15 SPECIAL COMMUNICATIONS SERVICES AND EXHIBITS - DETAILS

One of the objectives of this study was to develop proposals to showcase Canadian communications technology. While the theme of Expo '86 is "Transportation and Communications", we have the impression that the main Expo '86 effort is biassed fairly heavily towards the "Transportation" part of the theme and that "Communications" may play a relatively small role on the main Expo '86 site. If this impression is correct it would provide a considerable opportunity for the Canadian Pavilion to fill an important gap by emphasizing modern communications technology and its impact on society. We suggest that if this policy is adopted communications be considered under three headings as follows:

1. Advanced and attractive communications/information services for visitors to the Canadian Pavilion, in particular, and Expo '86 in general.

2. Exhibits which illustrate the crucial interdependence of modern transportation and communications systems, since the theme of Expo '86 is "Transportation and Communications".

3. Exhibits which provide an overview of and illustrate particular Canadian advances in computer communications and future social impacts of computer communications.

These are discussed below.

EXHIBIT 3.12 (Cont'd.)

| | | | |
|---|---|---|---|
| Beepers and Portable Telephones Possibly with Location Devices | Controlled from Canada Place, using possibly cellular radio in the Vancouver Region. | To keep visiting groups in touch with each other; possibly for monitoring location of children. | Visits of family and other groups can be much more enjoyable if the groups do not have to be physically tied together. |
| Electronic Tags | On Canada Place and Expo 86 grounds. | To track children, the elderly, people with handicaps or medical problems. | Reduce the need to accompany certain types of visitors. |

EXHIBIT 3.12

ADVANCED COMMUNICATIONS/INFORMATION SERVICES

| Item | Locations | Purpose | Remarks |
|---|---|---|---|
| Electronic Portals (details chapter 12) | At Expo 86 and Canada Place Gates. | Inform visitors about activities and events at Canada Place and guide visitors to Canada Place. Show queueing status at Canada Place | Well designed marqees with large computer-controlled L.E.D., flipdisk, or multi coloured signs are recommended. |
| Other actuated signs | On exhibition and cruise ship levels of Canada Place. | Ditto | L.E.D. or flip disk remotely controlled message boards. |
| Advanced Videotex/ Videodisk Reservation System | Airport, Canadian Pavilion, Cruise ship terminal Place, Hotels, also available by telephone | Airport, airline , tourist, other info. Canadian exhibits and queueing status, for various events, reserve tickets for specific times, purchase tickets to events. Could be extended to hotel, airline reservations and bookings. | Development of substantial improvement over current various exhibits can sharply decrease enjoyment for visitors. Consider 2 entrances, one for reserved, the other for non-reserved visitors. |
| Electronic Mail (E-Mail) System | Federal locations, Expo 86, Hotels, restaurants, other public places | Provide E-mail and bulletin facilities for groups of visitors, affinity groups, Canada Place and Expo Bulletins. | Could be an extension of the videotex/videodisk consoles. |
| Voice Mail System | Any touch tone telephone | Make E-mail more accessible by making it available over any touch tone telephone in the Vancouver area, possibly anywhere. | As part of ticket (advance ticket) or hotel reservations, assign voice E-mail box and numbers, also directory for affinity groups. |

## 3.15 SPECIAL COMMUMNICATIONS SERVICES AND EXHIBITS - DETAILS (Continued)

It is more difficult to use communications systems as exhibits than transportation systems, because communications systems are inherently less visual than transportation systems. Therefore, the best way to exhibit or illustrate communications and information systems is by providing services to Expo '86 visitors which utilize modern communications and information technology and which materially facilitate their visits, making them more informative, less onerous, more pleasant.

Exhibit 3.12 lists the advanced communications/information services which we suggest for consideration by the Federal agencies. There may well be other important candidates not listed in this exhibit, which were not yet considered due to the short period of this project.

This list will be discussed below.

## 3.16 ELECTRONIC PORTALS

In Sections 3.7 to 3.10 we proposed and illustrated electronic portals to Canada Place which would combine attractive fixed marquees identifying Canada Place and directions to Canada Place with large, electronic, computer-controlled signs which would provide information about attractions and events at Canada Place as well as items of interest such as weather, temperature or time, local and general news, etc.

If the Canadian Pavilion emphasizes modern computer/communications developments the fixed or variable signage on the portals might be designed to emphasize this theme in graphical form.

## 3.17 OTHER ELECTRONIC SIGNS

Section 3.12 also proposes a large video sign for the "holding area" of the Canadian Pavilion and this also might strengthen the communications/information services both in illustrating advanced electronic signage, as well as by the presentations provided by this display.

## 3.18 ADVANCED VIDEOTEX/VIDEODISK DISPLAY

One of the major recommendations of this report is to develop during the next six months, combined videotex/videodisk units which would substantially surpass existing videotex-only units. These units should illustrate state-of-the-art information technology and at the same time provide a wide range of information and possibly transaction services to Expo '86 visitors in an attractive and possibly entertaining style.

## 3.19 STATUS AND RESERVATION SYSTEMS

One of the most unpleasant experiences at World Exhibitions is the fact that visitors frequently have long waits for specific exhibits or attractions both on the exhibition grounds in particular as well as in the city where the exhibition is located due to the fact that the exhibition attracts a volume of visitors which tax the local facilities.

This problem can be significantly alleviated and the visit can be made much more enjoyable by the following systems:

## 3.19 STATUS AND RESERVATION SYSTEMS (Continued)

### 1. Status Information System

If visitors could find out beforehand what the crowding conditions or wait lines are at various exhibits they could postpone their visit to crowded exhibits and see other exhibits instead. This is particularly important for Expo '86 due to the fact that the main site is fairly spread out over a distance of three kilometers and in addition is separated by a significant distance from Canada Place. This situation may be aggravated by the relatively limited transportation facilities within the Expo '86 site. Visitors can be expected to become exceptionally unhappy if they find that after travelling a considerable distance to an exhibit of interest, that they are then subjected to a relatively long wait, in crowded and uncomfortable conditions.

The proposed status information system could take several forms. For example, Expo '86 is currently considering a closed circuit TV system which would enable visitors at several locations of Expo '86 to view the line ups at any of the exhibits.

In particular, the proposed portal(s) and its monitors should provide indications of the length of wait for various attractions at Canada Place.

3.19 STATUS AND RESERVATION SYSTEMS (Continued)

Another method might be to measure the wait lines by using turnstiles or other sensors over the approaches to an exhibit or by direct observation by attendants and to feed this information into a computerized information system. This system could then display expected waiting duration at various exhibits on electronic monitors, for example, on the proposed videotex system. The same information could also be made available by an automated voice system over any telephone by dialling a general number for the Canadian Pavilion, or Expo '86, and specific numbers for specific exhibits or other events.

2. Reservations System

An even better method would be to provide a reservation system at least for the more popular attractions such as the Imax Theatre so that visitors who have selected a particular time to see a particular exhibit or event are assured of immediate admission at that time. For this purpose, exhibits or events which provide reservations could have two entrances, one for those with tickets and one for those without tickets. A "spin-off" benefit of a reservation system is that it would enable the status system to predict the waiting conditions at an attraction, and therefore, visitors could decide to reserve tickets for those attractions where waits are predicted and take their chances with those attractions which appear to be relatively uncrowded. Again, the proposed videotex system could be expanded to provide a ticketing function. Ticket issues might be restricted to visitors who have an Expo '86 ticket or passport and for this purpose, machine-readable tickets or passports might be considered.

## 3.19 STATUS AND RESERVATION SYSTEMS (Continued)

The reservations function might be extended further to other attractions in Vancouver, airlines and other transportation systems, hotels, etc., and for this purpose, the proposed videotex system might be augmented with credit card readers since the vast majority of visitors can be expected to carry credit cards.

## 3.20 FACILITATING COMMUNICATIONS AMONG GROUPS OF VISITORS

One of the problems at a major exhibition is the difficulty for family units or other groups of visitors to make contact with one another since for a good part of the time they are not at a specific hotel or other location. This needlessly forces groups to visit exhibitions together or make arrangements to contact one another at fixed times. Since the times spent at various exhibits and travelling between them is relatively unpredictable, such procedures force an undesirable degree of planning and regimentation on visiting groups.

Modern electronic mail (E-mail) technology could essentially overcome this problem, providing each group of visitors with an E-mail box (possibly for a fee) which they could dial up on the proposed videotex system or other computer system, with terminals located at the Expo '86, Canada Place, Hotels and other sites.

An even more attractive approach might be to provide a voice mail system which could be accessed from any touch tone telephone and which would allow family and other groups to record and retrieve short messages by dialling an assigned voice mailbox number on the touch tone telephone.

## 3.21 PORTABLE RADIOS OR BEEPERS

A specific problem is for parents to keep track of their children, or for persons to keep track of older people or people with health problems, etc. To alleviate this problem, Communications Canada might consider a system of renting out beepers or portable radios for the Expo site.

Computerized portable radios are coming on the market which can provide for both voice and digital communications. These portable radios might be controlled from a cellular radio system.

## 3.22 ELECTRONIC TAGS

We have heard of, but have not yet investigated newly-developed location devices which could be put into one's pocket or used as a necklace or bracelet and which could be sensed and identified from electronic sensors. Some of these are Canadian developments. If these devices have reached a reliable and economic level of development, Communications Canada could sponsor a system of establishing a number of sensors over the Expo '86 sites. The videotex monitors or a separate system, could then be used to locate the person who was carrying such an identifying electronic tag, determine the sensor location and the time such a person was last there and possibly trace the movements of that person.

If this possibility is of interest to the Federal Agencies, the electronic tags would have to be investigated thoroughly to determine the feasibility of electronic tagging.

EXHIBIT 3.13

## ADVANCED COMMUNICATIONS EXHIBITS
## TRAFFIC MONITORING, CONTROL, COMMUNICATIONS SYSTEMS

OBJECTIVE

Illustrate the crucial interdependence of modern transportation and communication systems.

EXHIBITS

Automated electronic location, traffic control, signalling, internal (operational) and external (public) systems using various voice and data radio and telephone communications, computerized controls and advanced control centers and war rooms, as well as in vehicle (cockpit) systems for:

Satellites
Aviation
Rail
ALRT
Bus, Truck - Interurban, urban
Private Automobiles

TASKS

1. Review existing and planned regional and Canadian transportation communications, control and information systems.

2. Select systems for suitability for Canadian Expo '86 Pavilion.

3. Enlist co-operation or support from selected organizations.

## 3.23 TRANSPORTATION/COMMUNICATIONS EXHIBITS (Exhibit 3.13)

The Expo '86 theme is "Transportation and Communications". Therefore, it would be very appropriate if a group of exhibits illustrated the crucial interdependence of modern transportation and communications systems. This could be done by illustrating various transportation control and communications systems for the different modes of transportation. For example, radar and control towers used for controlling air traffic, possibly particularly in the Vancouver region, might be illustrated by a mock-up or live monitors connected to the actual local radar (approach, area, en-route) and other aviation control systems. This might also be done for other modes such as satellites, rail and particularly the new ALRT system which is fully automatic and depends on sophisticated computer communications systems. To the extent that sophisticated control systems are in use for bus, truck, public services (police, fire, ambulance) interurban or urban systems, these could also make interesting exhibits. Finally, computerized communications and driver assistance systems for modern automobiles will be of interest to many Expo '86 visitors. These systems should illustrate the vehicle components, i.e., cockpits, as well as the central stationary components (consoles) of the control systems.

For this purpose, existing and planned regional and Canadian transportation control and communications systems should be reviewed for their suitability for the Canadian Pavilion, i.e.:

- visual attractiveness
- their relation to modern communications technology
- the space requirements
- costs
- sponsorship possibilities.

EXHIBIT 3.14

## SOCIAL IMPACTS OF COMPUTER/COMMUNICATIONS SYSTEMS

OBJECTIVE

Illustrate development and impact of computer communications systems (with emphasis on Canadian developments) on communications (eg. mail), transportation (local, long distance), urbanization, the home, shop, office, industry, agriculture, mining, education, science, recreation, politics, finance, markets, medicine, law, engineering, social science, individual and collective security, safety systems, etc., provide a tour providing an overview as well as exhibits catering to specific interest groups.

APPROACH

1. Develop Framework space assignments and overview in Canadian Pavilion within which various exhibits, audiovisuals, hands-on demonstrations, can be fit.

2. Set Up Organization to Develop this Exhibitry

3. Provide outline of theme, objective, space allocation and invite Canadian scientific, educational, business, industrial, political organizations for proposals. Majority of proposals will hopefully be fully or partly funded by the larger organizations. Provide funding or prizes for best proposals from smaller organizations.

4. Select best proposals, arrange these into a pleasant, logical and comprehensive overall exhibit of the Canadian contribution to the future of computer communications.

## 3.24 FUTURE DEVELOPMENTS AND IMPACTS OF COMPUTER COMMUNICATIONS SYSTEMS (Exhibit 3.14)

Computer communications technology is advancing extremely rapidly and will dramatically impact all aspects of our future lives.

Therefore, it would be appropriate to devote a significant portion of the Canada Pavilion to the development and future impact of computer communications systems. Canadian developments and impacts on Canadian situations could be emphasized.

## 3.25 TECHNOLOGY ADVANCEMENTS

This exhibit might begin by illustrating the new technologies such as the chip, communications systems using fibre optics, cellular systems, satellite as well as the older microwave and wire transmission methods. Since much of the new development will depend on software developments utilizing micro electronics and modern communications, the advances of software from fairly laborious machine instructions to 5th generation (artificial intelligence) should also be illustrated.

## 3.26 SOCIAL IMPACTS

However, the technology oriented portion of the computer/communications exhibits should take up only a modest part of the corresponding exhibit area and the major part should be dedicated to illustrate the social impacts on such activities as:

3.26 SOCIAL IMPACTS (Continued)

- Communications, for example the increasing automation of the mail and the eventual supplanting of paper mail by fully electronic mail, electronic newspapers, and other electronic services supplanting the printed mediae. The proposed videotex/videodisk development could be applied for such exhibits or demonstrations.

- The likely decentralizing effects of communications on urbanization (an analogy might be drawn between the decentralizing effect of the automobile and computer communications). It is likely that computer communications will have a far more dramatic effect on decentralization than the already large impact on spread development of the automobile. This part of the exhibit would emphasize the growth of the computer cottage industry and the advent of urban subcentres. It would demonstrate that many of the office functions of the central business district will be obsoleted by the communications revolution. In a computer age, it is unlikely that businesses and other organizations will continue supporting the high costs of downtown office space for an army of white collar staff and the attendant high commuting costs. The revolution which we have witnessed in postwar years during which industry moved out of the downtown to the suburbs and the downtown became a specialized office and entertainment city, will likely be followed by another exodus made possible by modern computer communications. This could have severe effects on the economics of the downtown unless these effects are foreseen and the downtown is systematically restructured for the new realities.

3.26 SOCIAL IMPACTS (Continued)

The federal exhibitors could consider an audio visual presentation showing changing urban developments since ancient times and how this has been influenced by transportation and communications technology; this would dramatize the fact that first transportation limitations forced industry to locate downtown near labor and supply markets. When the advent of trucking and highway networks permitted industry to gravitate to the suburbs, communications limitations led to the specialization of downtown into an office city. When practically everyone is equipped with a sophisticated electronic work station linked with any number of computers and communication networks to everyone else as well as to tremendous data and processing capabilities the importance of physical proximity disappears and we can speculate on the resulting dramatic impacts on:

Urban Form, particularly office concentration
Structure of Work
Organization Pyramids.

The conclusion of this exhibit may well be that planners and architects should plan office buildings to be convertible into apartments, condominiums and multi use buildings, or otherwise the downtown may face extinction or becoming a slum.

The "wired home" would make a fascinating exhibit particularly for female visitors, but also for male adults, children, etc.

Similarly, potential impacts on a wide range of other activities could be dramatized.

## 3.27 SUGGESTED ACTIONS

To develop maximum Canadian content and participation for such an exhibit we propose the following approach. We understand that visitors to the Canadian Pavilion will first enter an orientation cinema to orient them to other exhibits and events in Canada Place, and this orientation might take approximately 15 minutes. Therefore, we would suggest that five to seven minutes of this introductory audio visual presentation be devoted to a look at the future impact of computer communications so as to attract interest in the more specific exhibits.

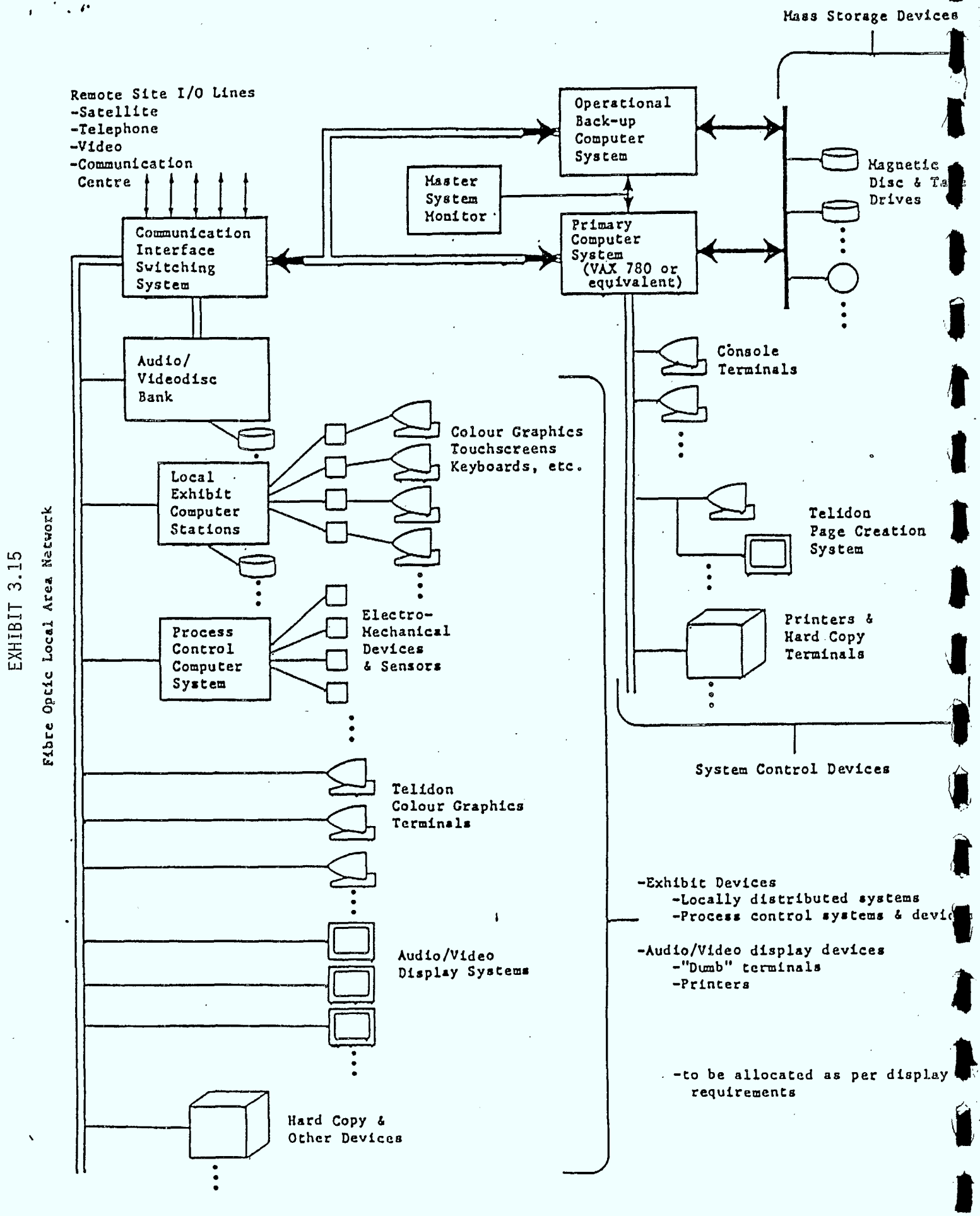
Then, a framework space layout would be developed in which the exhibits relating to the various aspects listed above would be arranged in a logical order. For example, one logical sequence could simply follow the human development from birth (medicine) through education, which more and more involves computers even at a very early age, through the impact on the child of the 'wired home' through work in various industries (in Canada and Vancouver the resource industries would be particularly emphasized), recreation and entertainment throughout, proceeding to the various professions. For the professions, interesting exhibits might be possible for the impact of medicine, for example, ranging from computerized diagnoses to remote observance and treatment which would help to reduce the need for hospitals and similar institutions which might be used for only the most acute state of treatment. This would also be of particular interest for Canada's remote areas. Similarly, interesting

3.27 SUGGESTED ACTIONS (Continued)

exhibits can be developed for law (considerable Canadian developments in computerized systems for legal research, prediction of outcome of cases, etc.), engineering (computer design, the obsolescence of the drafting board), the impact on collective life, i.e. politics, finance, markets, the likely obsolescence of conventional stock and commodity exchanges and their displacement by electronic trading. Various safety and security systems both for individual and collective safety and security would make interesting exhibits.

The federal organizations would set up a small but knowledgeable core organization to develop this exhibitry. This organization would first develop an outline of the theme, objective, classification of exhibits of interest, space allocation and financial arrangements and widely distribute this among potential Canadian contributors to this portion of the exhibit. This invitation to offer exhibits or proposals would include Canadian scientific, educational, business, industrial (including resource industries), social and political organizations. Those organizations which are financially strong would likely provide their contribution on a fully or at least partly funded basis. The Canadian Pavilion might provide funding or prices for the best proposals from smaller organizations who could not finance their own exhibits.

The best proposals would be selected and integrated into a pleasant, logical, comprehensive, entertaining and harmonious overall exhibit of the Canadian contribution to the future of computer communications and their likely impact on society.


Mass Storage Devices
Remote Site I/O Lines
-Satellite
-Telephone
-Video
-Communication Centre
Operational Back-up Computer System
Master System Monitor
Primary Computer System (VAX 780 or equivalent)
Magnetic Disc & Tape Drives
Communication Interface Switching System
Audio/ Videodisc Bank
Console Terminals
Colour Graphics Touchscreens Keyboards, etc.
Local Exhibit Computer Stations
Telidon Page Creation System
Electro-Mechanical Devices & Sensors
Process Control Computer System
Printers & Hard Copy Terminals
System Control Devices
Telidon Colour Graphics Terminals
-Exhibit Devices
-Locally distributed systems
-Process control systems & devi
-Audio/Video display devices
-"Dumb" terminals
-Printers
Audio/Video Display Systems
-to be allocated as per display requirements
Hard Copy & Other Devices
Fibre Optic Local Area Network
EXHIBIT 3.15

## 3.28 PREVIOUS PROPOSALS

Recently, we have become aware of the Department of Communications Expo '86 Communication Exhibitry Proposal. This proposal in many ways is similar to the proposals outlined in this chapter but provides more details about the concept and the division of the concept into four sets of exhibits as follows:

1. Economic and Industrial Development
2. Technological Development
3. Social Development
4. Cultural Development

It was proposed that the various sytems be controlled by a large dual minicomputer system utilizing a fibre optic local area network as illustrated in Exhibit 3.15. Also, a layout for the main exhibit area between the Orientation Theatre and the Imax Theatre was proposed as illustrated in Exhibit 3.16. Specific components of the proposals are:

1. A moving sidewalk which would carry visitors by a number of computer communications exhibits following a story-line and expose them to various experiences.

2. The Atrium - Change of pace area

3. "Meet me at the corner" - A communications and control centre which will provide audio visual communications between a number of locations (street corners) across Canada and exhibition visitors

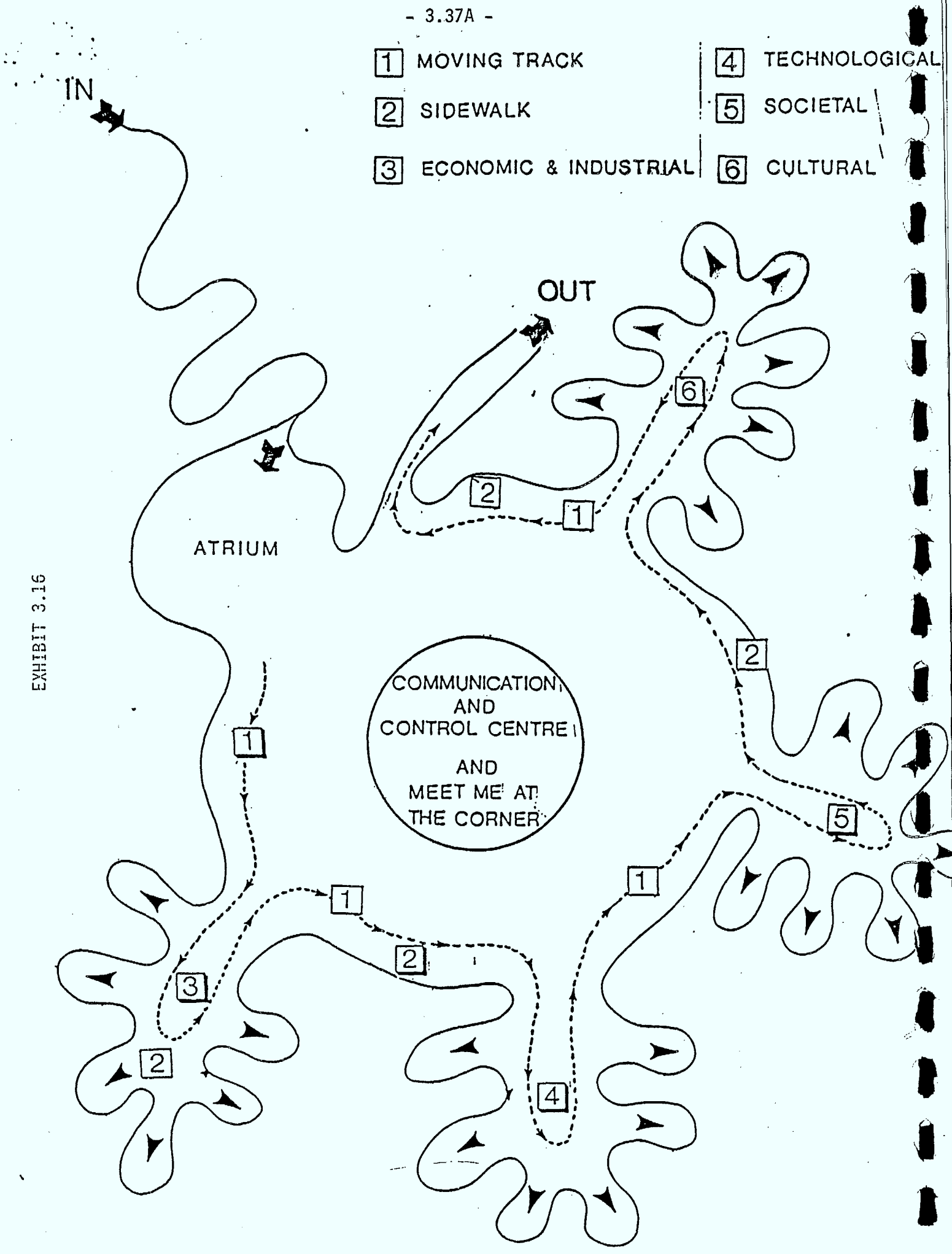

1 MOVING TRACK
2 SIDEWALK
3 ECONOMIC & INDUSTRIAL
4 TECHNOLOGICAL
5 SOCIETAL
6 CULTURAL
IN
OUT
ATRIUM
COMMUNICATION AND CONTROL CENTRE AND MEET ME AT THE CORNER

EXHIBIT 3.16

3.28 PREVIOUS PROPOSALS (Continued)

4. History of offices leading up to advanced office automation

5. The automated factory

6. The automated kitchen

7. A computerized economic model.

Among specific technical development, the following were proposed:

- electronic drafting
- illustration of control by recognizing finger movements and voice
- a programmable keyboard using touch sensitive screens
- the electronic book
- both recognition and automatic translation
- universal paging over long distances using presumably cellular urban radio systems
- micro-engineering illustrations
- artificial intelligence
- remote surgery
- remotely controlled manipulators (a Canadian specialty).

Under societal development such streams were proposed illustrating:

1. A global village
2. Making the world work
3. Co-operation
4. Learning

3.28 PREVIOUS PROPOSALS (Continued)

with specific exhibits as follow:

- windows on the world
- the traffic game
- electronic surveillance
- the intelligent atlas
- an interactive game

Under cultural development, the following were proposed

- a computer theatre
- the options board
- electronic travel

So far we have seen only a summary document which we understand is a portion of a much larger proposal which dealt with themes, budgets, staffing and other considerations.

We believe that this prior work and our proposals are either similar or complementary to the extent that the prior work has already developed proposals to a more detailed stage including cost estimates, work plans, etc. They should be reviewed as part of finalizing the exhibition plans for the Canadian Pavilion.

CANADA PLACE

# INFORMATION/COMMUNICATIONS STUDY

## CHAPTER 4

## INFORMATION/COMMUNICATIONS SYSTEMS
## FOR
## CANADA PLACE AND THE CONVENTION CENTRE

TELERIDE CANTEL

October, 1984

Teleride
Corporation
Limited

6477 Knight Drive
Delta, B.C.
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Tel. (604)594-6343

October 29, 1984

Mr. William G. Leithead
Vice-President
Planning and Development
Canada Harbour Place Corporation
17th Floor, 200 Granville Street
Vancouver, B.C.
V6C 1S4

Dear Mr. Leithead:

Teleride

**CHAPTER 4**
**COMMUNICATIONS/INFORMATION SYSTEMS FOR CANADA PLACE**

We herewith submit the final draft of Chapter 4 which addresses the Communications/Information Study for Canada Place in the post Expo 86 period. This chapter has been prepared in accordance with our discussions of late August, and subsequent meetings.

Several areas of the report have been hard to define and hence only rough estimates can be provided. The major difficulties are with Closed Circuit TV and Satellite Communications. Closed Circuit TV is very dependent on the management philosophy of the complex which is currently not known. Satellite Communications is likewise very dependent on undefined needs. When further definition of these services is available a more accurate estimate could be developed.

We will be pleased to meet with you, your staff and your Associates to provide any further clarification of this report or to assist in its implementation.

Respectfully submitted,

TELERIDE CORPORATION

J. Kates

Josef Kates
President

CANTEL ENGINEERING ASSOC. LTD.

Mark Lopianowski
Principal

JK/ML:zb

cc: T. Tetreault

CHAPTER 4

# INFORMATION/COMMUNICATIONS SYSTEMS FOR CANADA PLACE AND THE CONVENTION CENTRE

TABLE OF CONTENTS

EXHIBIT 4.1G

| ITEM | LOCATION | PURPOSE | REMARKS | REFERENCE |
|---|---|---|---|---|
| Security Communications Alarm System | video monitors for exhibition area | To provide entrance, exit security | Due to fabric roof over exhibit area use of conventional sprinklers is restricted to periphery only. Closed circuit TV will be used to provide surveillance from control centre. Note - consideration may be given to directional infrared sensors. | Pg. 4.6<br>Pg. 4.24 |
| Convention Centre EDP Functions (c) | Computer Centre | Food Inventory, Other Inventory accounting (AP/ARIGL) sales reservations (leads, bookings, for halls and meeting rooms) registration | Standard hotel, convention computer package. Could be combined with Tokyu assignment. | |

EXHIBIT 4.1F

| ITEM | LOCATION | PURPOSE | REMARKS | REFERENCE |
|---|---|---|---|---|
| Cable TV | Levels 145, 169 | Provide internal and external cable TV services | are being currently evaluated | Pg. 4.29 |
| Satellite Communications | Top of hotel or ground level | Provide 2-way satellite communications | temporary ground level mount preferable | Pg. 4.7<br>Pg. 4.26 |
| Teleconferencing (C) | Level 169 | To provide modern teleconferencing facility for conferences | A modern teleconferencing centre may be provided either by the convention centre or Tokyu Corporation. Recommended rental as required. | Pg. 4.6<br>Pg. 4.22 |
| Vehicular Traffic Control | 2 parking levels cruise ship level street level | To control entrances to 2 parking levels. To dispatch taxis and buses from holding areas to bus bays and taxi stands | The parking entrance will be manually or electronically controlled. A dispatcher(s) will order appropriate buses and taxis from holding areas or directly from bus and taxi company dispatch offices to cruise ship level to provide service as required | Pg. 4.7 |
| Truck Control | Head of ramp to exhibition level | Control access of trucks | Convention level can only accomodate trucks under 40 feet. Kiosk or electronic communications. | Pg. 4.7<br>Pg. 4.29 |

EXHIBIT 4.1E

| ITEM | LOCATION | PURPOSE | REMARKS | REFERENCE |
|---|---|---|---|---|
| Public Telephones | Cruise ship, convention & meeting level | Coin telephones for visitors to Canada Place | For 5,000 people at Convention level and at Meeting Room level | Pg. 4.4 |
| Incoming Telephone Trunks | Telephone Room Level P.2 or mezzanine adjacent to computer room | To provide links to Vancouver telephone central office(s) as well as selected foreign exchange trunks | Approximately 100 trunks will be required to meet peak telephone traffic requirements expandable to 200 trunks PABX estimation at $315,000 | Pg. 4.18 |
| Paging P.A. System | Levels 125, 145, 169, | To page and make public announcements | For paging and announcements Canada Place will be subdivided into several areas so each area or group of areas can be individually addressed. Bids have already been received. Alpha-numeric pagers recommended | Pg. 4.5 Pg. 4.20 |
| Intercom (C) | Kitchen to food serving delivery gate to kitchen | direct communication | Hands free system | Pg. 4.29 |

EXHIBIT 4.1D

| ITEM | LOCATION | PURPOSE | REMARKS | REFERENCE |
|---|---|---|---|---|
| Event Directory | Convention Lobby; top of escalators in meeting room level | Direct people to appropriate hall of meeting room | Electronic signs or CRTs driven by the registration input/per CRT | Pg. 4.2<br>Pg. 4.10<br>Ex. 4.7 |
| Exhibits | Exhibit Halls | Federal Exhibits during Expo '86. Convention use thereafter. | 30 foot grid will be in place for stringing wires | |
| House Phones | | Internal telephone communications | Approximately ___ house phones, some specially designated (paging, enquiry) | Pg. 4.3 |
| Convention Telephones(C) | Exhibition and convention areas, meeting rooms | booth communication, meeting communication | 620 potential booths, data access to booths, revenue generation | Pg. 4.3<br>Pg. 4.11 |
| General Switched Telephone Outlets | Levels | Telephones for temporary or permanent users (exhibitions, commercial tenants) of Canada Place | Approximately 800 outlets and lines connected to a modern telephone switch will be required | Pg. 4.3<br>Pg. 4.12 |

EXHIBIT 4.1C

| ITEM | LOCATION | PURPOSE | REMARKS | REFERENCE |
|---|---|---|---|---|
| Visual Signage | All levels | To provide directions to all facilities and activities | Properly designed pictograms for parking, toilets, restaurants, telephones etc. as commonly applied in public transportation, meeting, entertaining facilities. | |
| General Information: Electronic Passive and Interactive Videotex and Graphic Displays | Levels 125, 145,169 (C) | Directions to and schedules of facilities and events within Canada Place, ship terminal, airport, Vancouver and other regions. | Passive (overhead) airport type displays for most frequently required information; interactive (console type) displays for large amounts of information (may be able to utilize system to be provided by IBM). | Pg. 4.2<br>Pg. 4.8<br>Ex. 4.6 |
| Attendee Registration (C) | West of Exhibition Hall | To provide registration facilities for conventiones | Some convention centres provide a marketing and registration service for users of their facilities. | Pg. 4.2<br>Pg. 4.10 |
| Convention Registration (C) | Convention Lobby West Wall | Registration Data entry/ enquiry registration marquee | Portable input to register room assignments to meetings. Should also enable preprogramming of room assignments for conventions. | Pg. 4.2<br>Pg. 4.10 |

EXHIBIT 4.1B

| ITEM | LOCATION | PURPOSE | REMARKS | REFERENCE |
|---|---|---|---|---|
| Telephone Room | Proposed for level P.2 | Location for telephone switch, trunk and line terminations | Consider alternative location adjacent to computer room to facilitate various voice/data systems. | |
| Message Boards | For cruise terminal, exhibition and meeting (?) levels (125, 145, 169(?)) | Information about locations and time of specific events in Canada Place, cruise ship terminal, to contact and inform exhibition and convention attendees | Several remotely actuated large displays are envisaged for the lobbies, and cruise ship terminal. These may be electronic boards/per board. | Pg. 4.1<br>Pg. 4.8<br>Ex. 4.3<br>Ex. 4.7 |
| Large Screen TV Capability(ies) (C) | Halls on Exhibition Level | To provide TV, cable and video projection capabilities for large meetings | Primarily for convention use, but may be considered for use during exhibition also. | Pg. 4.2 |

EXHIBIT 4.1A

CANADA PLACE REQUIREMENTS

| ITEM | LOCATION | PURPOSE | REMARKS | REFERENCE |
|---|---|---|---|---|
| Control Centre | Mezzanine above exhibition level | To supervise and control all information, communications and control systems | A centralized communications and control facility is envisaged where supervisors will be provided with appropriate control consoles. Also listed in Exhibit 3.1 | Pg. 4.3 |
| Computer Room | Mezzanine above exhibition level | Appropriately environmentally controlled space for housing central computers, control and other computer equipment | Several computer systems are envisaged related to safety, security and information requirements of Canada Place (should provide for 200 - 400 square metres (25,000 - 50,000 btu) for entire building; 100-200 sq.ms. adequate for Canada Place only. At present about 40 sq.ms. provided for fire alarm system. | |

(1) Firmer cost estimates should be based on actual proposals or quotes.

# 4.0 INFORMATION/COMMUNICATIONS SYSTEMS FOR CANADA PLACE AND THE CONVENTION CENTRE

## 4.1 EXECUTIVE SUMMARY

Chapter 3 of this report provides proposals for information/communications systems related to the Canadian participation in Expo '86. This chapter addresses the information/communications requirements of Canada Place in general and the requirement of the post Expo '86 Convention Centre in particular. These requirements and the corresponding proposals are summarized in Exhibit 4.1.

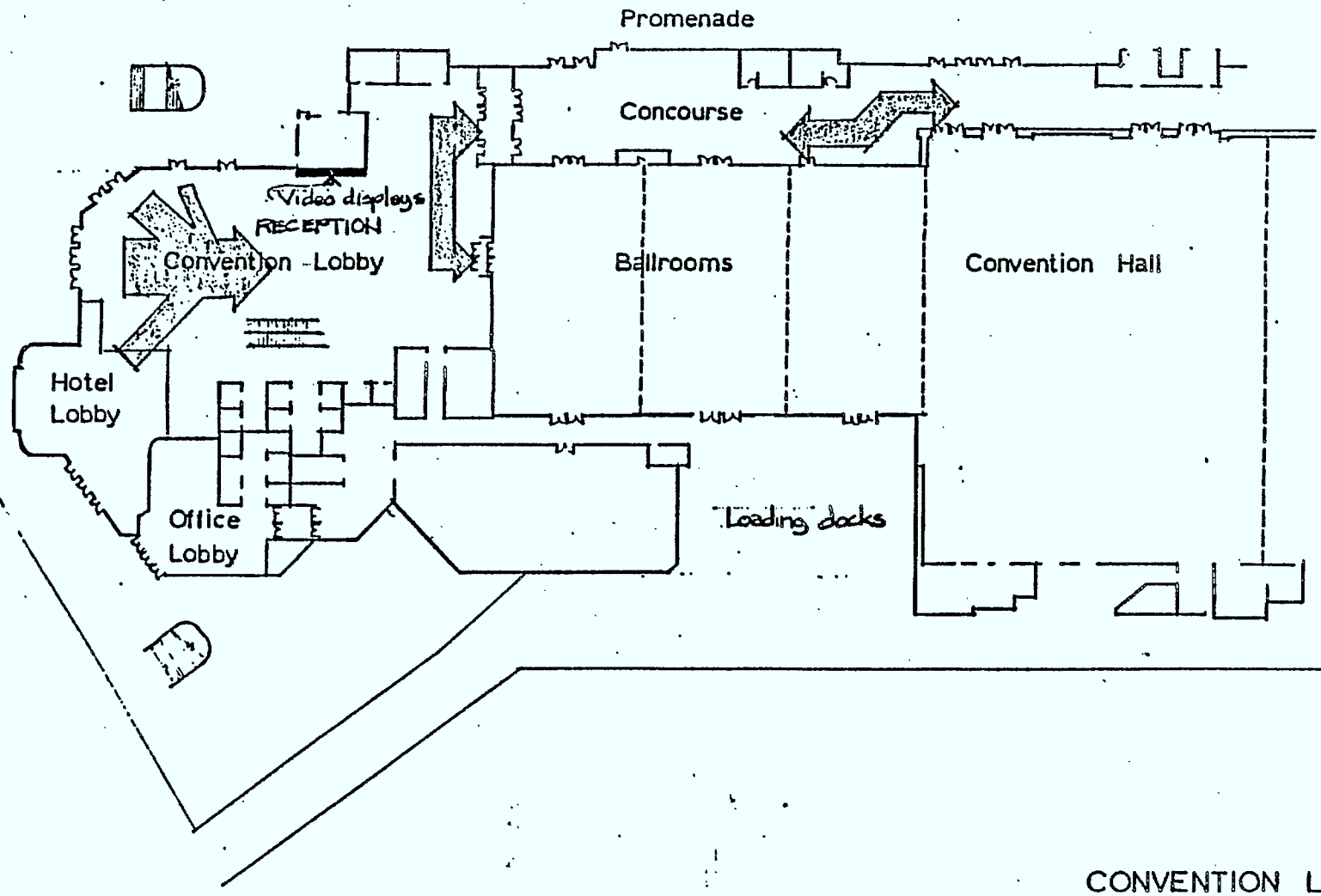
### 4.1.1 Information Signs

Exhibit 4.5 lists the proposed information systems.

Exhibit 4.2 is a plan of the Convention Centre. After Expo, the main entrance to the Convention Centre will be through the front lobby illustrated in Exhibit 4.3. The Expo entrance will be dismantled and converted into a loading dock. Through the lobby is a formal entrance into Ballroom 1 and to the west is the concourse illustrated in Exhibit 4.4 that leads to the other ballrooms and Convention halls. The concourse ultimately leads to a retail and food fair at the end of the pier.

A large remotely controlled sign can be installed in the main Convention lobby either above the ballroom entrance thus directly facing those entering the lobby, or behind and above the registration desk. The sign can provide information on the convention and related activities. The sign, however, must conform with the interior design of the lobby and the Convention Centre.

EXHIBIT 4.2




CONVENTION LEVEL
POST EXPO

4.1.1 Information Signs (Continued)

This could be the same sign which was previously proposed for the "holding area" of the Federal Expo '86 Pavilion. In the main concourse could be passive video consoles displaying events and providing directions at the Convention Centre. These are non-interactive overhead units with recurring displays.

**Convention Hall**

A large video projection system could be installed in Convention Hall 2. Hall 2 is the centre hall and the largest of the three ballrooms. The screen can be mounted on the east wall, opposite the entrance side. The screen can be used as a monitor in large conventions when all three halls are opened. Video monitors can also be installed in the other two halls for conventions. These screens and monitors could also be used during Expo '86.

4.1.2 Reservations and Registration Systems - Hotel Packages

Computerized convention registration packages appear to be part of the associated hotel reservation package. Therefore, if the Convention Centre will be associated with the Tokyu or another hotel chain, we suggest that the Convention Centre utilize the corresponding computer package. If the Convention Centre remains independent, it can:

1. Determine whether it wishes to offer to potential users a computerized space planning and reservation service?

2. If so, they can then review existing packages and adapt selected packages to their requirements.

EXHIBIT 4.3

CONVENTION CENTRE

LOBBY

### 4.1.3 Control Centre

A central surveillance, control, communications and information centre located on a mezzanine above the main exhibition level is envisaged. All alarm and security systems will be monitored from this centre probably by means of computer-controlled CRTs mounted in appropriate control consoles. This centre will also have the capability to control remotely actuated signs, displays and public address systems, although separate controls for these systems may also be provided to the managers of various facilities and events.

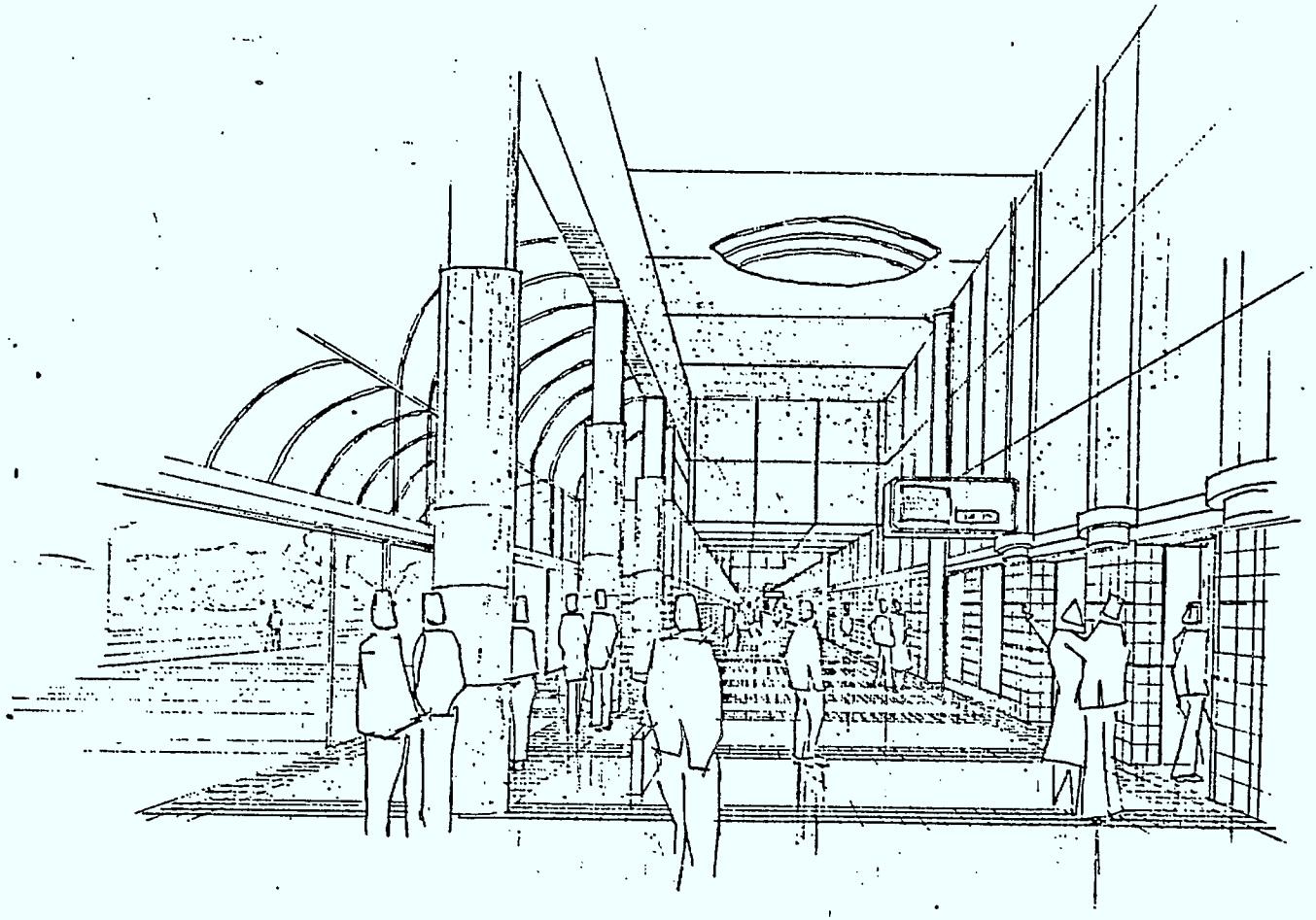
Consideration should be given to grouping the control centre, computer and telephone rooms and telephone switchboard into adjacent areas since this will facilitate interconnection of direct voice, data and video communications; possibly off-hour manning can also be reduced with consequent increased efficiency, lower capital and operating costs.

### 4.1.4 Telephone System

The post Expo '86 telephone system can be separated into several independent areas. These are:

1. Trade and Convention Centre
2. Canada Customs
3. Port of Vancouver
4. Private Concessions
5. Public Telephones

EXHIBIT 4.4



CONVENTION CENTRE
CONCOURSE

[redacted]

4.1.4 Telephone System (Continued)

The Trade and Convention Centre (TCC) will be the major user of any telephone system within the Canada Place complex. Not only will they have a permanent staff who require a modern communication system but they will periodically host conventions which will need access to an extensive voice and data communications system. This conflict in usage presents the major problem in designing a telephone system for the TCC. The System must be capable of meeting the demand yet economical to operate. With the exception of usage, the system is similar to that used in a hotel or motel. The telephone system must be capable of handling both voice and data, be easily reconfigured to meet the many changes required by convention usage and have an excellent accounting package to permit rapid billing of convention users. Details of an appropriate switch are given in Section 4.4.

Canada Customs and the Port of Vancouver have very similar requirements for a telephone system. They both require a limited number of phones and easy access to other telephones within the area served by the Canadian Government communication system. Neither area requires extensive data communication. The optimum method of satisfying the needs of Canada Customs and the Port of Vancouver is therefore to supply telephone service from the existing government system.

4.1.4 Telephone System (Continued)

The communication needs of private concession such as restaurants, car rental agencies, the theatre, etc., are all very similar. They all have need for both voice and data communications and easy access both to and from the public switched network. Communication between the concessions and other areas can best be supplied by B.C. Telephone or some other service provider who has direct access to the public switched network.

Public telephones are, and will probably continue to be, the private domain of the telephone companies. Conduit is being placed within the Canada Place to meet the telephone companies plans for public telephones.

In summary, the telephone requirements for Canada Place can be met by: access to or a modern PABX to serve the Trade and Convention Centre, access to the Canadian Government communications system, to serve government agencies and direct access to the public switched network to serve the public telephones and private concessions.

4.1.5 Paging and P.A. Systems

Canada Place is being equipped with an extensive P.A. System which should prove adequate for all public announcements as well as all paging which may be carried over the P.A. In addition, a radio paging system should be considered for use by both the staff

4.1.5 Paging and P.A. Systems (Continued)

of the Trade and Convention Centre as well as convention attendees. Provision of this service to convention attendees will not only enhance the capability of the Trade and Convention Centre but will also help to defray the cost of the system.

An alpha-numeric form of pager would appear the most desirable for this facility. It offers excellent message capability, privacy and operates in a silent mode.

4.1.6 Teleconferencing

Teleconferencing from Canada Place is expected to occur on a very intermittent basis. It is important that this form of service can be provided by the Trade and Convention Centre in order to serve the largest possible market area.

Because of the intermittent usage it is recommended that this service be provided in a similar manner to remote broadcasts. When the faciliteis are needed they should be rented and professional staff hired to operate the system.

4.1.7 Security TV System

The need for a security TV system is very dependent on the management of any area in question. Since the post Expo '86 management of Canada Place has not been identified it has not been possible to obtain any requirements for this type of system. In future, if a system is required, it can be added but the installation and the cost of developing a centralized monitoring system will be higher.

### 4.1.8 Satellite Communications

Consideration has been given to establishing a satellite uplink at Canada Place. Both the 4/6 Ghz and the 12/14 Ghz frequency bands have been examined. The area in question is particularly prone to interference in the 4/6 Ghz band and a detailed analysis of interfering sources as well as the design of the station is required before operation in this band can be confirmed. Initial investigation would indicate that operation in the 12/14 Ghz band would not be a problem.

Location of a satellite antenna on top of the hotel has been considered but is not being recommended because of the temporary need for this service. The very nature of a satellite uplink requires that the trnsmitter be located in close proximity to the antenna. To temporarily mount an entire earth station on the roof of the hotel is not considered desirable. It is recommended to lease a portable system and locate the equipment at ground level.

### 4.1.9 Miscellaneous Communications Systems

Canada Place has limited capability to handle large numbers and sizes of trucks. In order to cope with this problem it is recommended that, during convention periods, trucks transporting exhibits be directed to the Cruise ship bus and taxi assembly area used by vehicles servicing the cruise ship. They may then be released to the pier as space becomes available.

EXHIBIT 4.5

INFORMATION SYSTEMS FOR THE CONVENTION CENTRE

| LOCATION | SYSTEM | COST ESTIMATE |
|---|---|---|
| Convention Lobby above entrance to ballroom or above registration area | Large text sign | $ 25,000 - $ 50,000/unit |
| Convention Hall 2 | Large video projection unit | $ 25,000/unit |
| Concourse | Passive videotex monitors | $ 2-3,000/unit |
| All | Interactive videotex consoles | $ 5,000/unit |
| All | Fixed signage in accordance with federal guide-lines | |

## 4.2 INFORMATION SIGNS

Remotely controlled large information signs, passive video and videotex displays and interactive videotex/disk consoles are discussed more extensively in Chapters 3 and 9 of this report.

In the context of the Convention Centre, variable text or large video displays could be considered for the Convention lobby, and the ballroom. In the ballroom a full video capability would be desirable.

The large text sign(s) can be supplemented by passive overhead monitors located along the concourse, and possibly near meeting rooms similar to the system used in the Palais des Congrès in Montreal discussed below.

As part of our study we visited the Montreal Convention Centre in the Palais des Congrès. This centre is equipped with a large number of Telidon displays which provide directions for visitors to the centre. This system is described in Exhibit 4.6.

The Montreal video displays are very compact and attractively packaged so as not to be unsightly when mounted on the ceiling. They are tilted to reduce glare from ceiling lights, and to improve the viewing angle. They are located in high traffic areas (lobbies, escalators) and in front of each Convention hall. This helps in reaching a large audience.

Exhibit 4.6 Cont'd.

2.

A visitor entering the Palais des Congrès will be guided to his destination by the television monitors of the TELIDON system. As he gets closer to his destination, the information on the monitors will become more precise.

Delegates attending a specific event will need only to follow the instructions on the screen showing the name or the logo of their organization. They will also be able to get a synopsis of a conference or a workshop, or note down last-minute changes or special bulletins from their convention organizers. The information on the screen will never be outdated since it can be changed instantaneously, whenever needed.

During breaks in activities, visitors and delegates will be able to question one of the ten interactive terminals and get information on many topics such as sport and cultural activities taking place in the city. The system will also tell them how to get there and the cost of their tickets. It will even suggest a few quiet restaurants!

But this is only the tip of the iceberg. In a few years time, the system will be linked to all the major Montréal hotels. Visitors will have access to all this information - in the comfort of their own room.

The system goes even beyond these on-screen information services. the data-processing capability will soon be used to computerize the Palais des Congrès' accounting, registration and billing operations.

- 30 -

For information:

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de Montréal
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Le Groupe Communi-Conseil
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Exhibit 4.6

Palais des Congrès de **Montréal**

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# Communiqué

PRESS RELEASE # 4

Montréal, August 26th, 1983

## The TELIDON-videotex system: a unique feature of the Palais des congrès de Montréal

Delegates and visitors to Montréal's new Palais des Congrès will have access to a unique communication service found in no other convention hall in the world.

To get information on events scheduled inside the hall, on shows currently playing in town, on restaurants in the area or on public transportation rates, they need only to consult one of the 72 television screens located throughout the Palais des Congrès. for more complete information, they can punch in specific questions at one of the ten TELIDON-videotex interactive terminals placed at strategic locations in the hall.

The Palais des Congrès' TELIDON-videotex system is one of the most sophisticated of its kind in the world. It integrates several elements and components which, until now, had never been used together for information and communication purposes.

The system which cost over $1.6 million can now provide 2000 pages of electronic information. This is only the beginning. The system's memory bank can actually store up to 100,000 pages of information.

4.2 INFORMATION SIGNS (Continued)

On the other hand, the screens are about 12". The colour reproduction is of low quality (dull, poor area definition). The screens are single-sided providing at most a 100-120 degree viewing area. The poor resolution of the graphics restricts the sharpness of logos and graphical illustrations.

The information content of the screens is very limited. They are strictly directional aids with no information content. By following arrows on the screen, one can find the way to one's particular session. The information does not provide for the viewer:

1. directory of sessions;
2. session description;
3. session cancellation, changes;
4. interactive enquiries.

The screens are updated about every 60 seconds. It takes roughly five seconds to paint a new screen. Screens are updated even if the information has not changed which unnecessarily interrupts the screen content.

The Convention Centre could also provide access to both convention and exhibit information as well as more general information via interactive videotex/disk consoles as discussed in Chapters 3 and 9. These would be located in the lobby(s), along the concourse, and in the concession area as shown in Exhibit 4.7.

EXHIBIT 4.7

INFORMATION KIOSKS

## 4.3 CONVENTION REGISTRATION SYSTEMS

A service that might be supplied by Canada Place for conventions would be a reservation system. We investigated the available services by contacting several convention and show facilities.

1. International Centre, Mississauga
2. Canadian National Exhibition, Toronto
3. Metro Toronto Convention Centre, Toronto

We have found that the standard approach to registration for space at a show or convention is to reserve the whole convention space as one block for the sponsoring organization. It is then the responsibility of the sponsoring organization and not the Convention Centre to divide the space and deal with individual registrations. The Convention Centre is left with the rather simplistic task of scheduling slots for the convention with no responsibility for detailed reservations.

The recently opened Metro Toronto Convention Centre is by far the most sophisticated of any of the facilities we reviewed. It is also very similar to the Canada Place development, since it also has an associated hotel in the complex (l'Hotel). They have indicated that they will be using a computerized system for reservations, but this will be largely for organizing banquet facilities and associated hotel reservations and accounting. The computer system will contain the registration of a hall or groups of halls for a

## 4.3 CONVENTION REGISTRATION SYSTEMS (Continued)

particular convention. This block of space is then handed over to the Convention Association just as in the manual systems. Essentially, they will use a hotel computer package which deals with convention registration similarly to the registration of hotel rooms.

Should Canada Harbour Place Corporation feel that some form of computerized reservation is essential, it is recommended that an investigation into the package which will be used by the hotel be carried out. The purpose of this project will be to determine the possibility of interfacing to this system for convention services. To facilitate this, CHPC should begin preliminary discussions with the TOKYU group to apprise them of the possible need for this functionality.

## 4.4 TELEPHONE SYSTEM

### 4.4.1 Overview of Requirements

During Expo '86 the Canadian Government's requirement for telephone service at the Canadian Pavilion can most easily be met from the Canadian Government internal telephone system. Private concessions in the area can likewise obtain a temporary service from B.C. Telephone. After Expo '86, when facility is transformed into the Trade and Convention Centre, a more permanent telephone system must be established.

In order to function effectively the permanent offices of the Trade and Convention Centre (TCC) will require all forms of modern communications available today. These include, but are not limited to voice, data, telex, facsimile, telemail and electronic

4.4.1 Overview of Requirements (Continued)

messaging. In addition the TCC must be able to supply state of the art communications in order to attract modern business conventions. The TCC must therefore be prepared to continuously upgrade their system to provide any new emerging services.

From a quantitative point of view the TCC's demand for telephone service can fluctuate from some 20 lines necessary for their permanent offices to more than 800 lines if all the facilities are fully utilized. This large variation represents a major problem in the design of the TCC telephone system. Sufficient equipment must be available to meet the convention demand but, for the majority of the time, the equipment is idle. Therefore, the TCC system must be easily reconfigured to meet the convention demands and have an accounting system capable of billing for convention usage.

The Port of Vancouver offices require telephone services to support their cruise ship activities during the cruise ship period. This is foreseen to be relatively straightforward requirement and may be most effectively served by the Canadian government system. The two direct lines to the Harbour Police may be provided via BC Telephone.

4.4.1 Overview of Requirements (Continued)

For the foreseeable future Canada Customs only requires voice service in their offices. In Canada Place these offices are only planned to be used during the cruise ship season, however, if customs services are required for Trade shows the offices may be continuously occupied. Telephone service direct from the Canadian government system is most appropriate.

Cruise ships docking at the facility require the capability of using shipboard telephones to connect into the BC Telephone system as well as cruise ship offices. The circuits can best be served by BC Telephone.

The Concessions with Canada Place requires a direct connection to the public switched network. This is desirable because the majority of their communication is either with the public or with centralized data bases for credit verification etc. Their needs may most easily be satisfied by BC Telephone.

## 4.4.2 Trade and Convention Centre Telephone System

### 4.4.2.1 Technology Available

The modern trend in telephone switching is for the PABX to be capable of switching both data and voice traffic. These systems, referred to as integrated voice data facilities are in an evolutionary stage with new advances being continuously introduced. The advantage of an integrated system is that data may be treated in a similar manner to voice and therefore data terminals may be located throughout an office area without having to provide an additional data transmission network. Expensive data modems are not needed within the serving area. Modems are required for external data communications but they may be shared among many users.

Systems are currently available which are capable of carrying 19.2 kbit/sec of asynchronous data plus voice over three telephone pairs. The future trend is for both voice and data to co-exist on the same telephone pair. This will result in a greater utilization of telephone cables. Data and telephone terminals will be able to be colocated without any costly changes in site wiring. These systems are expected to be available in 1985/86 and would be extremely advantageous to the Convention Centre where large trade shows are expected to attract many data terminals or portable computers. The planned telephone wiring would thus have at least twice the current circuit capacity.

4.4.2.1 Technology Available (Continued)

Modern switching architecture and digital technology has enabled switches to be designed which are modular and whose operation are defined and controlled by software. These switches allow a great deal of network flexibility and are capable of a great many features. They may be easily reconfigured and expanded to the limits of their processor (mainframe) capability. For example, a PABX usually consists of a mainframe, subscriber line units and trunk units. The mainframe, which contains the central processor, is sized for the ultimate growth capacity of the switch. Likewise different software is provided depending on the features required. Subscriber line units, which permit each subscriber to communicate with mainframe, are added as the subscriber base grows. The trunk units, which permit the PABX to interconnect with other communication systems such as B.C. Telephone, are also added as the subscriber base grows. They are, however, added in proportion to the number of subscribers using the PABX and their requirement for external connections.

At TCC the PABX mainframe should therefore be sized for the maximum number of lines expected during a convention period. The subscriber sets, line units and trunk units can then be added on an as required basis. The cost of the PABX on a usage basis will therefore be much higher than normal because of all the idle capacity which must be available for conventions.

4.4.2.2 System Features

Generally available features which are considered most important to CHP are as follows:

1. Reconfigurable under software control - this means that telephone circuits may be easily added or deleted up to the limit of the hardware line and trunk circuits available.

2. Multiple attendant - this is particularly important during convention periods when additional attendants may be required.

3. Accounting system - a system is required to provide a timely identification of system usage for billing purposes.

4. Paging - access to the paging system from the attendant's position will provide a more effective operation.

5. Different classes of service - necessary for the many different organization sharing the facility. Some areas need toll access while others should be restricted.

6. Data and voice capability - considered essential with the continuing trend toward more data terminals. Data over the same physical pair is more desirable.

4.4.2.2 System Features (Continued)

7. Message centre - for efficiency the system should be capable of either directly recording messages or being equipped with an external system.

8. Call park and remote pickup - this service would permit a call to be parked while an individual is paged and then picked-up by the paged individual.

9. Modem sharing - permits local data circuits to share a pool of data modems which are required for off premise data extensions.

10. Conference calls - permits a number of individuals to participate in the same call.

11. Traffic monitor - permits the level of activity on the system to be monitored so that traffic engineers may plan network reconfigurations or expansions.

12. Service and maintainability - it is essential that local service is available and that the mean time to repair is short.

13. Direct inward dial - this feature will allow outside calls direct access.

#### 4.4.2.3 Switch Capacity

The size of the switch for CHP is primarily dependent on the services to be provided to the Trade and Convention Centre. The current estimate of permanent telephone lines connected is 40 whereas the maximum peak demand is estimated at 800 lines. This difference of lines is primarily due to the potential convention demand. Similarly, the trunk demand can vary from 45 trunks to in excess of 100 trunks. The TCC PABX should therefore be capable of expansion to at least 1,000 lines and 200 trunks. Before acquisition of a PABX a study should be conducted to accurately determine the initial requirements. For the purpose of this study, it is estimated that 300 lines and 60 trunks should be equipped with additional lines and trunks added as convention bookings warrant.

#### 4.4.2.4 Budgetary Cost

The budgetary cost of a PABX with the mainframe capable of expansion to 1,000 lines but only equipped with 300 lines and 60 trunks is $315,500. Installation is estimated to cost $55,000 while maintenance, including parts and labour, is estimated to cost up to $1,200 per month. To this must be added the cost of subscriber sets which varies greatly according to the desired features. For estimation purposes an average set is estimated to cost $75.00.

4.4.2.4 Budgetary Cost (Continued)

BC Telephone charges a monthly rental of $75.15 for each trunk connected and has connection charge of $88.00. Care must therefore be taken when requesting trunks as this may significantly add to the costs of operating the facility. Additional trunks for conventions should be added on an as required basis and disconnected when not required.

4.4.2.5 Space Required

The space required for a fully equipped switch is less than 20 square meters. This area should prove adequate for equipment terminations, maintenance of the facility and auxiliary subsystems.

4.4.2.6 Potential Suppliers

Typical systems that have been examined and are considered adequate to service CHP requirements are:

| | | Country of Manufacture |
|---|---|---|
| 1. | Northern Telecom SLI-1 | Canada |
| 2. | Mitel SX 2000 | Canada |
| 3. | Ericson MD110 | U.S.A. |
| 4. | Rolm VLCBX | U.S.A. |
| 5. | Microtel Omni S111 | U.S.A. |

## 4.5 PAGING AND PUBLIC ADDRESS SYSTEM

Canada Place is being equipped with an extensive public address system whch may also be used for voice frequency paging. This system incorporates a control system which will permit access to individual zones as well as the entire complex. The main control centre will be located in the CHP control room but other areas will have access to their own paging zones as conditions warrant.

In addition to the paging which is possible via the PA system there is also a need for individual paging units for maintenance and operational staff. These units will allow staff members to be contacted throughout the complex without disturbing convention activities. It may also prove desirable to rent pagers to convention attendees. This service could be an attractive feature for the Trade and Convention Centre and could be a source of revenue for that area.

Several different types of pagers are available and more are being introduced all the time. Currently popular models are:

1. Voice pagers - in this system short voice messages are transmitted to the appropriate pager which then operates in an audible mode.

2. Tone pagers - in this system either one or two tones are sent to the pager and the recipient is required to interpret the message from the tone combinations.

## 4.5 PAGING AND PUBLIC ADDRESS SYSTEM (Continued)

3. Numeric pagers - in this system a series of digits, which represents the message, is generated by a computer terminal or touch tone pad and then transmitted to the pager. The pager may either display the numeric message on a liquid crystal display (LCD) or alternatively store the message for future reference. The receipt of a message may be identified by either a tone or vibration of the pager.

4. Alphanumeric pagers - in this system a message containing alphanumeric characters is generated by a computer terminal and then transmitted to the pager. This type of pager operates in a very similar manner to the numeric pager except that longer plain English messages are possible. If a long message is sent the display is strobed until the entire message has been read.

Either the numeric or alphanumeric pagers would appear the most desirable for the Convention Centre because of their silent operating features. These pagers are currently in an introduction phase but should be readily available by 1986.

There are many local paging companies from which a paging service can be rented. Each company has different rates and services which tend to vary with time and competition. This means that a comparison is only meaningful at the time the service is about to be acquired. However as a guide, tone pagers rent for $20.00 per month, voice pagers for $30.00 per month, numeric pagers for $30.00 per month, and the proposed rates for alphanumeric pagers (available in 1985) is $45.00 per month. These rates include service and may also vary depending on the quality of pagers required and the service demand.

## 4.5 PAGING AND PUBLIC ADDRESS SYSTEM (Continued)

An alternative to renting is to purchase and operate an inhouse system. A purchased system would consist of a base station, an operator position and individual pager units. The cost of a system which would operate within Canada Place and capable of voice, tone or numeric messages would be $16,500 not including pagers which generally cost $475.00 each. If wide area coverage is necessary a more costly transmitter with a higher output power is required.

The relative merits of renting or purchasing a system depend on the type of paging system chosen, quantity of pager required, and the criterion used by Canada Place to evaluate lease/purchase alternatives. While a study of this nature is considered necessary it is beyond the scope of the present project. This study should be undertaken when detailed requirements are known and acquisition is contemplated.

## 4.6 TELECONFERENCING

The Trade and Convention Centre will occasionally require the capability to establish teleconferencing for panel discussion and demonstrations. These are expected to be held before audiences in the main exhibition halls, ballrooms, or perhaps the meeting rooms. The exact requirements cannot be defined but it is expected that each teleconference will require a projection television system, a variety of television cameras, and an audio system.

The cost of video display equipment ranges from less than $20,000 to more than $1 million depending on the size and quality of the projection. One of the major difficulties with standard broadcast television is that the quality of the picture degrades as the projection size increases.

4.6 TELECONFERENCING (Continued)

This is caused by the fact that TV has a fixed number of lines and on larger screens the individual lines become more apparent. To overcome this problem high definition video systems have been developed. These systems use more lines per picture and hence require special cameras, projectors, and transmission systems. While these systems are superior, they are costly and require similar equipment at all teleconferencing locations. An alternative is to place multiple smaller screens through the viewing area and adopt television standards. This not only improves the picture quality but also dramatically reduce the overall system cost.

If the quality of normal broadcast video is deemed acceptable, standard TV receivers, projectors, and remote pickup equipment will prove suitable to satisfy Canada Harbour Place's teleconferencing needs. Likewise transmission systems are readily available to interconnect the remote locations. Due to the intermittent usage of this service and the variable requirements, consideration should be given to renting the basic equipment on an as required basis. The system could therefore be custom designed for the occasion and staffed with professional operators.

Some consideration should be given to permanently installing 10 ft. projection screens within the exhibition halls and rooms. These screens are readily available and would be suitable for viewing by several hundred people. The cost of a screen in a motorized version is approximately $800. Several could be strategically located in the exhibit halls, and ballrooms, and perhaps the meeting rooms.

## 4.7 SECURITY CLOSED CIRCUIT TELEVISION (CCTV)

A need has been identified for a CCTV system for Canadian Pavilion during Expo '86, however, this need has not been expressed for the post Expo period. These systems can be very useful in preventing theft, vandalism, detecting people in difficulty, and reducing the number of security staff required. The need for such a system is strongly dependent on the operating management's philosophy. The operating methodology also determines the number and types of cameras and the complexity of the control room. None of this information is available and hence only a very rough estimate can be given for a CCTV system.

Each CCTV system is custom designed but generally, where many cameras are involved, they are interconnected to a central control room where switchers, monitors and recorders are located. Several different types of cameras may be selected depending on the different light levels encountered. These may be equipped with either fixed or operator controlled zoom lenses. They may also be mounted on ceilings, walls or poles and may either have fixed or variable direction.

Many different features may be incorporated in the control room including camera sequencing, split screen images and event recording. Camera sequencing, which can be set according to the need, allows more than one camera to share a monitor. A similar situation occurs with split screen images. Camera controls are possible which will permit a camera to focus on a door being opened and record the event with both a time and date.

## 4.7 SECURITY CLOSED CIRCUIT TELEVISION (CCTV) (Continued)

For the purpose of estimation, a hypothetical system has been developed which is assumed to be adequate for the convention level, meeting room, and mezzanine area. This system is envisaged to have:

1. 20 cameras for indoor locations of which 10 are equipped with zoom lens and may be moved under the operators control

2. 5 outdoor cameras which are fixed in both focus and direction

3. 3 switch sequencers

4. 3 monitors

5. 1 time lapse recorder

A budgetary cost for the above noted system fully installed is $130,000. This assumes that conduits are available for the cable runs and that the control room is capable of accepting the necessary control equipment and display console.

## 4.8 SATELLITE COMMUNICATIONS

Consideration is being given to locating a satellite antenna on the roof of the hotel associated with Canada Place. The purpose of this antenna is to provide the Canadian Pavilion with a demonstration of Canadian satellite technology and for possible future convention use. No definition of requirements is available and therefore only a generalized study is possible.

For the purpose of this study, earth stations having uplink capability and operating in either the 4/6 GHz or 12/14 GHz band were considered. The space segment is assumed to have occasional use in non primetime, be unprotected and preemptible.

The downtown core of Vancouver suffers from severe problems of frequency congestion in the 4/6 GHz band. This congestion is considered of a sufficient magnitude that a detailed study of interference at the potential site must be made before an earth station may be designed. Such an investigation is beyond the scope of this study and therefore we cannot state with any degree of assurance that a 4/6 GHz earth station could be operated from the proposed location.

No major frequency interference problems appear to exist with the 12/14 GHz frequency band and therefore this band is recommended for a Canada Place earth station.

## 4.8 SATELLITE COMMUNICATIONS (Continued)

The concept of locating a satellite uplink on the roof at the Pan Pacific Hotel has been examined and it would appear an ideal for a receive only antenna but when uplinking capability is required the site is somewhat inaccessible. To determine the impact of placing a complete terminal on the roof would require a detailed specification of the earth terminal, examination of the roof's construction to ensure that the roof cansupport the station, and an examination of methods to suply power and communication cables to the terminal. In contrast to other alternatives, the concept of placing an earth station on the roof of the hotel does not appear desirable.

An alternative method of providing satellite services from Canada Place is to lease a portable terminal and have that terminal located at ground level. This has the advantages that:

1. The visiting public will be able to see the equipment and no capital cost will be incurred.

2. No structural changes are required to Canada Place.

3. Cabling problems are minimal.

4. Terminal lease rates may be lower than usual because of the advertising exposure abailable to the terminal supplier.

## 4.8 SATELLITE COMMUNICATIONS (Continued)

One potential leasing source is Telesat Canada who offers the Anikast 1400 service. This service is provided via a self contained transportable earth terminal which has uplink capability. The standard lease cost varies from approximately $300 to $450 per hour for a non prime time (09:00 - 15:59, Mon-Fri and 09:00 - 13:59, Sat, Sun and Holidays), unprotected, preemptible service. This lease rate does not include the space segment or the remote terminal. If it proves desirable, the terminal could be purchased for approximately $300,000 with the operating costs borne by the owner.

The satellite space segment can likewise be supplied by Telesat. If full coverage of Canada is required using the 12/14 GHz band, two transponders must be employed. The standard lease cost for each transponder varies from approximately $300 to $450 per hour for an occasional use, non prime time, unprotected, preemptible channel. If two way transmission is required consideration must be given to the additional transponders.

The cost of providing satellite services is therefore very dependent on the complexity of usage of the service. Once the requirements are known, a quotation can be developed and suitable equipment chosen.

## 4.9 MISCELLANEOUS COMMUNICATION FACILITIES

### 4.9.1 Cable TV

Television coverage within Canada Harbour Place is planned to be established on a per occasion basis. In general where a major program is planned, an external production unit will be engaged to provide the service. Conduits are being placed throughout the convention area to facilitate the addition of CATV cables. At this time no requirements have been identified.

### 4.9.2 Intercom System

An intercom system is required between the production kitchen, the servery, and the food storage area. Extension to the Catering Manager's Office, pantries, dishwashing area and other areas with a common interest should be considered.

### 4.9.3 Truck Control

Because of limitations in turning radius trucks greater than 40 feet in length are not permitted to enter the Trade and Convention level of Canada Harbour Place. Signs will therefore be required at the entrances to the pier to direct truck traffic. During the convention periods it may prove advantageous to queue the trucks in the bus and taxi holding area in order to avoid congestion on the pier.

# CANADA PLACE

## INFORMATION/COMMUNICATIONS STUDY

CHAPTER 5

## COMMUNICATIONS/INFORMATION SYSTEMS
## FOR
## THE CRUISE SHIP TERMINAL

TELERIDE

CANTEL ENGINEERING

October, 1984

Teleride
Corporation
Limited

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October 29, 1984

W.C. McKenzie, P. Eng.
Program Manager
Port of Vancouver
1204 - 200 Granville Street
Vancouver, B.C.
V6C 2P9

Teleride

Dear Mr. McKenzie:

**INFORMATION/COMMUNICATIONS**
**FOR THE CRUISE SHIP TERMINAL AND CANADA CUSTOMS**

Attached is Chapter 5 of the Canada Harbour Place Information/Communications Study. This chapter discusses the Information/Communications systems for the Cruise Ship Terminal and Canada Customs for this Terminal. Cruise Ship Terminal systems are summarized in Exhibit 5.1 and Canada Customs systems in Exhibit 5.4.

We would be pleased to discuss these proposals if necessary and provide further assistance if required.

Respectfully submitted,

TELERIDE CORPORATION

CANTEL ENGINEERING

# CHAPTER 5

# COMMUNICATIONS/INFORMATION SYSTEMS FOR THE CANADA PLACE THE CRUISE SHIP TERMINAL

## TABLE OF CONTENTS

EXHIBIT 5.1 - Vancouver Port (Continued)

| ITEM | LOCATION | PURPOSE | PROPOSAL | PRIORITY | REF. |
|---|---|---|---|---|---|
| Bus & Taxi Dispatching | From dispatcher to bus and taxi holding areas | To control bus and taxi access to terminal | Manned communications kiosk at vehicle muster area | High | Page 5.6 |
| Closed Circuit TV | Cruise Area | Security of ships, stores/baggage, etc. | One entrance already mounted. No additional CCTV required | Low | Page 5.6 |
| Closed Circuit TV | Truck Gate | Access identity | Already being provided | High | Page 5.7 |
| Fire Alarm System | Cruise Area | To warn of fire, heat, smoke | Already being designed | High | |
| Telephone System | Cruise Area | To provide telephone service | Already laid out. Recomend use of Government telephone system for Custom. BC Telephone for concessions | High | Page 5.7 |
| Ship to Shore Telephones | Docking Area | Direct access from ship to BC Telephone | Circuit already being installed for service | High | Page 5.8 |
| Traffic Flow Signs | In all vehicular traffic areas | To direct vehicular traffic | Part of graphic design package | | |

EXHIBIT 5.1

VANCOUVER PORT

| ITEM | LOCATION | PURPOSE | PROPOSAL | PRIORITY | REF. |
|---|---|---|---|---|---|
| Event/ Schedule Display | Cruise level lobby possibly also in adjacent lobby area | Schedule information event information convention information when cruise ships not running | Floor console or suspended CRTs Visible in 260' x 95' room and 215' x 56' adjacent room; text only; schedule information updated once a day; controlled by port dispatch office | High | Ex. 5.3 Page 5.2 |
| Entrance Displays | At each of 4 entrances out from cruise ship lobby | Show ship at entrance | LED signs Updated once a day; removed hidden or alternative use when lobby is in use by convention; walls are removed when used by convention so probably attached to ceiling | Medium | |
| Message Board | Cruise level Main Lobby | Message for cruise ship passengers (greeters and well-wishers) | combined with above floor console or suspended CRTs | Low | |
| Paging | Cruise level Main lobby & adjacent lobby | To make PA announcements, page employees, passengers, visitors | Controlled at port dispatcher's office (fixed location), manager's office (fixed location), and hostess' office (several locations). Bids already received, being evaluated. | High | Page 5.4 |

## 5.0 VANCOUVER PORT REQUIREMENTS

The Port of Vancouver has a number of communication problems which are unique to the cruise ship industry in Canada Place. These are:

1. The facility is only used as a cruise ship terminal during that period of the year when cruise ships are operating.

2. Most cruise ships enter port in the morning and disembark by evening. During this period several thousand people pass through the facility during both embarkation and disembarkation.

3. Passengers and their luggage must be processed through customs on disembarkation.

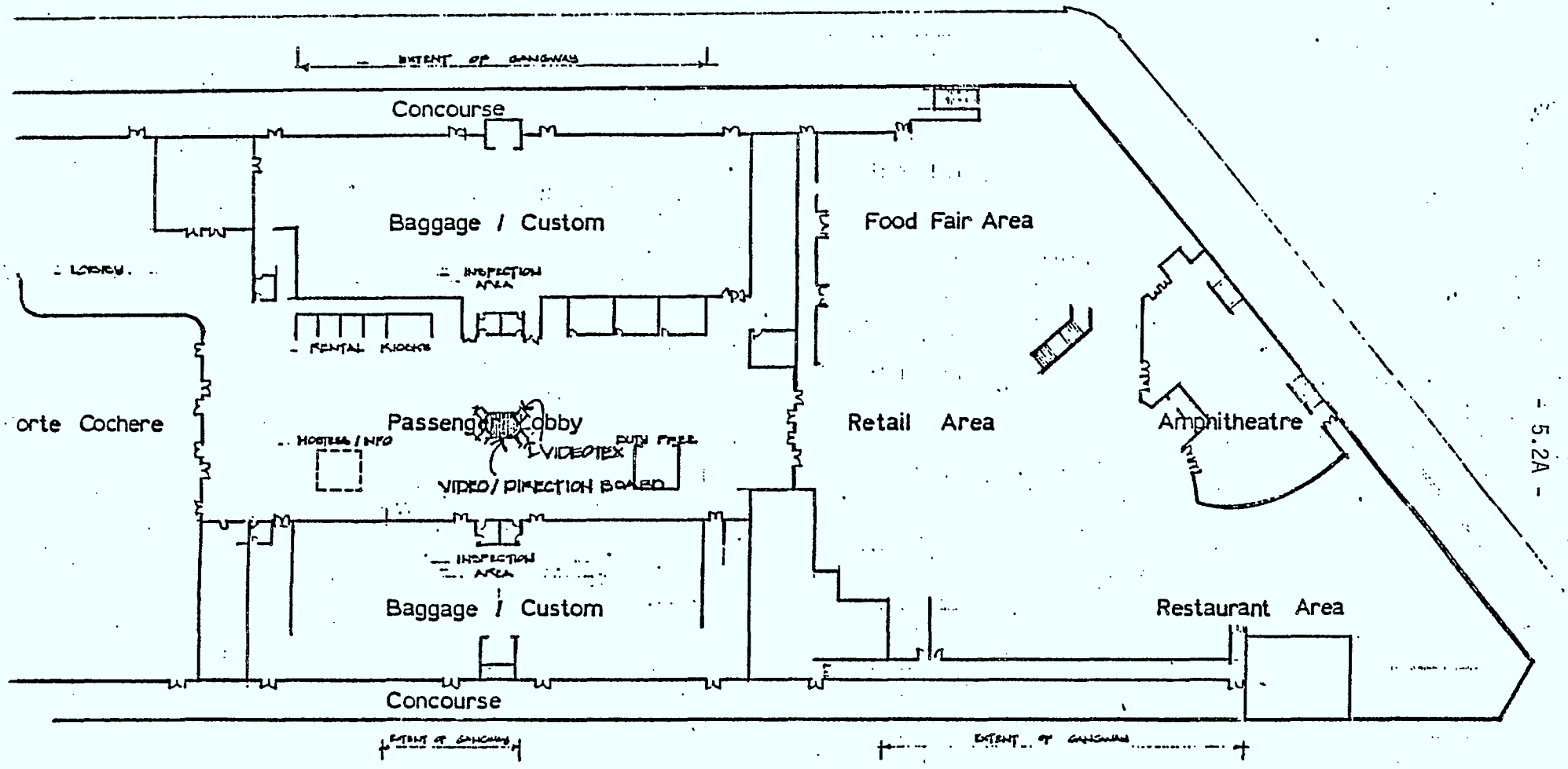
4. Passengers must have quick and ready access to transportation, communication facilties and information on areas of interest.

5. Canada Place has a limited capacity to handle both buses and taxis.

6. Passengers first impressions of the city and country will be influenced by the efficiency which they encounter at their port of entry.

The Port of Vancouver must, therefore, be able to effectively handle the volumes of people and traffic which are encountered

EXHIBIT 5.2




CRUISE SHIP TERMINAL LEVEL

## 5.0 VANCOUVER PORT REQUIREMENTS (Continued)

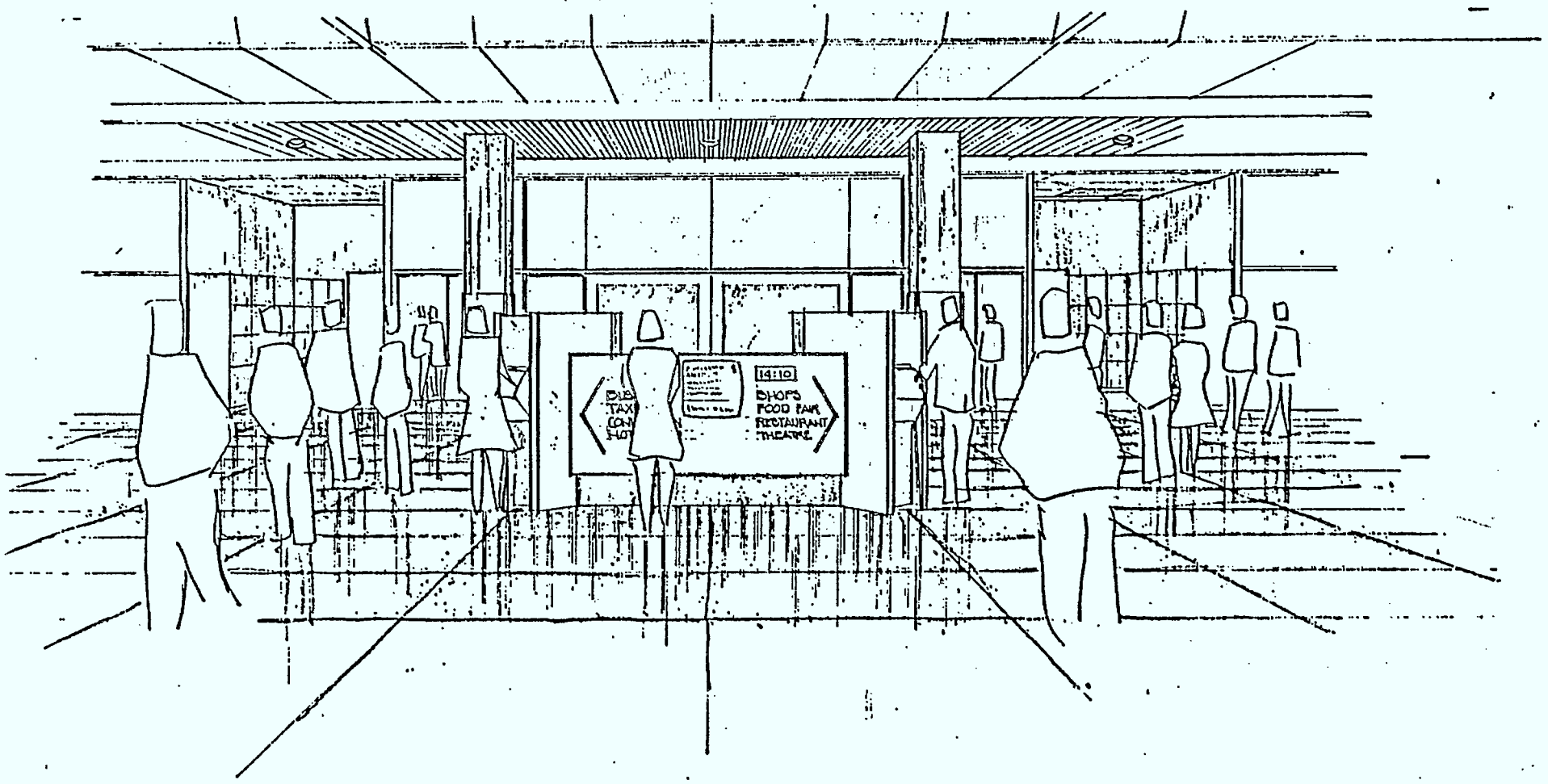
during the docking and departure of any cruise ship. The facilities must be converted from those required by passengers during disembarkation to those required for embarkation during a very short period. To meet these needs the requirements for the Port of Vancouver Cruise Ship Facility are given in Exhibit 5.1 and are discussed below.

## 5.1 MESSAGE BOARDS AND DISPLAYS

Vancouver Port requires information signs to guide embarking cruise ship passengers/visitors to the proper ship. Signage will have to be very flexible since various areas are assigned at different times to customs and immigration, or freely accessible areas, embarkation or reembarkation, etc.

Exhibit 5.2 is a plan of the Cruise Ship Terminal. Passengers disembarking from cruise ships will enter a bonded concourse and into one of four baggage pick up and customs areas. Coming out of customs, the passengers enter a central lobby where they wait for their ground transportation, or decide where to go. South of the lobby is the bus stop and to the north is a retail and food centre. This centre is accessible to both passengers and the general public.

EXHIBIT 5.3



## 5.1 MESSAGE BOARDS AND DISPLAYS (Continued)

Passengers disembark and re-embark through the central lobby, thus making it an ideal location for an information centre or console. This information console could be a combination of interactive and passive screens similar to the information console(s) proposed for the airport and illustrated in Exhibit 5.1. It cannot be too large because the room is only 75' wide, (thus viewing distance of only 33'). The videos can provide information for ground transportation, events in Vancouver, etc. This information console should be combined with an information counter attended during active periods by a hostess. The video displays should be able to be controlled separately during the cruise ship season from the cruise ship level and from the corresponding convention centre system during the off season when the Cruise Ship Terminal will become an extension of the convention exhibition area.

In the event that a completely clear area has to be retained in the passenger lobby, the 'passive' airport type displays and directories could be suspended from the ceiling and the interactive consoles could be moved to the entrances from the upper exhibition level.

## 5.2 PAGING

A paging facility is required to assist in directing passengers through the embarkation and disembarkation process, to asist the customs agents during customs clearance, and to aid in communication for Port of Vancouver staff. This system should have access to the dock area, the customs area (departure lounge), the passenger lobby, the ground transportation area, and the ship's provisioning areas.

The system should, therefore, have the capability of zone paging and if possible be activated from the area manager's office, the hostess's office and the dispatcher's office. A major paging facility is being installed within Canada Place with zone paging facilities and a centralized dispatching area. This system should be capable of meeting the needs of the Cruise Ship area.

## 5.3 BUS AND TAXI DISPATCHING

Canada Harbour Place has limited space for taxis and buses. To overcome this problem a vehicle muster area must be provided in an area remote from the pier. Vehicles are then permitted to enter the pier under the control of the dispatcher. During this study various systems have been con sidered to accomplish this task. They include:

5.3 BUS AND TAXI DISPATCHING (Continued)

1. Direct radio contact between the dispatcher and the vehicle.

2. Voice paging from the dispatcher to the vehicle.

3. Message boards in the muster area which are activated by the dispatcher.

4. The placement of a manned kiosk in the muster area which is in constant contact with the dispatcher.

Direct radio contact from the dispatcher to the vehicle is the most desirable solution from an operational standpoint. This solution suffers from the problem that all vehicles within a serving area are not equipped with a common frequency. To implement this system would, therefore, severely limit the number of vehicles which could service the pier. This solution is, therefore, not considered desirable because it is too restrictive.

An alternative solution is to use voice pagers controlled from the dispatcher's office. This solution suffers from two distinct problems:

1. All vehicles would have to be equipped with identical pagers which would present a major logistics problem.

5.3 BUS AND TAXI DISPATCHING (Continued)

2. Because of the one way nature of this system, the dispatcher would not be aware of which vehicles were available for servicing the pier.

Pagers are, therefore, not considered an acceptable solution for controlling traffic to the pier.

Another solution is to provide a dispatcher controlled sign in the muster area. If this were implemented, an area would be required where the drivers could report their availability to the dispatcher and wait to be called to the peir.

The best method of handling commercial pier traffic appears to be to provide a manned communications kiosk at the vehicle muster area. Drivers would then report availability to the kiosk when they entered the area. The pier dispatcher would request service from the kiosk attendant who would then release the appropriate vehicle to the pier.

5.4 CLOSED CIRCUIT T.V.

Security of the Cruise Ship Facility is not considered a problem because of the very limited access available to the pier. One entrance is manned and the other entrance is monitored by closed circuit T.V. Internal security in the baggage handling and ships provisioning area is not considered a problem and hence no closed circuit T.V. is planned for these areas.

## 5.4 CLOSED CIRCUIT T.V. (Continued)

Security in the parking areas of the pier may require a closed circuit T.V. system. This will depend on the operator of the parking facility. No operator has been assigned and, therefore, no CCTV system is being considered.

## 5.5 TELEPHONE SYSTEM

The telephone services required in the cruise ship area can be identified in the following areas:

1. Port of Vancouver Offices
2. Canada Customs Offices
3. Private Concessions
4. Public Telephones
5. Ship to Shore Telephones
6. Harbour Police

The Port of Vancouver requires a relatively small telephone system with modern call handling capability. No extensive use of data is forseen, however easy access to other government agencies is seen as an asset. Because of the relatively few phones involved and the ready accessibility of the Canadian Government system it is recommended that all phones be connected to the government system.

## 5.5 TELEPHONE SYSTEM (Continued)

The Canada Customs area in Canada Harbour Place consists of a relatively small number of offices requiring telephone service. Their needs have been identified as a modern telephone system with no requirement to access a centralized data base. As easy access to other Customs and Government Offices is desirable, it is recommended that all Canada Customs telephones be connected to the Canadian Government System.

Private concessions such as restaurants, car rental agencies, etc. all require direct inward dialing as well as ready access to centralized data bases. The majority of a concession's communications are via the public switched network. While this form of service would be provided by a PABX located within Canada Harbour Place, it is recommended that service be provided by BC Telephone.

Public telephones are required to service both the passengers and the visiting public. This service is provided by BC Telephone and conduits for these circuits are being installed in Canada Harbour Place.

Ship to Shore telephones are required to allow direct access to the public switched network when the ships are in port. Telephone outlets are being provided in dock face to allow for connection of either dockside or shipboard telephones.

Two telephones at dock level are required to provide direct connections to the Harbour Police. No access to the public switched network is required and, therefore, these circuits may best be provided by leased circuits. Consideration should be given to providing special identification or access boxes to these phones to prevent confusion.

EXHIBIT 5.4

CANADA CUSTOMS REQUIREMENTS

| ITEM | LOCATION | PURPOSE | PROPOSAL | PRIORITY | COST ESTIMATE $(000) | REF. |
|---|---|---|---|---|---|---|
| Customs Area Signs | passenger disembarking area | to direct passengers to primary customs, baggage claim and exit areas | CRTs or LED signs are recommended. They must be easily moved as customs area will only operate during arrivals and then be dismantled during departure times. They may be controlled from the cruise ship area during cruising season and from the convention area during other periods. | High | 1-2/CRT 5-10 for larger LED or Flip disk signs | Pg.5.9 |
| Customs Area Intercom | passenger customs clearance area | for internal customs usage | Specify the required intercom in the inspection booth and install appropriate wiring. System should operate from main office to primary inspection (12 booths), to secondary inspection and to exit areas and must be moveable for ship departures. | Medium | under 10 | Pg.5.10 |
| Ships Agents Communications | from ship to shore | to advise passengers when to disembark | may be radio, intercom or telephone. Telephone jacks are being installed at dockside. | High | N/A | Pg.5.8 |
| Surveillance TV | customs or bonded areas | Security | not required | | | |
| Customs Telephones | cruise ship and pier offices | communication | Secure phone service from the Canadian Government system | High | N/A | Pg.5.8 |
| Harbour Police Phone | pier level | direct connection to Harbour Police | Secure leased lines from BC Telephone | High | N/A | Pg.5.8 |

## 5.6 CANADA CUSTOMS REQUIREMENTS

Canada Customs requirements are summarized in Exhibit 5.4 which also lists the corresponding proposals. Canada Customs will have offices on both the pier and passenger levels at Canada Harbour Place. The pier level customs area will be used to clear longshoreman and ship supplies to the bonded dock area. Their communications requirements will be minimal and only consist of a telephone in the pier office.

The main customs activity will take place on the cruise ship level where passengers and their luggage will be cleared on embarkation. The customs procedure will be similar to that used at the airport and consist of a primary and secondary inspection. The primary inspection process will be conducted at six customs booths which will be located where the passengers enter the cruise ship terminal from the passenger concourse. After primary inspection, the passengers will claim their baggage and then either proceed to an exit or be directed to a secondary inspection area before exiting. As passengers may disembark on either side of the pier, this inspection process/area will be duplicated.

During the embarkation process the passengers will use the same area as used for disembarkation. As no customs services are required during this period all customs signage, communications equipment and booths must be moved to avoid passenger congestion or confusion. This change must be accomplished within a short period as embarkation procedures will begin directly after all passengers have cleared though customs. Therefore, this is an ideal application for remotely controlled video, LED or flip disk signs.

## 5.6 CANADA CUSTOMS REQUIREMENTS (Continued)

Customs activities are expected to be relatively routine as the vast majority of disembarking passengers will have originated from a U.S. port. No sophisticated communications systems such as computer-aided passenger clearance will be required. Telephones will be required in the permanent offices and an intercom between the inspection areas and the office would be an asset. Signage will be required to ensure a smooth flow of passengers from the vessels, to and through customs. No closed circuit TV will be required for either the passenger area or the bonded pier as the problems with security are judged to be minimal.

# INFORMATION/COMMUNICATIONS SYSTEMS

# FOR

# DRIE'S BUSINESS DEVELOPMENT CENTRE (BDC)

Teleride Developments Limited Cantel Engineering Associates

October, 1984

Teleride
Corporation
Limited

6477 Knight Drive
Delta, B.C.
V4E 1S3
Tel. (604)594-6343

October 29, 1984

Mr. J.F. Murray
Manager, Industrial Development
Government of Canada
Industry, Trade and Commerce and
Regional Economic Expansion
P.O. Box 49178
Bentall Tower Four
1055 Dunsmuir Street
Vancouver, British Columbia
V7X 1K8

Teleride

Dear Mr. Murray:

**INFORMATION/COMMUNICATIONS SYSTEMS FOR DRIE'S BUSINESS DEVELOPMENT CENTRE (BDC)**

Attached is Chapter 6 on information systems for your Business Development Centre for Expo '86. The proposals are summarized in Exhibit 6.1 together with cost estimates and approximate time schedules.

The computer information and display systems proposed could well be a model for other DRIE and Business Development offices. Therefore, we suggest that DRIE consider the proposals and their costs as a project to generally enhance its business and industrial services in Canada and abroad, rather than as a limited duration project for Expo '86. In this expanded context, the proposed program and its costs appear to be very justifiable.

We suggest that your department decide on which of the suggested initiatives you wish to implement and then proceed with the more detailed work required.

We would be pleased to discuss this report further with DRIE officials and to provide further assistance as required.

Yours sincerely,

TELERIDE CORPORATION CANTEL ENGINEERING ASSOCIATES LTD.

cc: Terry Tetreault

# DRIE'S BUSINESS DEVELOPMENT CENTRE (BDC)

## TABLE OF CONTENTS

EXHIBIT 6.1

BDC INFORMATION SYSTEMS - RECOMMENDED ACTIONS

| Action | Tentative Completion Dates | Cost (1) Estimate |
|---|---|---|
| Acquire 1-2 terminals for access to BOSS, CANTEL and other databases | OCT 84 | 10,000 |
| Review existing or planned Canadian databases in more detail for their suitability for the BDC | DEC 84 | 5,000 |
| Determine desirability and feasibility of: | | |
| 1. special software to simplify access to selected databases and appropriate micro computers | | |
| 2. downloading of selected databases or subsets thereof to Vancouver based computer | JAN 85 | 5,000 |
| Based on above, refine plans for hardware, software, communications, training and advertising of BDC services | FEB 85 | 2,000 |
| Implement selected system (can probably be much earlier) probably consisting of: | OCT 85 | |
| 1-2 interactive videotex console(s) in waiting room for individual enquiries; | | 20,000 |
| 1-2 as above with video disc including budgets for video preparation | | 100,000 |
| 1 - video projection unit in conference room with its own keyboard (which can be connected to the videotex/disk units) | | 25,000 |
| 5 - micro computer equipped work stations for DRIE interview offices, including special software | | 50,000 |
| Budget for project management (if required) (15%) | | 30,000 |
| Contingencies | | 50,000 |
| TOTAL BUDGET approximately | | $300,000 |

(1) Firmer estimates should be based on actual quotes or proposals.

# 6.0 DRIE'S BUSINESS DEVELOPMENT CENTRE (BDC)

## 6.1 EXECUTIVE SUMMARY

DRIE plans on a Business Development Centre during Expo '86 to provide business information for visitors and facilitate business transactions. This BDC will be located in the meeting rooms above the main exhibition area. Two types of facilities are proposed:

1. Self-Serve Console in Waiting Room

   A Telidon/Videotex console located in the waiting area of the BDC for either unassisted use, or assisted by a secretary in this area. This console will enable visitors to make a number of general (economic information) or specific enquiries while waiting. The videotex/videodisk facility discussed in Chapter 9 would be ideal for this purpose, since it would enable DRIE and other organizations to insert short videos of various regions, specific industrial areas, i.e., industrial parks, specific companies, products and services and mix this with the videotex system. A similar facility is being used for industrial development purposes at the New Orleans World Fair.

   A particular database of interest for this videotex facility is the CANTEL database provided by the Federal Government in a Telidon (NALPS) videotex format.

2. Office Work Stations

   Computer terminals or personal computers will be located in five offices manned by DRIE officials. These would be used to access a number of databases about Canadian companies such as BOSS in Montreal.

6.1 EXECUTIVE SUMMARY (Continued)

3. Conference Audio Visual Room

The above systems should be connected to a video projection unit in a conference room equipped for audio visual presentations. This will facilitate use of the interactive videotex/disc system during presentations with groups of visitors.

We therefore recommend the following action steps.

1. Acquisition by DRIE of one to two microcomputers suitable for accessing the CANTEL, BOSS and other databases of interest. These will be used to familiarize DRIE personnel with how to access and search these databases.

2. Systematic review of a number of other Canadian economic and industrial databases and assessment of their usefulness for the BDC.

3. Identification of those databases which appear to be most useful for the BDC.

4. Determination whether the direct access to the various communications networks and the host computers providing these databases is simple enough so that no further inititive is required or alternatively the desirability of simplifying access to the identified databases by programming the DRIE microprocessors to carry out automatically the access routines (dialling the communications network, signing on the host computer, possibly

6.1 EXECUTIVE SUMMARY (Continued)

standardizing the access to various databases) to simplify the work of DRIE officials. During this study the desirability of "downloading" part or all of the databases of interest to a DRIE computer located in Vancouver should also be more carefully reviewed than we have been able to do during our study.

5. Based on 4., acquire and program five micromputer equipped work stations for DRIE interview offices.

6. Acquisition of one or two interactive colorgraphic videotex/disk units.

7. Development of the video disk database for Item 6.

8. Acquisition of a video projection unit for the DRIE conference room in Canada Place and interconnection of this projection unit with the videotex/disk unit.

## 6.2 DEPARTMENT OF REGIONAL INDUSTRIAL EXPANSION (DRIE) REQUIREMENTS

DRIE will be operating a Business Development Centre (BDC) for the duration of Expo '86. This will require the office to be established from March - October 1986. This office will be largely staffed by DRIE personnel (approximately 10) but there will also be requirements for staffing from:

1. Federal Business Development Board (FBDB)
2. Canada Patents
3. Tourism Canada

EXHIBIT 6.2

DRIE REQUIREMENTS

| SERVICE | PURPOSE | REMARKS |
|---|---|---|
| Public Data Base Access | Provide visiting businessmen access to financial and statistical information which they can use in evaluating potential markets. | It is probably important to limit this selection to services which are available free-of-charge. There would be no easy method of charge-back for other offerings which means DRIE would have to pick up the cost. |
| DATAPAC access TYMNET/TELENET access | Provide access to other computer systems over public data networks. | Using public data networks may reduce communication costs to DRIE if the destination of the connection absorbs charges for the usage. |
| TELEX | Provide visitors communications with their offices and other short messages on TELEX. | DRIE may have to absorb this as an operating cost of the BDC. |
| Telephone | Provide telephones for visitors to contact various companies turned up in their investigation. | This could run into a considerable sum of money. It is most reasonable to charge this back to the caller. |
| Office Services | Provide automated office services to support visitors' business functions while investigating these opportunities. | Services could include:<br>° word processing;<br>° electronic mail;<br>° store and forward messaging;<br>° photocopying.<br>° telephone answering |
| Office Space | Provide temporary office space meeting rooms, quiet areas for visitors to concentrate. | This has been allowed for in the space plans. It should be noted that each of these spaces must be serviced with appropriate communication lines. |

## 6.2 DEPARTMENT OF REGIONAL INDUSTRIAL EXPANSION (DRIE) REQUIREMENTS (Continued)

These organizations plus DRIE's data centre can be contacted in Ottawa or Vancouver. The contacts are:

Vancouver

| | | |
|---|---|---|
| 1. | FBDB: | Frank Reiter<br>(604) 687-1300 |

Ottawa

| | | |
|---|---|---|
| 2. | Canada Patents | Ed Rymick<br>(613) 996-5736 |
| 3. | Tourism Canada | Bernie Campbell<br>(613) 996-5653<br><br>Bob Duncombe<br>(613) 995-7091 |
| 4. | DRIE | Don Ranger<br>(613) 593-6868<br><br>Ross Rutherford<br>(613) 995-1321 |

Requirements for the BDC are summarized in Exhibit 6.2.

The BDC will be promoted to visitors to Expo '86 as a centre for business and business opportunity information. They will be able to contact Canadian trade officials before arriving

## 6.2 DEPARTMENT OF REGIONAL INDUSTRIAL EXPANSION (DRIE) REQUIREMENTS (Continued)

to pre-register and tentatively arrange meetings with Canadian businesses during their visit. To facilitate this, the following services will be provided:

1. Access to DRIE's BOSS database;
2. Access to other public databases;
3. Access to Expo '86 Telidon system;
4. Telex;
5. Word Processing;
6. Electronic Mail;
7. Duplicating;
8. Telephone Services;
9. Meeting Rooms and Temporary Offices.

This service will be promoted abroad through the Canadian Trade missions in participating countries. These trade missions will be supplied with brochures and orientation to explain the proposed services to interested individuals or organizations. They will then be able to access the DRIE organization to register their interest.

It is assumed that there will be a large contingent of visitors to the Expo site who were never made aware of the BDC services before arrival at the exhibition. To create awareness of the BDC within Expo, the provincial pavilions will be promoting the centre in response to enquiries at their individual provincial business displays. The staff manning the provincial pavilions will have to be kept abreast of BDC developments as well as having access to some information from the BDC system.

## 6.2 DEPARTMENT OF REGIONAL INDUSTRIAL EXPANSION (DRIE) REQUIREMENTS (Continued)

More importantly, a greater number of visitors can be made aware of the services of the BDC through promotion on daily event signs and within the proposed Telidon information system, as well as through other Expo and local media.

The main information will come from the BOSS database in Montreal. Whereas BOSS supplies information for over 14,000 companies in Canada related to location, size, principal products, employees, etc., the data required for the BDC is only name, address, and telephone (and telex) number(s) contact(s) and principal products and services. Therefore, it is envisaged that a subset of the BOSS database will be down-loaded to some as yet to be determined local computer located in Vancouver. A group of 5 or more terminals in the BDC could then access these data locally.

The central computer in Vancouver would also hold on-line a complete business product directory with which all the companies on BOSS are cross-referenced. This requires at present a manual search and retrieval, but by placing the directory on-line, the search could be automated. The automated enquiries could also be logged so that a detailed list of all enquiries could be sent to companies for their personal follow-up.

The central system would also provide for accessing pertinent public databases (STATSCAN, INFOGLOBE, etc.). Selection of information would be menu-driven and any of the BDC terminals would have easy-to-use access to the pertinent information. This access could even be extended to the TELEX system.

## 6.2 DEPARTMENT OF REGIONAL INDUSTRIAL EXPANSION (DRIE) REQUIREMENTS (Continued)

It is anticipated that a requirement for roughly 6-8 terminals exists. These would either be connected to a central processor which in turn is connected to:

1. Public Databases
2. DataPac
3. Telex
4. BOSS
5. DRIE offices (this may be the same as 2.)
6. Expo '86 Telidon system

or the terminals would be connected directly to the above databases and systems.

Constraints to be considered include:

1. 6 month project - However, the Vancouver Board of Trade or another organization should continue to provide this service. Alternatively, this facility could be shifted to other exhibitions and conventions where DRIE would provide similar services. However, the service should be considered as a pilot or model for improving DRIE's

## 6.2 DEPARTMENT OF REGIONAL INDUSTRIAL EXPANSION (DRIE) REQUIREMENTS (Continued)

business and industrial development information capabilities in Canada and abroad.

2. small budget - perhaps only $300,000 for all D.P. but this is quite adequate.

3. no expertise - requires good deal of user-friendly software

4. promotion - will the system be under-used? or overused? This will partly depend on the system quality and training of DRIE officials.

5. corporate sponsorship - what is available that is applicable? At least large corporations should provide videotex and video materials for the proposed systems.

EXHIBIT 6.3

CANTEL - Canadian Government Telidon Database

A. 3 communication methods

1. DATAPAC dedicated
2. DATAPAC dial up
3. conventional dial ups

B. log on with user ID and password

C. menu displayed with selection of available databases

- uses Teleguide-like terminals
- will be demonstrated at CNE
- no charge except for communication costs (they would bill back DATAPAC charges)

Conventional telephone too expensive but DRIE could use the Centrex system and this would make telephone communications most cost effective.

## 6.3 DATABASES

Public databases are computer stored information which is made available to the general public, usually by membership in the organization which collects, organizes, stores and provides access to the data. Along with the membership, one receives an identification code (ID) and usually a protective password. Since members are charged for using these databases, it is important that access is restricted to those who have an appropriate password.

We have made a preliminary review of several public databases as a representative sample of what is available to DRIE. At a later time a more exhaustive study could reveal the best selection of these databases and possibly other databases for the BDC.

The specific requirements for information are twofold. DRIE envisions the use of an interactive terminal in the BDC waiting area where people could scan various government databases containing demographics and economic information without the assistance of DRIE officials. It has been suggested that the CANTEL database would be well suited for this purpose.

Secondly, more specific industry and business information should be available through DRIE officials while in conference with visitors. The business opportunities database (BOSS) developed by the Canadian government is used for this purpose now, but other data could also be useful.

## 6.4 CANTEL DATABASE

CANTEL is a system which uses Telidon technology and provides access to a number of Canadian Government agencies' databases, such as Statistics Canada, Industry, Trade and Commerce, Economic Council of Canada, etc.

This requires a colour graphic terminal which can be connected by normal long distance telephone lines to the central computer located in Ottawa. Once connected to the system, a user of CANTEL can find his way to various information items by making appropriate selections from a sequence of menus. Using this terminal, BDC staff would simply call up the system in the morning and identify themselves through the terminal with the BDC user ID and password. The terminal would then give menu-driven access to the data for the rest of the day. Dialling up the CANTEL system in the morning is a relatively simple procedure which could be carried out by a secretary. Finding the information required by means of the menus, requires only keying a number corresponding to the desired menu item, which visitors would be able to do readily while waiting. One problem discussed in our chapter on videotex, is that a visitor may not be aware of what information is available. Therefore, the BDC should mount a poster and provide brochures which explain the use of and information made available by the CANTEL terminal.

Also, to make this terminal less forbidding and more user friendly, we would suggest that the terminal only be equipped with a simple minimum keypad sufficient to search through the menus. A separate alphanumeric keyboard could be used by BDC staff to 'log on' (connect to) to CANTEL computer in the morning.

EXHIBIT 6.4

BOSS - Business Opportunities

- operates on Montreal service bureau
- built around ADABASE (not easily transferrable)
- BOSS will be developing by 1986
  1. an easy to use interface (user friendly)
  2. an online industry index
  3. possibly a downloadable module for micros - so that the database (or excerpts thereof) can be transferred to a local microprocessor in Vancouver
- simple RS232 TTY access or 3270 (too expensive)
- require some knowledge to use the system

it was suggested:

a. a subset of the data was hard to extract just for DRIE but if a general requirement could be outlined, perhaps future developments would allow for this;

b. out-of-hour (other than 8-8) service is out of the question;

c. DATAPAC costs absorbed by BOSS;

d. they wish to cooperate fully if possible..

## 6.5 COSTS OF CANTEL TELIDON TERMINAL

The Telidon terminal itself would cost roughly $5,000. With shipping, installation, testing and training, roughly $10,000 should be budgeted. Once installed ,the operational costs associated with the terminal consists mainly of maintenance costs (approximately $500) and communication costs. The communications costs can vary greatly depending on how the CANTEL computer in Ottawa is accessed. For example, if the federal government WATS system could be used, communication costs would be limited to the local telephone line. If this is not possible, a telephone connection directly to the CANTEL computer (leased line) could be installed at a cost of $2,000 to $3,000 per month. Alternatively, a dedicated connection through DATAPAC, a public information transfer system could be set up at less cost if the system is not used heavily.

## 6.6 BOSS DATABASE

The BOSS database resides on a computer in Montreal. It contains general information about over 14,000 Canadian companies such as address, number of employees, products, etc. It is the basis for a business directory printed by the government each year.

Since BOSS is structured around the ADABASE data management system, it is not easily transferable to other locations. Therefore, it is made available to government agencies who have terminals to call up the system over conventional telephone lines.

EXHIBIT 6.5

OTHER DATABASES

1. DOW JONES

- commerce related
- American offering
- expensive
- useful, but limited in Canadian content
- RS232 interface
- $75 U.S. initiation
- $72 U.S./hr. usage

2. INFOGLOBE

- all Globe and Mail articles for last n years;
- somewhat complicated access and only mediocre commands;
- somewhat expensive
- RS232 interface
- $100 initiation
- $180/hr. usage

3. THE SOURCE

- like CANTEL but on commercial databases
- much more consumer oriented
  a) on-line marketing
  b) electronic mail
  c) billboards
  d) games
- not unreasonably priced (but also not free)
- RS232
- $100 U.S. initiation
- $20.75 U.S./hr. usage

4. COMPUSERV

- similar to The Source, but less expensive
- smaller offering and smaller user community
- RS232
- $40 U.S. initiation
- $12.50 U.S./hr. usage

## 6.6 BOSS DATABASE (Continued)

There are plans in place to enhance the capabilities of BOSS. Several of these changes are scheduled for completion well before Expo '86 begins. An easy-to-use interface is being developed to alleviate the need to manually find the industry code used as an access key to BOSS. This will require an on-line index of these codes. Finally, passing a subset of the data to a microprocessor to offload the Montreal machine can be accomplished by developing some software for the micro and extracting data into a file from the BOSS database. This will allow BOSS users to better control their environment.

## 6.7 COSTS OF BOSS

The simplest and cheapest approach to using the BOSS system is to use a basic ASCII terminal or a device with similar characteristics such as a microprocessor or personal computer device to communicate with BOSS. This could call the system over a data communications system such as DATAPAC. The BOSS database organization is willing to absorb the cost of these communications. Therefore, the costs to DRIE in Vancouver of providing this data service would be the cost of the terminal plus the maintenance fee. A suitable terminal would cost $1,000 and the monthly maintenance fee would be $20.00.

Provision should be made for desk space, printed BOSS directory and a modest amount of training. Therefore, assuming DRIE acquires six terminals (5 + one spare) a total capital budget of $7,000 should be adequate.

## 6.8 OTHER DATABASES

Other databases exist with useful information for many different purposes. As an example, a few are listed below and more detailed descriptions are provided in Exhibit 6.5 in point form.

| Database | Content | Most Frequent User |
|---|---|---|
| Dow Jones | - stock markets (American)<br>- financial news<br>- trends | Business |
| INFOGLOBE | - newspaper articles from Globe and Mail | Any |
| THE SOURCE | - games<br>- billboards<br>- electronic mail<br>- online marketing | consumers |
| COMPUSERV | - electronic mail<br>- billboarding<br>- press services | consumers |

All of these databases are accessed as in BOSS. There are small variations from one system to the other such as ID, password, commands, etc. This could mean that each staff person in the BDC would have to be conversant with several systems.

## 6.9 USE OF PERSONAL COMPUTERS (PCs)

To simplify the procedure for accessing several databases we would recommend that instead of acquiring only simple terminals which would suffice if BOSS only were to be accessed, DRIE acquire small personal computers, such as IBM PCs, Apple, Commodore PETs, etc. The varying methodologies for accessing different databases would be stored in these personal computers and would be recalled through a standard set of commands programmed into the terminal. The cost of suitable PCs can range from $500 to $10,000. Therefore, for 5 PCs plus one spare, the capital cost could range from $3,000 to $60,000. The higher cost range would be warranted if the agents are trained to make use of the sophisticated features of an expensive PC. Otherwise, we would recommend relatively low cost PCs such as Commodore PETs, Radio Shack TRS80s, etc.

The added value of these PCs is the ability of the operators to also use them for other functions of the BDC such as:

- recording enquiries
- electronic mail access
- word processing
- hard copy printing of retrieved information.

The operating cost would include maintenance costs of $200 - $300 per month for all five. There would be an initial cost of training and setting up the computer software for communications and computer connections as well which could run between $5,000 and $10,000.

## 6.10 NEW ORLEANS WORLD FAIR

As part of this study, we examined what was being done in the Business Briefing Centre in the Louisiana Pavillion at the 1984 World's Fair and how it might relate to the Business Development Centre. This system integrates computer and video disk technology to allow a visitor to collect information about possible plant locations and government aid programs available to businesses in Louisiana.

The system consists of:

a) 2 IBM PCs with touch-sensitive screens;
b) 1 IBM System 34;
c) 1 SONY LVD-1000 video disk player.

The System 34 is used for central data storage. The basic information is sent to the PCs each day. The PCs store this information so they can recall it without interrupting the System 34. This allows the 34 to be able to collect information about visitors and run the video disk unit.

The video disk itself contains various visual information. Some organizations have made up video sequences highlighting the benefits of their location. Many communities have contributed still pictures which exemplify their particular location and lifestyle. The final contributors were government agencies who produced video sequences describing various aid and incentive programs available. In all, there are some 2,000 still frames, nine government sequences and assorted corporate videos.

6.10 NEW ORLEANS WORLD FAIR (Continued)

The PCs are used by the visitors, in small study rooms, with consultants handy. The PC allows them to select sites based on criteria (sq.ft., ceilings, population centres, etc.) to examine. From a list of suitable sites, the visitor can call up videos of interest. This may be a video or a series of stills depending on what has been catalogued. The video disk is only updated on a six month or greater cycle. The data, however, is relatively current.

At the end of the session the visitor can have a hard copy of the information he reviewed. His enquiries are also recorded so that they can be followed up on. These recorded transactions are stored on the System 34 to which the PCs are connected interactively.

It has taken 1½ years to assemble the video material not counting production of the video disk itself. In all, a catalogue of 120 communities is assembled, each represented by 4-30 slides. Of these slides, some are general shots of the area, while others show actual available buildings and sites.

In its first two months of operation, the Business Briefing Centre has had 300 visitors who used the system. Of these roughly half were out-of-state businessmen. Of the 150 businessmen (2-3 daily), 4 have selected sites which are of interest to them.

## 6.11 SUGGESTED DRIE ACTION PROGRAM

The following actions are suggested:

1. Acquire a terminal or micro in the next two months to:

    1. become familiar with the CANTEL database and operation;
    2. similarly for BOSS (if not already done);
    3. try other databases.

2. Review other databases in more detail.

3. Identify, visit and evaluate other centres similar to BDC who use electronic services.

4. Preliminary selection of databases, consoles, and plan for installation, training and monitoring to be complete by December, 1984.

5. Final hardware, software and services selection complete by August, 1985.

6. Installation complete December, 1985.

7. Orientation and training January-March, 1986.

# INFORMATION/COMMUNICATIONS STUDY

## CHAPTER 7

# INFORMATION AND COMMUNICATIONS SYSTEMS

FOR

VANCOUVER INTERNATIONAL AIRPORT

TELERIDE

CANTEL ENGINEERING

October, 1984

Teleride
Corporation
Limited

6477 Knight Drive
Delta, B.C.
V4E 1S3
Tel. (604)594-6343

October 29, 1984

Mr. Neil R. Clarke
Manager, Airport Services
Vancouver International Airport
Vancouver, British Columbia
V7B 1T6

Dear Mr. Clarke:

Teleride

**INFORMATION/COMMUNICATIONS SYSTEMS FOR VANCOUVER INTERNATIONAL AIRPORT**

Attached is Chapter 7 which addresses the requirements of and recommendations for Vancouver International Airport. The recommended installations are summarized in Exhibit 7.0 on Page 7.1A. You will note that the cost estimates vary widely. Numerous contacts with various suppliers have indicated that costs can indeed vary widely depending on the size, technologies, and installation of the displays. Therefore, to narrow costs down either the systems have to be specified in more detail based on estimated available budgets or suppliers have to be asked to quote on one or several alternatives for each of the systems providing for fairly substantial variation of scope for the installations.

We would, therefore, recommend that the Regional Air Administration proceed as follows:

1. The Air Administration should decide whether or not to undertake a major information/communications improvement project at Vancouver International Airport.

2. Organize the project by appointing a project manager and providing this project manager with appropriate professional assistance.

3. Decide on the scope of the project with the assistance of the report.

4. Decide on specific applications of large information signs, information kiosks, passive and interactive CRTs for the three passenger levels of the airport in the context of the above scope.

.../2

5. Together with the other participating agencies, decide whether to carry out the videotext improvement project described in section 7.5.

6. Develop specifications or descriptions for the selected systems and invite proposals or bids.

7. Manage the procurements, developments and installations decide upon.

8. Evaluate the improvements and report thereon to the Central and Regional Air Administration and other airport managers.

We would be pleased to assist you with this process if required.

Yours sincerely,

TELERIDE CORPORATION

CANTEL ENGINEERING ASSOC. LTD.

Josef Kates
Chairman

Mark Lopianowski
Principal

JK/ML:zb

cc: Terry Tetreault

CHAPTER 7

# INFORMATION AND COMMUNICATIONS SYSTEMS FOR VANCOUVER INTERNATIONAL AIRPORT

TABLE OF CONTENTS

EXHIBIT 7.0

SUMMARY OF RECOMMENDED INSTALLATIONS

| Level | Suggested Priority | Central | Distri-buted | Qty. | Item | Exh./Page | | Cost Range $(000) (1) |
|---|---|---|---|---|---|---|---|---|
| 1,2,3 | High | | x | 10-20 | Common Airport Passive CRTs | - | 7.12 | 2-4 ea. |
| 1 | Med. | x | | 1 | Directory Board | 7.21 | 7.16B | 25-50 |
| 2 | High | x | | 1 | - U.S. Departures | 7.22 | 7.18 | 25-50 |
| 2 | High | x | | 1 | - Arrivals | 7.22 | 7.18 | 25-50 |
| 3 | High | x | | 1 | Overhead Variable Sign | 7.25 | 7.18 | 25-75 |
| 2 | High | x | | 1 | Arrival Display | 7.23 | 7.18 | 25-50 |
| 1 | Low | x | | 1 | Arrival Display | | 7.17 | 25-50 |
| 3 | Med. | | x | 2-10 | Interactive Consoles per | 7.20 | 7.16 | 5-15(2) |
| 2 | Low | | x | 2-6 | Interactive Consoles per | 7.20 | 7.16 | 5-15(2) |
| 1 | Low | | x | 2-4 | Interactive Consoles per | 7.20 | 7.16 | 5-15(2) |
| 1,2,3 | Med. | | x | | Review Fixed Signs | 7.1 | 7.16 | |
| 1,2,3 | High | | x | | Negotiate CRT Improvements with Airlines | - | - | NIL |
| 4 | High | x | | | Central Computer Control, | - | 7.20 | 25-100 |
| 2,3 | High | x | | | Graphics and videotex development unit to develop videotex frames. | | 7.21 | 25-50 |
| 1,2,3 | Med. | x | | | Video content for video disk(s) | | 7.29 | 50-100 |
| 2,3 | Med. | x | | | Develop Improved Videotex System | 7.26 | 7.21 | 50-150 |
| 4 | High | x | | | Operational Applications | | 7.11 | 25-50 |

Notes:

(1) Firmer Cost estimates should be based on specifications and quotes.
(2) The higher figure would include video disk drives.

| Step | ACTION PLAN | Completed By |
|---|---|---|
| 1 | Decide on Scope of Airport Improvements | November 30, 1984 |
| 2 | Set up Organization to Implement Improvements | November 30, 1984 |
| 3 | Design and Specify Improvements | February 28, 1985 |
| 4 | Invite Proposals | March 31, 1985 |
| 5 | Purchase and Install Improvements | November 30, 1985 |
| 6 | Videotex/Videodisc Development | June 30, 1985 |

# 7.0 VANCOUVER INTERNATIONAL AIRPORT INFORMATION SYSTEMS

## 7.1 INTRODUCTION AND SUMMARY

Vancouver International Airport is a very important intermodal facility which provides both a gateway and a crossroads between the Pacific rim countries, the West Coast of North America, Canada and even direct links to Europe and the Near East. It will be a very important facility during Expo '86 being the first entry point for millions of visitors to Expo '86 and Vancouver. The efficiency and attractiveness of this airport may also contribute to attracting visitors to Expo '86 in particular and British Columbia in general.

Airports, being very complex facilities, with a large number of activities, and yet each airport being visited relatively infrequently by most users (passengers, greeters and well-wishers), tend to be very confusing to most users except those who have very frequent occasions to use a particular airport. The airport represents an extremely important social, business and economic facility to its region. Therefore, there is a premium on the effectiveness and attractiveness of the information and communications systems provided in an airport.

The important Expo '86 with its theme of transportation and communications, the strategic importance of Vancouver International Airport, the fact that this airport is of a medium size in comparison to, say, Toronto and Montreal International Airports, provides an excellent opportunity for the Canadian Government to develop sharply improved airport information and communications systems at Vancouver airport which may subsequently be adopted for other major Canadian airports as well.

## 7.1 INTRODUCTION AND SUMMARY (Continued)

This chapter overviews the existing public information systems at the Vancouver Airport and proposes improvements in accordance with the requirements of the airport management. This report was prepared as part of a larger study encompassing the Vancouver Airport as well as Canada Place, the Canadian Expo '86 Pavilion, DRIE, Vancouver Port and the Department of Communications.

Section 7.2 discusses the existing information systems at the airport followed by Section 7.3 which discusses the future requirements of the airport. Section 7.4 provides proposals for the improved videotex and large variable sign directories. Section 7.5 suggests a development of videotex improvements, based in the airport terminal.

The proposed installations are listed in Exhibit 7.0 with cost estimates where available and the corresponding implementation action steps with approximate completion dates:

The key improvements are:

- Upgrading of the existing airline CRTs to NALPS standards.
- Installation of CRTs operated by the Airport and showing departures and arrivals for all airlines, as well as any special notices.
- Replacement of large suspended fixed direction sign on Level 3 facing the staircase by a large variable flip disk sign
- Installation of centrally located information kiosks on at least Levels 2 and 3 and possibly Level 1.
- Installation of a number of interactive videotex units at strategic locations in the terminal possibly extending the interactive videotex units to video disk.
- Experimental development of an advanced videotex/disc unit for airport, Expo '86 and other public applications.

PICTOGRAPHS

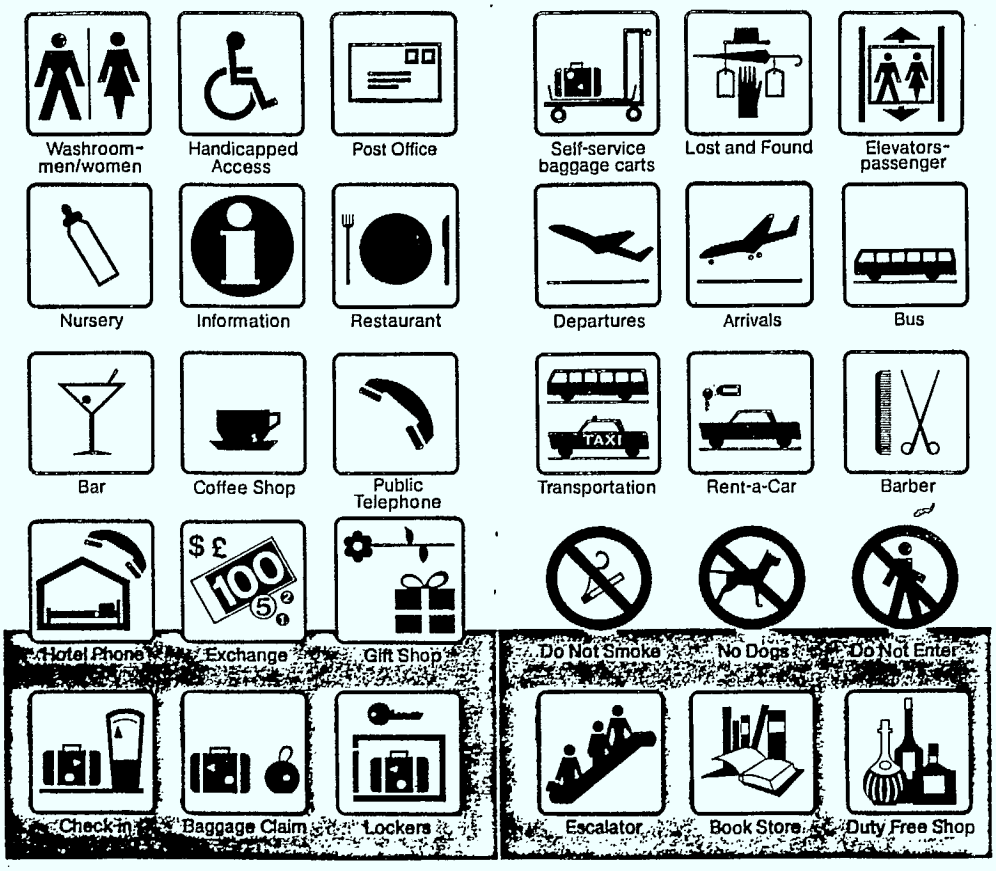



EXHIBIT 7.1


EXHIBIT 7.2

PICTOGRAPHS

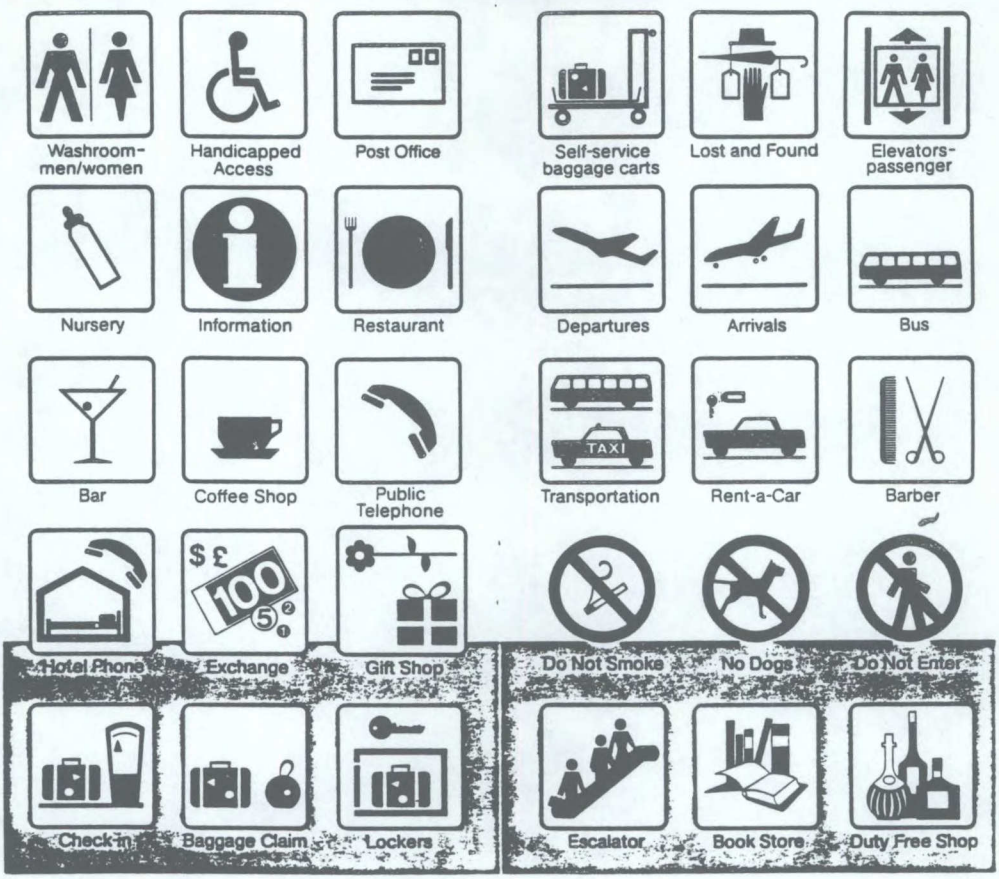



EXHIBIT 7.1

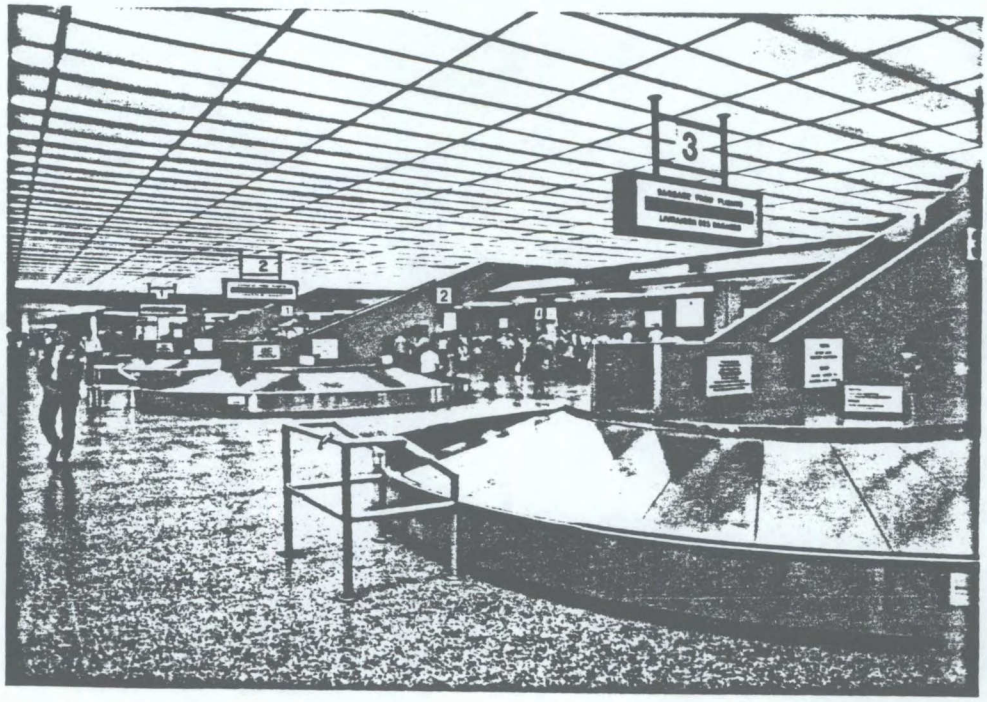



EXHIBIT 7.2

## 7.2 EXISTING INFORMATION SYSTEMS

### 7.2.1 Introduction

The existing information system at the Vancouver International Airport consists primarily of:

(a) illuminated signs
(b) CRT terminals

The majority of the illuminated signs are directional pictographs, i.e., washrooms, restaurants, etc., (see Exhibit 7.1), while the others are devoted to advertising and miscellaneous information. The pictographs are pointers to various facilities in the airport, and are distributed throughout the airport.

CRT terminals provide flight information for various airlines. Each airline supports its own CRT network. Terminals are installed at the ticket counters, departure and arrival gates.

Other public information is provided by information centers and dedicated display boards. General airport information is provided at the Transport Canada Counter on level 3. Local and provincial information is provided at the B.C. Tourism Center on level 2. Accommodation information is provided on dedicated boards with direct lines to hotels on levels 1 and 2.

Airline and flight number for baggage claim is displayed above each carousel. This is the only place where variable dot matrix displays are used (see Exhibit 7.2).

EXHIBIT 7.3

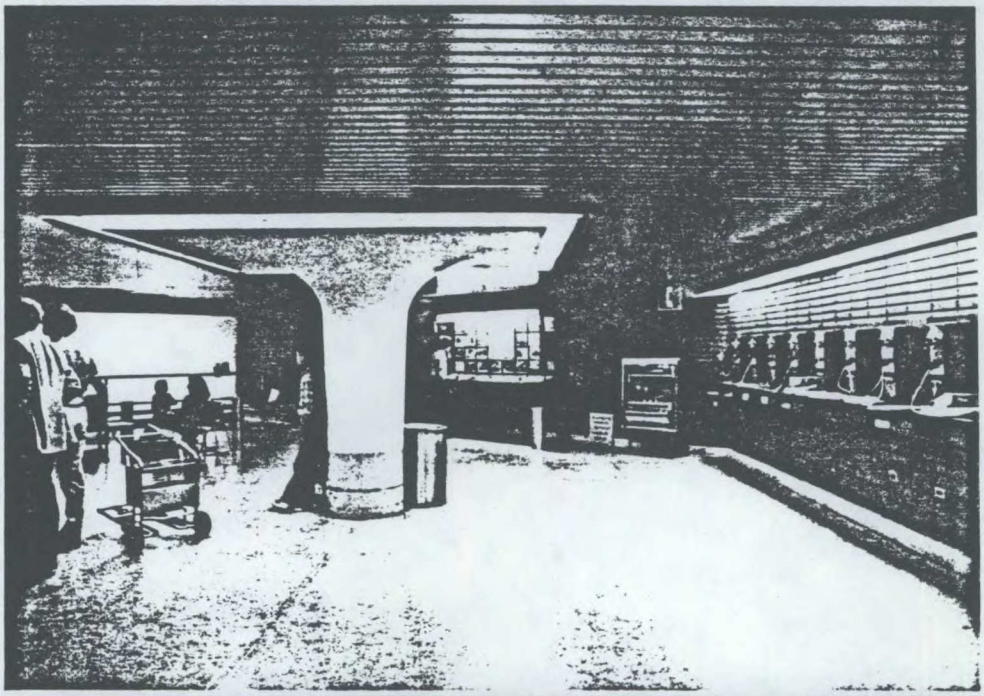
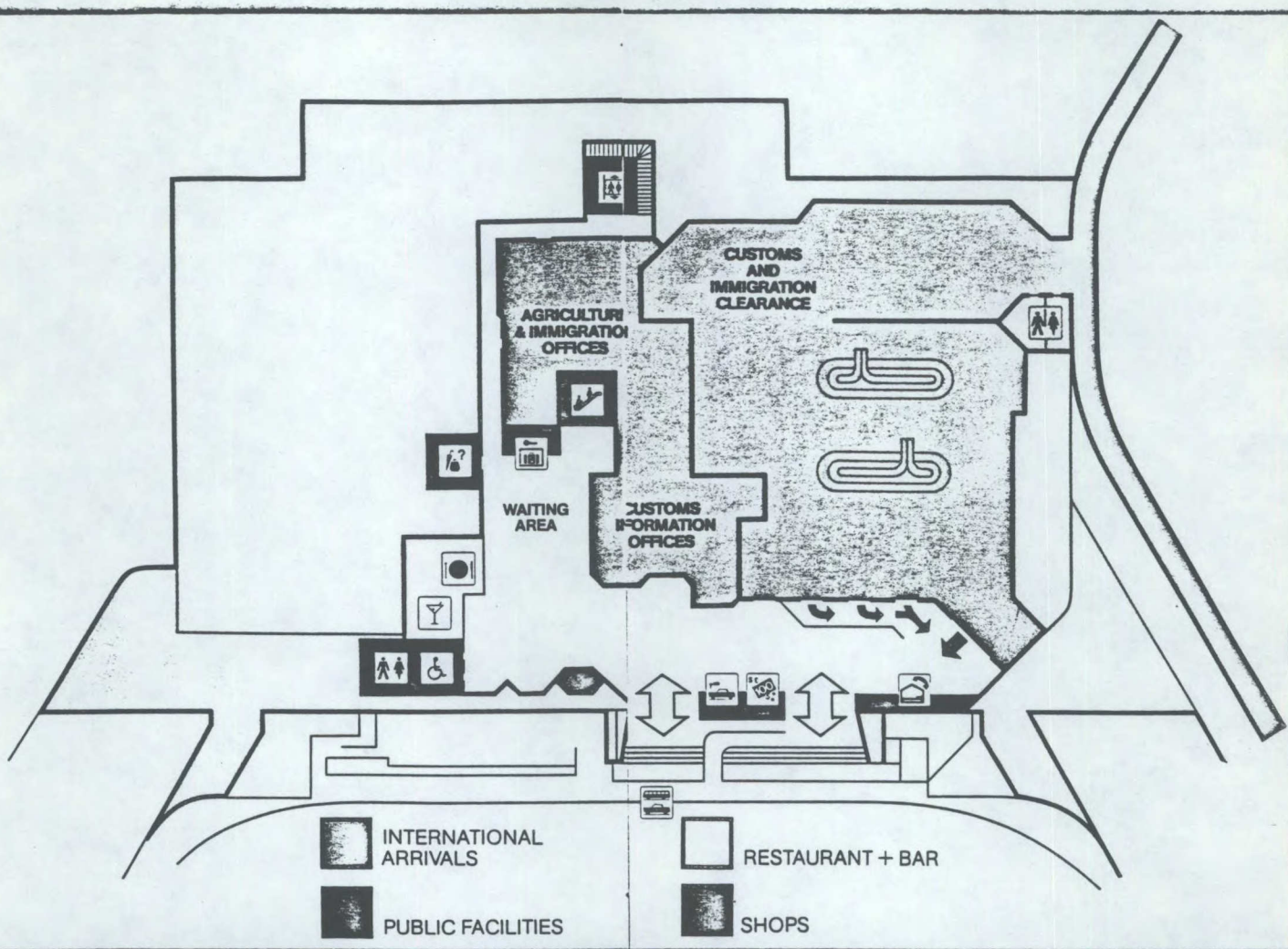


EXHIBIT 7.4

EXHIBIT 7.5

# LEVEL 1




International Arrivals; public waiting lounge; public telephones; washrooms; handicapped persons' washroom; snack bar and cocktail bar; Canada Customs; Immigration; Agriculture Inspection; Health and Welfare Services; money exchange; elevator to upper levels; escalator to Level 2; lockers; lost and found service; newsstand; hotel reservation board with direct lines; car rentals; shuttle bus to parking lot.

PLAN 1

### 7.2.2 Level 1 (See Plan 1)

At the entrance of level 1 is the most visible information center in the airport. It is a cluster of CRT terminals in the middle of the lobby. It is highly visible. The terminals provide flight information of various airlines (See Exhibit 7.3). However, this console is the only flight information display on this level.

Behind this console are two video screens, showing arriving passengers entering custom and baggage claim area. These screens appear to be very popular with people waiting to pick-up arriving friends.

There is a hotel reservation board beside the international arrival gate (see Exhibit 7.4). It is however in a dark corner and cannot be easily seen.

There are no information outlets in the waiting area, other than a clock (see Exhibit 7.5).

EXHIBIT 7.9


EXHIBIT 7.10


EXHIBIT 7.11

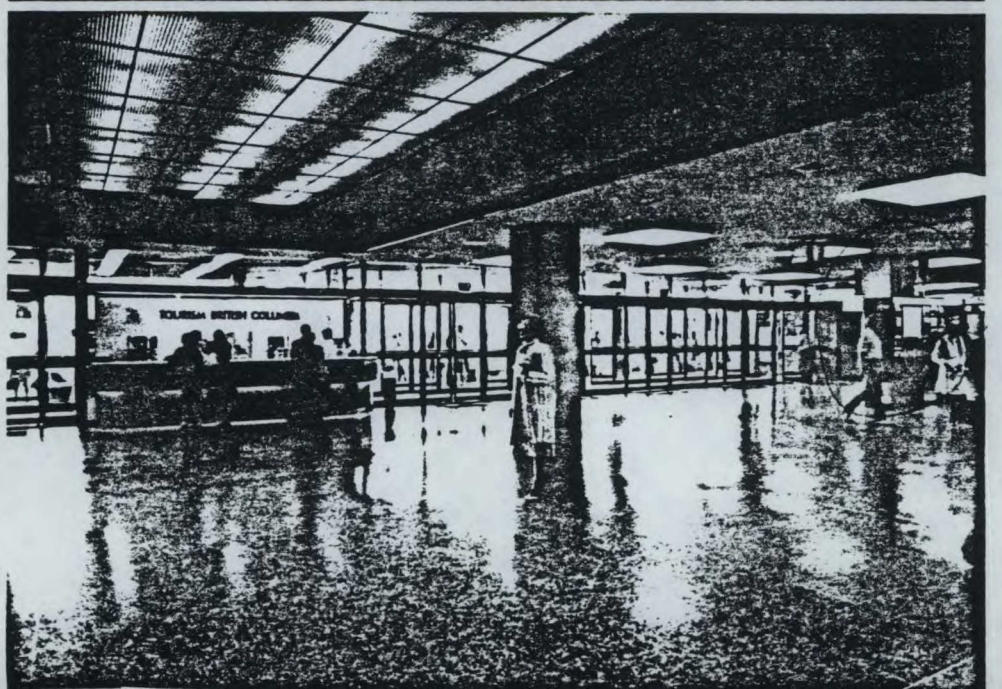
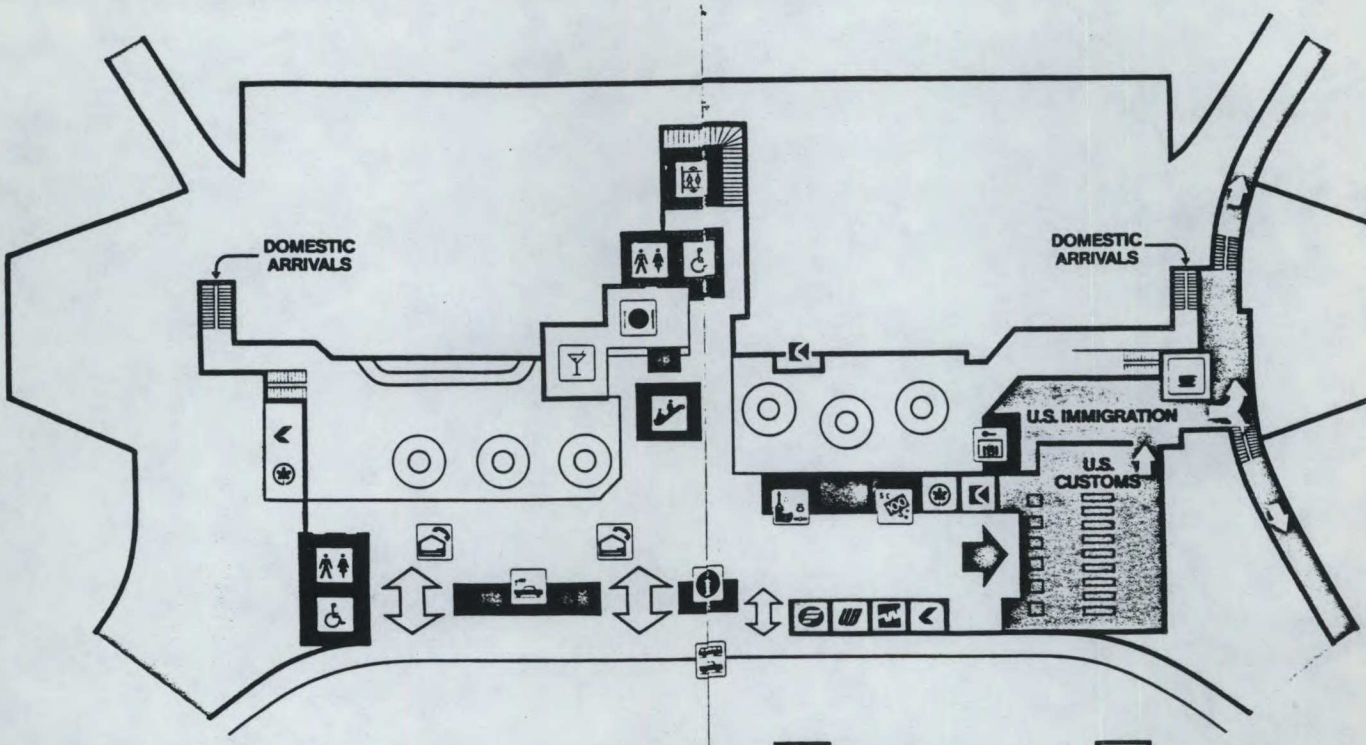


EXHIBIT 7.6


EXHIBIT 7.7


EXHIBIT 7.8

# LEVEL 2




Domestic arrivals luggage carousels; U.S. destination check-in counters for Frontier, CP Air, Air Canada, PWA, United and Western Airlines; lost property offices of Air Canada, CP Air and Pacific Western Airlines; car rental counters; hotel reservation boards with direct lines; B.C. Tourism Information; restaurant and bar; public telephones; shuttle bus to the parking lots; taxi, limousine and bus services; U.S. Customs and Immigration pre-clearance public waiting lounge; elevator to all levels; an outdoor boarding area for limousine, bus and taxi transportation to downtown Vancouver; in-transit luggage collection; washrooms; handicapped persons' washrooms; money exchange; duty free store and newsstand.

U.S. DEPARTURES
DOMESTIC ARRIVALS
RESTAURANT + BAR
SHOPS
AIRLINE TICKETING
PUBLIC FACILITIES

PLAN 2

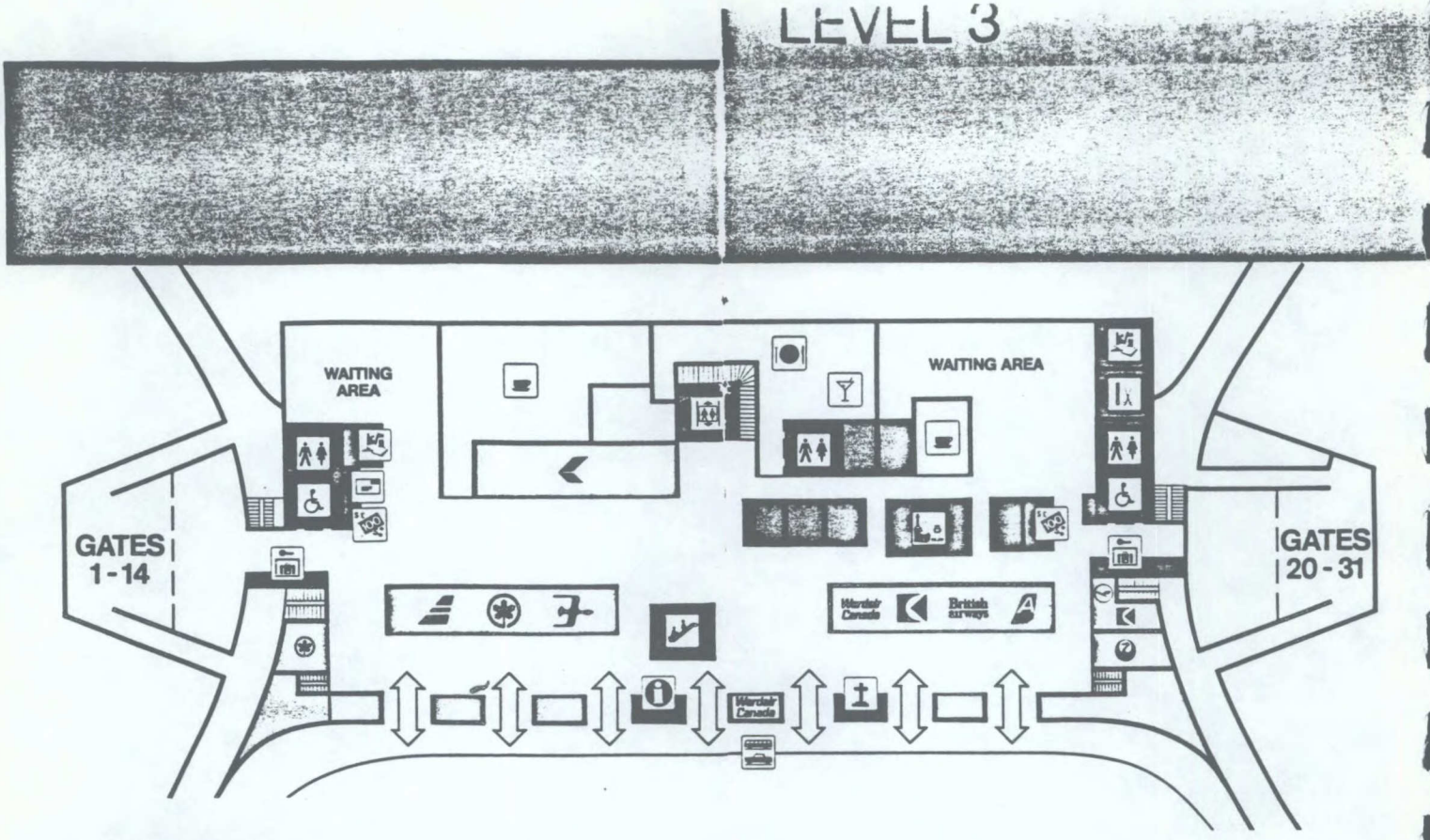
### 7.2.3 Level 2 (See Plan 2)

The problem on level 2 is finding the carousel for a particular flight in the entrance lobby to direct people coming to pick up incoming passengers (see Exhibit 7.6). This is also a problem if one enters from level 1 (see Exhibit 7.7).

There are CRT terminals installed outside the luggage claim area which provide arrival information. These could be upgraded. (See Exhibits 7.8 and 7.9.)

There are no information displays at the U.S. Custom and Departure Gates. (See Exhibit 7.10.)

A tourist information booth for B.C. Tourism, is located in the entry way. It is quite visible to arriving pasengers thus in its most appropriate location. Hotel reservation boards are in front of the baggage area (see Exhibit 7.11).




Ticket and check-in counter for Air Canada, Time Air, Cathay Pacific, CP Air, Lufthansa, British Airways, Air B.C., Japan Airlines, Wardair and Qantas; Transport Canada Information Counter; Interfaith Airport Chapel; newsstand; gift shop; duty free store; bookshops; money exchange; flight insurance; washrooms; Sea Island Restaurant and Bar; domestic and international departure gates; public waiting areas; cafeteria; snack bars; public telephones; candy store; flower shop; toys & drugs; lockers; B.C. Specialty shop; elevator to all levels; barbershop; escalator to Level 2; handicapped persons' washrooms; security control points.

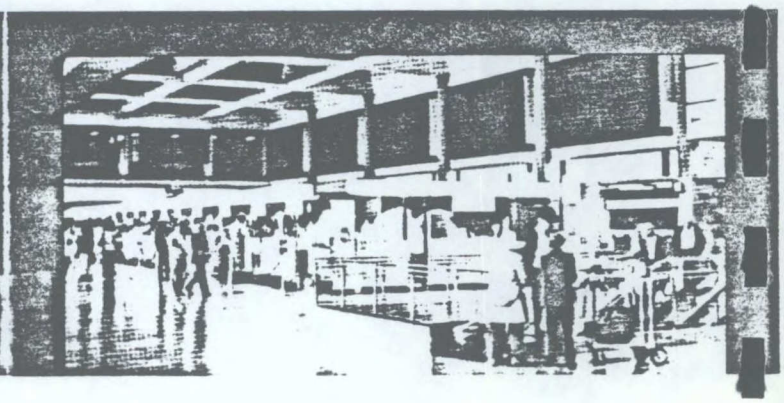
DOMESTIC – INTERNATIONAL DEPARTURES

RESTAURANT + BAR

SHOPS

AIRLINE CHECK INS

PUBLIC FACILITIES

PLAN 3

EXHIBIT 7.12

EXHIBIT 7.13

EXHIBIT 7.14


EXHIBIT 7.15


EXHIBIT 7.16

EXHIBIT 7.17

### 7.2.4 Level 3 (See Plan 3)

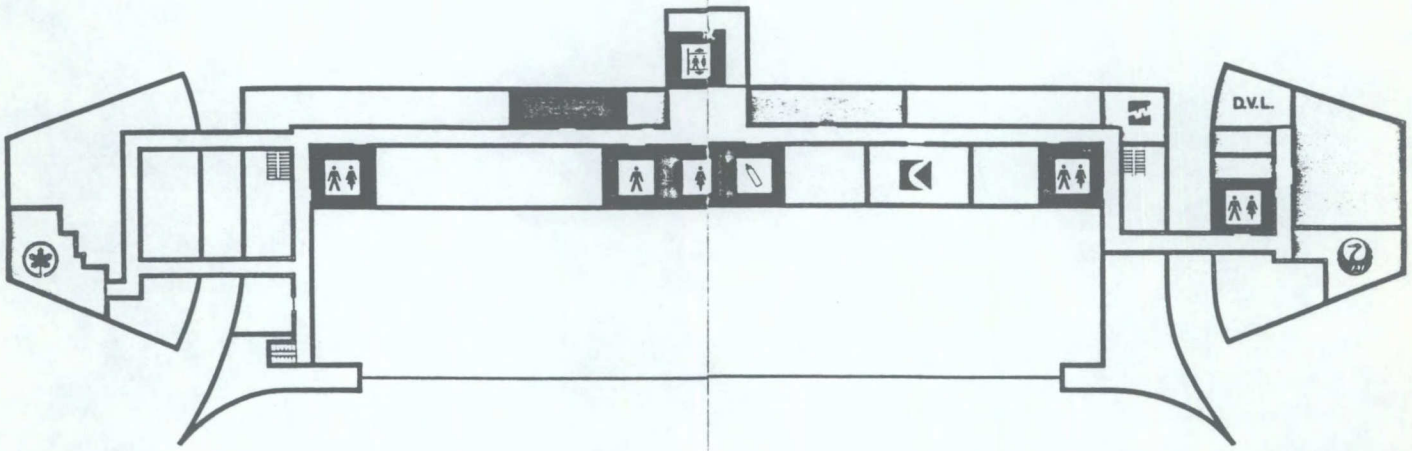
As in level 2, improvements can be considered concerning central information displays where visitors can get oriented. The Transport Canada information counter is located in the entry way, as the Tourism B.C. counter on the level below. However, the counter is oriented against the flow of traffic; that is, as people enter the airport, the counter is behind them, therefore, it loses some of its effectiveness. Similarly it is behind the people coming from the levels below (see Exhibit 7.12).

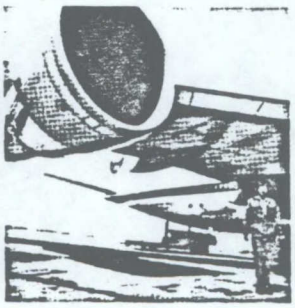
CRT terminals are installed in front of individual airline counters to display their respective flight information. The terminals are not very attractive and relatively small (see Exhibit 7.13).

As in the other levels, there are no information outlets in the waiting area (see Exhibit 7.14).

In the secured "fingers" of the boarding concourse and lounge, there are CRT terminals. All of them are in the concourse (see Exhibits 7.16 and 7.17) while none are in the waiting areas.

# LEVEL 4



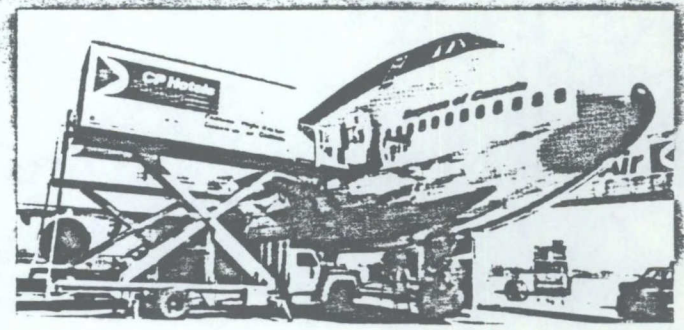
GENERAL OFFICES

AIRLINE FIRST CLASS LOUNGES

PUBLIC FACILITIES

TRANSPORT CANADA OFFICES

Nursery facilities; washrooms; handicapped persons' washrooms; first class passenger lounges of Air Canada, CP Air, Western Airlines and Japan Airlines; airline administrative offices; Transport Canada administrative offices; distinguished visitors' lounge (D.V.L.); weather office; elevators to all levels.



PLAN 4

### 7.2.5 Level 4 (See Plan 4)

The fourth level houses primarily offices with some public facilities. There are also several first class passenger lounges which are now serviced by CRT terminals provided by their individual airlines.

## 7.3 REQUIREMENTS

### 7.3.1 Introduction

As noted in Section 7.2, Transport Canada operates at Vancouver airport a 4-level passenger terminal. Three levels serve passengers and visitors (Level 1 - International Arrivals; Level 2 - Domestic Arrivals and U.S. Departures; and Level 3 - International and Domestic Departures). Level 4 is mainly an office level, including some V.I.P. lounges.

The following Section 7.3.2 provides a list of services and facilities which airport management wishes to be identified by the new information system. Section 7.3.3 is a statement of requirements for an airport directory supplied by airport management.

At the Vancouver airport, Transport Canada would like to improve the display of:

1. directory information within the airport terminal (including locations of concessions, washrooms, transportation, etc.); and

2. general hotel and other information, including accommodation, entertainment, Expo '86, and other information.

EXHIBIT 7.18A

GENERAL (ALL LEVELS)

| Vancouver International Airport | Aéroport International de Vancouver |
|---|---|
| **Public Services** | **Service au Public** |
| Washrooms | Toilettes |
| Elevators | Ascenseurs |
| Telephones | Téléphones |
| Baggage lockers | Consignée automatique |
| **Food Concessions** | |
| Restaurant/Bar | Restaurant/Bar |
| Snack Bar | Casse-croûte |
| Cafeteria | Caféteria |

EXHIBIT 7.18B

LEVEL 1 - lième ÉTAGE

| | |
|---|---|
| International Arrivals | Arrivées Internationales |
| Canada Customs | Douanes Canada |
| Canada Immigration | Immigration Canada |
| Canada Agriculture | Agriculture Canada |
| Canada Health and Welfare | Santé et Bien-Être Social Canada |
| Lost and Found | Objets perdus et trouvés |
| Information Counters | Renseignements |
| Concessions | Concessions |
| Car Rentals | Voitures de location |
| Currence Exchange | Bureau de change |
| Video Games | Jeux de video |

EXHIBIT 7.18C

LEVEL 2 - 2ième ÉTAGE

| | | |
|---|---|---|
| Domestic Arrivals | | Arrivées Domestiques |
| U.S. Departures | | Départs E.U. |
| Gates 28-33 | | Ports 28-33 |
| Airline Ticket Counters | | Guichet Aériens |
| | Air Canada | |
| | C.P. Air | |
| | Pacific Western | |
| | Western | |
| | United | |
| | Frontier | |
| Concessions | | Concessions |
| Duty Free | | Boutique Hors Douane |
| Currency Exchange | | Bureau de change |
| Newstand | | Kiosque à journaux |
| Car Rentals | | Voitures de location |
| | Budget | |
| | Tilden | |
| | Avis | |
| | Hertz | |
| | Dominion | |
| Flower Shop | | Magasin de fleurs |
| Video Games | | Jeux de video |
| Baggage Pick Up | | Retraits des baggages |
| U.S. Customs | | Douanes E.U. |
| U.S. Immigration | | Immigration E.U. |
| Ground Transportation | | Transports de surface |

EXHIBIT 7.18D

LEVEL 3 - 3ième ÉTAGE

| | |
|---|---|
| Gates 1-29 | Portes 1-29 |
| International Departures | Départs internationals |
| Domestic Departures | Départs domestiques |
| Airline Ticket Counters | Guichet Aérien |
| Air BC | |
| Air Canada | |
| British Airways | |
| C.P. Air | |
| Cathay Pacific | |
| Japan Airlines | |
| Lufthansa | |
| Pacific Western | |
| Quantas | |
| Time Air | |
| Wardair | |
| Concessions | Concessions |
| Travel Insurance | Assurance de voyage |
| Currency Exchange | Bureau de change |
| Post Office | Bureau de poste |
| Bookstore | Librairie |
| Barber Shop | Barbier |
| Gift Store | Souvenirs |
| Duty Free Shop | Boutique Hors-Douane |
| Drug Store | Pharmacie |
| Newstand | Kiosque à journaux |
| Bank Machines | Caisse automatique de banque |
| Royal Bank | |
| American Express | |
| Video Games | Jeux vidéo |
| Flower Shop | Magasin de fleurs |
| Chocolate Shop | Confiserie |
| Information | Renseignements |
| Chaplaincy | |

EXHIBIT 7.18E

LEVEL 4 - 4ième ÉTAGE

| | |
|---|---|
| Administrative Offices | Bureaux administratifs |
| Airline Companies | Compagnies aériennes |
| Transport Canada | Transport Canada |
| CARA | CARA |
| Nursery | Garderie |
| Environment Canada | Environement Canada |
| First Class Lounges | Salons de première classe |

7.3.1 Introduction (Continued)

A previous Telidon trial in Vancouver proved unsuccessful with users. Any new system should have only simple interactions, if any, attractive packaging and fast responses to enquiries. Commonality with systems of other agencies as well as distribution of airline information throughout the city are both of interest.

7.3.2 Services and Facilities Requirements

Exhibit 7.18 provides a list of items to be identified by an Airport Directory System. This list is by no means exaustive, and serves only to provide general background information for interested parties. Note that all information must be provided in both official languages. In most cases, the French translations are provided, however, it should be noted that translations are subject to amendment.

7.3.3 Directory Requirements

The following is a list of features/capabilities that may be incorporated into the proposed Directory System.

1) **Access to Information**

Information must be obtained quickly and simply. The access must not be complicated or overly intimidating. Furthermore, an individual should be able to obtain the desired information (direction-oriented) within one or two minutes.

7.3.3 Directory Requirements (Continued)

2) **Equipment**

Video disk and/or micro computer technologies have been presented to airport management with a favourable reaction, however, airport management does not preclude the use of other technologies if other forms are available.

3) **Maps of All Airport Sectors**

It is planned to provide approximately ten to fifteen Directory locations throughout the Terminal Building. As such, maps of all sectors of the Airport will be required for each separate Directory location. Furthermore, individuals must access this map within a very short timeframe.

4) **Advertising Potential**

While the potential for advertising has not passed the "conceptual" stage, this avenue should be explored. Advertising can take the form of video pictures, design, or simple wording, however, any advertising feature must not subordinate the necessity to provide quick and simple access to the basic directory information.

7.3.3 Directory Requirements (Continued)

5) **Multi-language Capability**

All information must be provided in both English and French. It would also be desirable to provide information in other languages (i.e. Japanese, Chinese, German, Spanish, etc.).

6) **Supplemental Information Capability**

The potential for including other supplemental information (i.e. flight information (arrivals/ departures), bus information, tourist information, concession information, etc.) should be examined.

7) **Flexibility of Change**

The airport is a dynamic environment with a continually changing building and occupancy structure. Therefore, any Directory system must have the ability to be changed quickly and inexpensively.

Furthermore, any system installed at the airport should be able to accommodate changes to the "state- of-the-art" without radical changes to the existing infrastructure.

8) **Cost Effectiveness**

The cost of the system should be minimized and potential sources to offset costs (i.e., advertising, promotional programs, etc.) should be examined.

### 7.3.4 Operational Requirements

Airport management have indicated that they would also wish to apply the proposed information system for various operational requirements in the airport. This means that the system should provide for operational information, i.e. various resources, facilities, etc. which would be required in relation to specific flights, gates, operations at the airport. This 'operational' information would be input and displayed only by and to operational personnel who would access the information system by means of special security and identification codes which will not be available to the general public.

Details of this operational application should be developed during a subsequent design study which will determine the following items:

- numbers, locations and types of terminals and other peripherals (printers) required;

- database - a complete list of 'operational' information to be stored and updated in the proposed system including the sources of the information (i.e. airlines, airport management, suppliers of services and goods), and methods for updating this database;

- methods for entering and updating the above information, including information verification and checking methods

- impact on the central information computer and intra and inter airport communications facilities.

## 7.4 INFORMATION IMPROVEMENTS

### 7.4.1 Introduction

The main problem with the existing information system at the airport is that it is fragmented with individual airlines supporting only their own networks. It would be desirable for passengers (especially connecting passengers and greeters) to be able to locate quickly any flight, the corresponding airline counter, departure gate, arrival door or arrival carousel. Also, as noted by Airport Management, additional information displays and directories should be provided.

Expo '86 may provide an opportunity to increase the efficiency, effectiveness and attractiveness of the airport information system. To do this, the type of information, how to display it, and where it is required, must be first identified and then co-ordinated.

### 7.4.2 Pictographs

The directional pictographs are relatively effective in that they can be seen clearly and directions can be easily derived from them.

### 7.4.3 CRT's

As noted by Airport Management more information outlets in the airport are required. Many places are without information, particularly waiting lounges. Waiting is a primary function at an airport, and it is important to be able to see, with relative ease, flight information and status.

7.4.3 CRT's (Continued)

Flight information at present is provided by CRT displays. Unfortunately CRT's by their nature, have a very limited viewing distance. The existing screens can only be read from between 10-15 feet away (3-4.5 meters).

The existing CRT displays could also be improved with modern colorgraphic technology. At present, these CRTs are relatively unattractive and uninteresting.

Information delivery at times is slow, and usually very limited. The terminals and their controls in the airport should be replaced and updated as discussed in Chapter 9.

7.4.4 Large Variable Information Displays

There are no large central information displays which can be read from a distance around the terminal. Such boards would substantially improve information, particularly on the main departure level - level 3 and for U.S. departures on level 2 although not so critical for arrivals on levels 1 and 2.

7.4.5 Types of Information

Airport information can be divided into three types:

1. Flight Information
2. Directional Information
3. General Public Information

7.4.5 Types of Information (Continued)

These represent the bulk of the information provided to keep the airport functioning.

There is perhaps one more to add to the list, and that is advertising. Although it is not critical to the airport operation, it can generate some revenue to maintain the information display system.

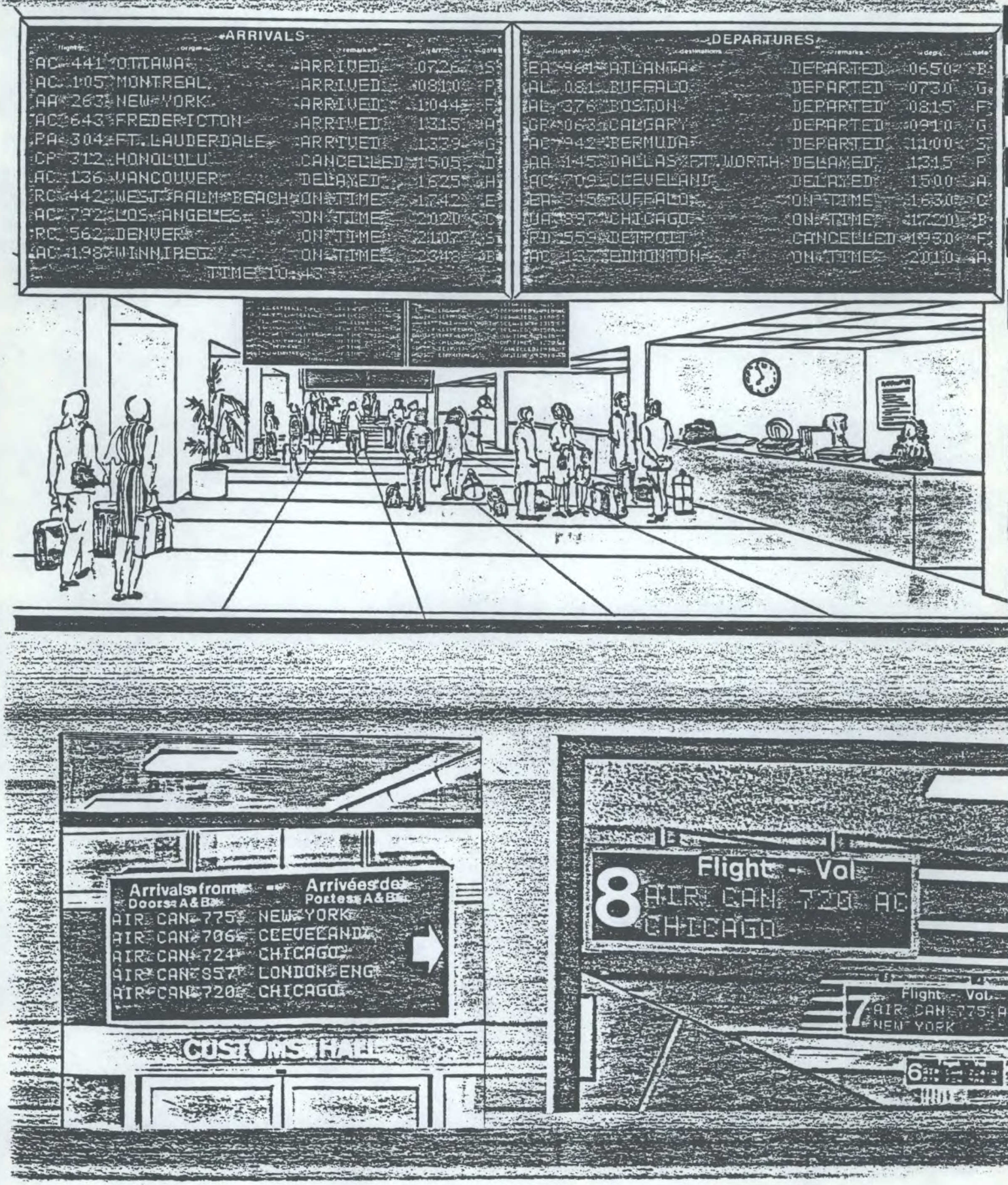
Flight information is of primary importance to the passengers, particularly those who are departing or in transit and need to know where to board the next flight and the status of it. Passengers waiting to board need to be continuously informed of the status of their flight - i.e., boarding time, delays, etc. Arrival information is important for those who are waiting for arriving passengers.

Directional information is useful to all users of the airport. The information can be in the form of large directories and supported by pictograph signs.

General/Public information includes hotel accommodation, car rental, transportation services, and other miscellaneous information, particularly for arriving passengers.

7.4.6 Methods of Presentation

Technologies of information display are discussed in more detail in Chapters 3 and 9 of this report. The purpose of this chapter is to match each information type with the appropriate technologies.


ARRIVALS
AC 441 OTTAWA ARRIVED 0726 S
AC 105 MONTREAL ARRIVED 0810 P
AA 263 NEW YORK ARRIVED 1044 F
AC 643 FREDERICTON ARRIVED 1315 A
PA 304 FT. LAUDERDALE ARRIVED 1339 G
CP 312 HONOLULU CANCELLED 1505 D
AC 136 VANCOUVER DELAYED 1625 H
RC 442 WEST PALM BEACH ON TIME 1742 E
AC 722 LOS ANGELES ON TIME 2020 C
RC 562 DENVER ON TIME 2107 S
AC 198 WINNIPEG ON TIME 2348 B
TIME 10:45
DEPARTURES
EA 961 ATLANTA DEPARTED 0650 B
AL 081 BUFFALO DEPARTED 0730 G
AE 376 BOSTON DEPARTED 0815 F
CP 063 CALGARY DEPARTED 0910 G
AC 942 BERMUDA DEPARTED 1100 S
AA 145 DALLAS/FT. WORTH DELAYED 1315 P
AC 709 CLEVELAND DELAYED 1500 A
EA 456 BUFFALO ON TIME 1630 C
UA 397 CHICAGO ON TIME 1720 B
RD 559 DETROIT CANCELLED 1930 F
AC 137 EDMONTON ON TIME 2010 A
Arrivals from Doors A & B
Arrivées de Portes A & B
AIR CAN 775 NEW YORK
AIR CAN 706 CLEVELAND
AIR CAN 724 CHICAGO
AIR CAN 557 LONDON ENG
AIR CAN 720 CHICAGO
CUSTOMS HALL
8 Flight - Vol
AIR CAN 720 AC
CHICAGO
7 Flight - Vol
AIR CAN 775 AC
NEW YORK
6

7.4.6 Methods of Presentation (Continued)

1. Flight Information can be displayed in two ways, by relatively large (3 - 10') display boards using LED or flip disc technology as shown in Exhibit 7.19 or alternatively the well-known small (13" to 24") CRT monitors. The large displays are for large viewing areas such as the main lobbies of the airport. CRT terminals can be distributed throughout the airport providing flight and other information to passengers and visitors in specific locations.

   The flight information can be provided by a passive display that can be updated periodically. It can also be provided by an interactive system that can be called up on demand, and which provides other information as well.

2. Directional Information can also be presented in several ways:

   - an illuminated plan or directory, similar to those in shopping centres; or

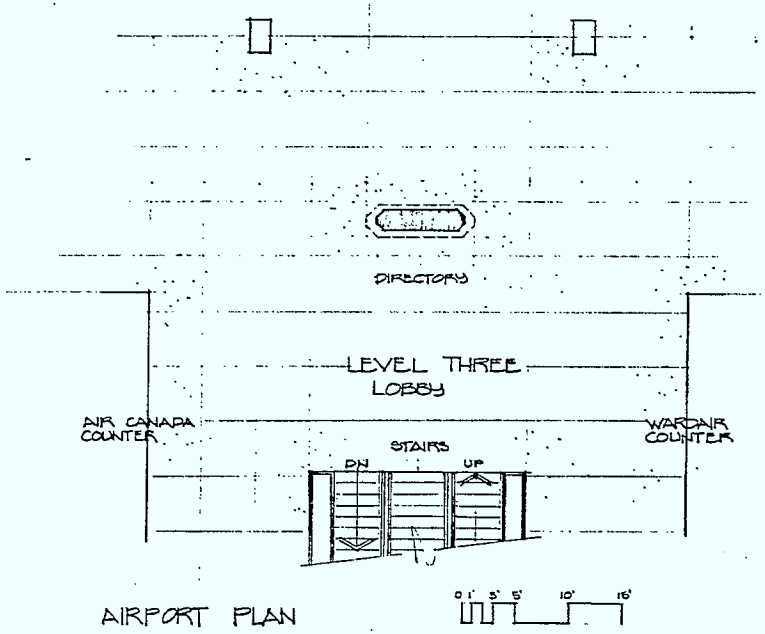
   - part of an interactive display where people can request the location of a specific facility and the display will show the way there.

   The latter can be part of a network of CRTs. The illuminated map or directory can be located in a central place, like the main lobby, and generally only one would be required for each level.

EXHIBIT 7.20

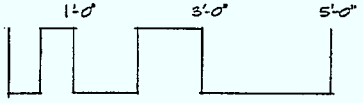
INDIVIDUAL INFORMATION UNITS AT AIRPORT

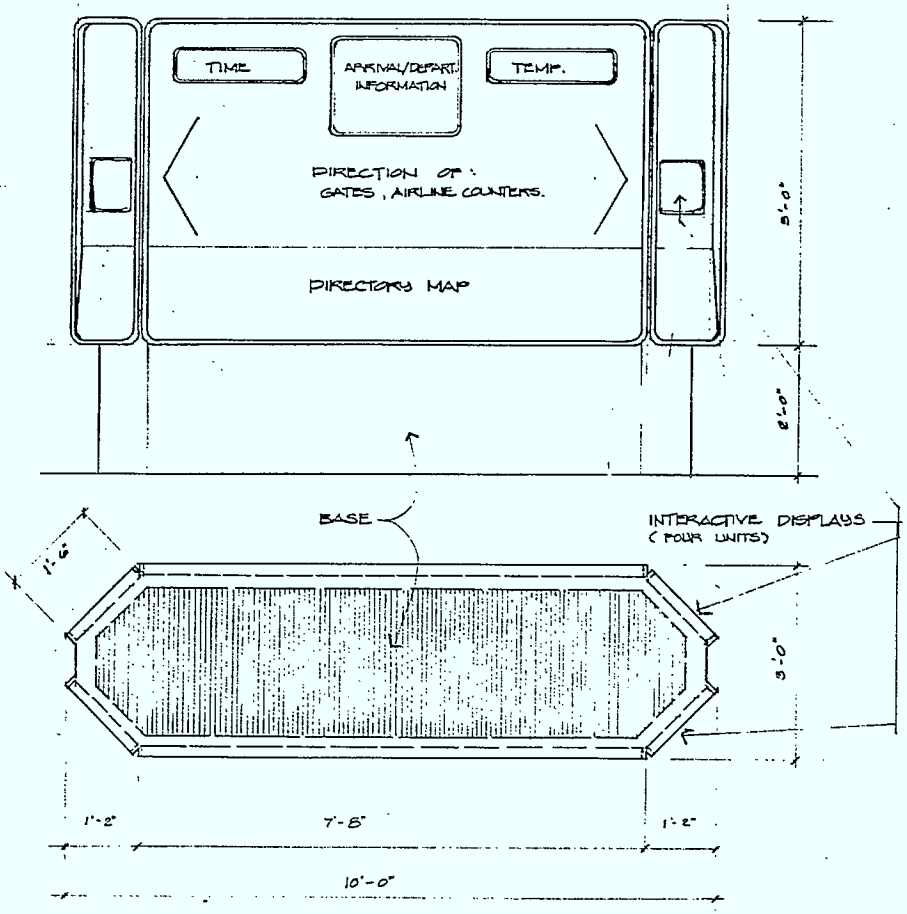
EXHIBIT 7.21




AIRPORT PLAN

DIRECTORY CENTRE
plan : elevation



7.4.6 Methods of Presentation (Continued)

The directory system should be supported by the existing pictographs (they too might be reviewed as part of a more detailed design study).

3. Public and General Information may be provided by large directories or interactive consoles. This is due to the large amount of information that needs to be provided. The user can select what he or she needs to know and it will be displayed on a screen. These screens are part of a console that can be located in any suitable location in the airport. This means that they can be distributed around the airport to places where they can be most effective. A concept for such consoles is illustrated in Exhibit 7.20.

A combined central directory concept suitable for levels 3, 2 and 1 (or some of them, particularly level 3) is illustrated in Exhibit 7.21 which shows details of location and dimensions for such a display installed on Level 3. This could be supported by central overhead flip disk or LED arrival and departure boards and invididual interactive units distributed throughout the terminal as illustrated in Exhibit 7.20.

7.4.7 Location of Displays

The location of various displays depends primarily on the type of display and the type of information it is providing. Exhibit 7.22 suggests the relationship of area, information required and the appropriate technology for the displays.

EXHIBIT 7.22

| LEVEL | AREA | INFORMATION | TECHNOLOGY |
|---|---|---|---|
| 1 | International<br>° Arrival<br>° Baggage | Connecting flights | CRT Monitors |
| | International arrival waiting | directory<br>flight information<br>Public services | CRT interactive |
| | General waiting | flight information<br>advertising | CRT Monitors |
| | Main Entry Lobby | flight information<br>directory | CRT Monitors<br>CRT Interactive (illuminated map) |
| 2 | Entrance Lobby | flight information | Intermediate LED display |
| | | directory | CRT Interactive (illuminated map) |
| | Domestic<br>° arrival<br>° baggage | flight information (connecting)<br>arrival & baggage | CRT Monitors |
| | Reception | flight information | CRT Monitor |
| | | directory<br>public services | CRT Interactive |
| | U.S. Customs departure/check in | flight information | CRT Monitors |
| 3 | Central Lobby | flight information<br>directory<br>Public services | Large LED/video<br>CRT Interactive illuminated map |
| | Ticket & Check In Counters | flight information | CRT Monitors |
| | General Waiting | flight information<br>advertising | CRT Monitors |

.../2

| LEVEL | AREA | INFORMATION | TECHNOLOGY |
|---|---|---|---|
| 3 | Cafeteria (eating area) | flight information advertising | CRT Monitors |
| | Passenger/depart. concourse/lounge | flight information (status - boarding, delays etc.) | CRT Monitors |
| | General Concourse | flight information | CRT Monitors |
| 4 | VIP Lounge | flight information (?) | CRT Monitors |

7.4.7 Location of Displays (Continued)

Level 1

In the international arrival area, there should be displays showing connecting flights for passengers in transit. The passengers can get directions once they are out of the secured zone. Thus, in the waiting area should be a directory, public services and flight information consoles.

The waiting area should have flight information so the greeters waiting for flights can be up to date on the status of the flights they are waiting for. In this area, advertising may be used - to provide commercials for restaurants, cafeteria, and the other concessions in the airport; and provide some revenue for the system. This could be the format for all waiting areas in the airport.

The main entrance lobby needs a general information centre. It should provide flight arrival, departure, status and level and gate data, and where baggage for various flights will be arriving; and a directory for orientation. The last item can be an illuminated map of the airport supported by an interactive console. This could be the format for all entry lobbies in the airport.

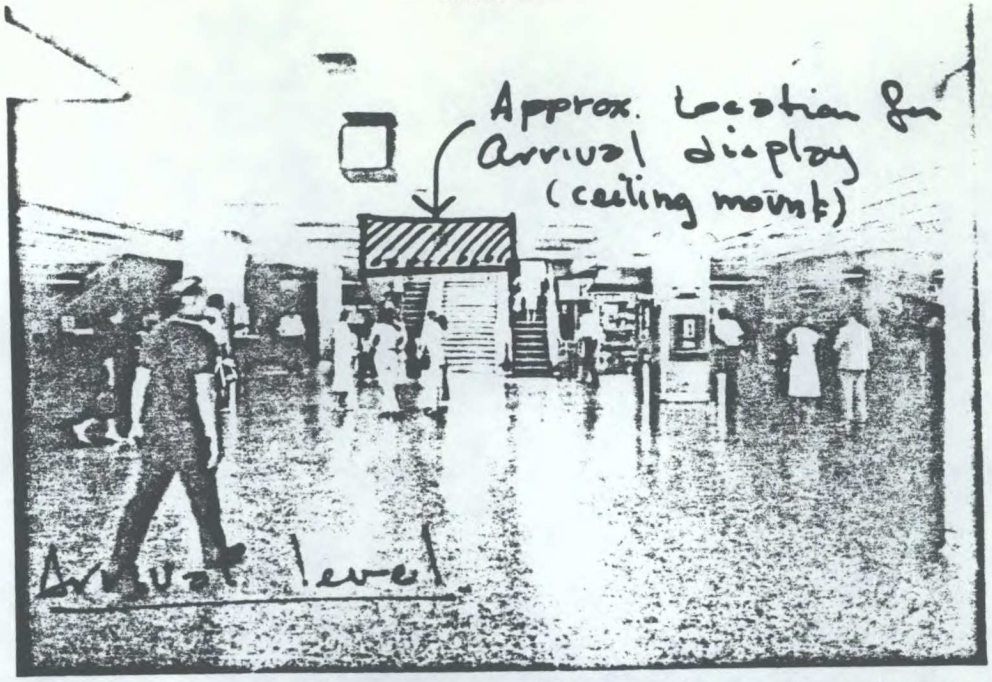



EXHIBIT 7.23

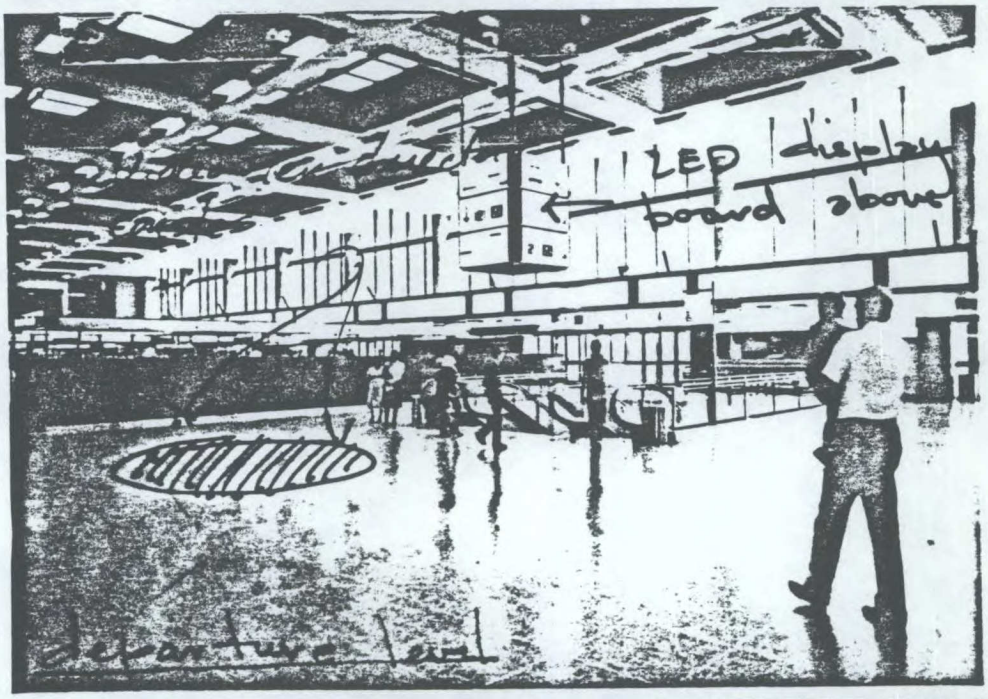



EXHIBIT 7.24

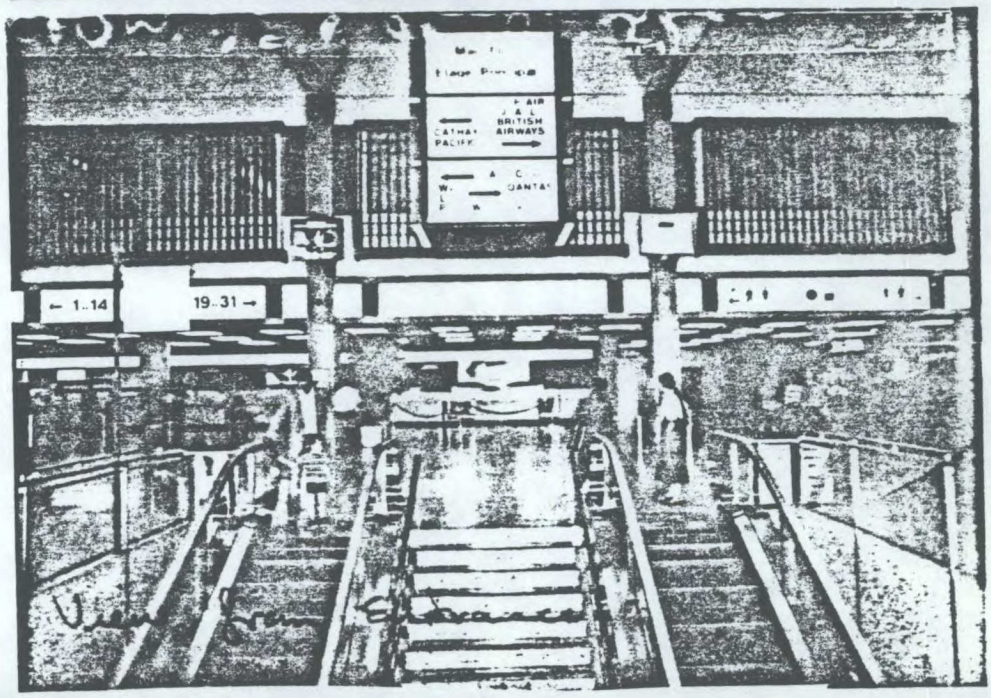



EXHIBIT 7.25

7.4.7 Location of Displays (Continued)

Level 2

The lobby could have an information system similar to the one described above. However, the volume of traffic in level 2 is higher than that of level 1, therefore a larger LED or flip disk type sign would be required. This sign would provide information that can be seen from a farther distance than the CRT terminals (see Exhibit 7.23.)

The domestic arrival, baggage and receiving area will require information directing greeters to the arrival door or appropriate carousel.

Flight information for transborder flights should also be provided at the U.S. customs and check in area.

Level 3

Level three is the main level of the airport. It has most of the airport concessions and ticket counters and serves all but U.S. departures, and therefore the highest traffic.

The central lobby at the stair/escalator well, is the primary location for a large flight information board. This could utilize LED or flip disk technology. It could even feature a video screen where flight information and advertising can be provided. On the floor, the typical directory console, as in other lobbies, can be installed. The most strategic location would be the area directly in front of the up escalator (see Exhibit 7.24). The large message board could be directly above the stairs - replacing the existing console (see Exhibit 7.25).

7.4.7 Location of Displays (Continued)

Waiting and general eating (cafeteria) areas, the general concourse along the shops, the restaurant and bar could also be provided with flight information. These could simply be ceiling mounted CRT monitors.

Level 4

The first class lounges on level 4 will have to be reviewed by the individual airlines in terms of what they want to provide for their passengers.

7.4.8 Further Improvements

The proposed system can be further refined as time goes by. The interactive consoles could be relocated periodically to find the most effective locations. The screen graphics should be refined to provide more attractive displays and more information. Variable or split screens could be used to provide several types of information on one or several screens.

Other information can be stored and presented in the system, e.g., information such as meeting places for tour flights, etc.

### 7.4.9 Central Control and Development Facilities

The information improvements proposed in this section involve a number of large variable displays as well as a number of passive or interactive CRTs at strategic locations throughout the terminal. If the system is also extended to the operational requirements of the airport, additional CRTs may also be placed in other facilities at the airport.

Therefore, a central facility will be required to update and coordinate the information being displayed or accessed via the various systems proposed. This central facility will most likely require a large micro or small mini computer with ancillary peripherals (supervisory console, disk drives, printer(s) and communication ports to the various displays, operational CRTs, as well as to link the airport computer to other airline computers and possibly computers of other agencies who could feed information of interest to airport users directly into the airport system).

If, as proposed, the system will also include colour graphic videotex displays to enhance the attractiveness and comprehensibility of the various public displays, it may also be desirable to provide a small colour graphic development facility as part of the central control facility.

Since the size and capability of the central facility depends considerably on the scope of the improved information system decided on, the range of cost at this time for the central facility is very wide, in the area of $25,000 to $100,000.

## 7.5 DEVELOPMENT OF IMPROVED VIDEOTEX SYSTEMS

### 7.5.1 Introduction

Section 7.4 proposes substantial improvements to the existing airport information system in accordance with the requirements of airport management stated in Section 7.3. These proposals use currently available technology.

In addition to these proposals, Vancouver Airport could also be designated as the site for substantially improving interactive videotex technology in preparation for Expo '86 and in order to improve the attractiveness and marketability of Canadian Videotex, Telidon and NALPS technologies.

As detailed in Chapter 9 there are many problems with current public access videotex systems. In fact, from the previous unsuccessful trials and list of problems it is apparent that unless some changes or enhancements are made to the existing systems any anticipated system will have similar difficulties. Thus, if it is still desired to have some sort of videotex system for the airport and Expo '86 it is imperative that some experimentation be done first to overcome insofar as possible, past deficiencies. In particular, the following actions are recommended:

1. Request Expo '86 Co-operation

   The Airport together with other Federal Agencies should inform Expo '86 that they wish to evaluate any concurrent videotex proposal to determine to what degree the Federal Agencies could and would utilize such a system.

7.5.1 Introduction (Continued)

2. Prepare Alternative Plans

In the event that the Expo '86 third party Videotex service should be delayed or unattractive to the Airport and other Federal Agencies, the Federal Agencies should initiate plans and trials of independent systems which would have the flexibility of interconnection with an eventual Expo '86 or third party system or which could be expanded to provide services to Expo '86 and the Vancouver region. This would have the advantages that:

(a) The Airport and other Federal Agencies would not delay a videotex development in case there is considerable delay with Expo '86 or third party plans and commitments.

(b) The Airport and other Federal Agencies can ensure that Federal information gets the greatest prominence on their systems.

(c) The Airport and other Federal Agencies can proceed to experiment with various features (bill-boarding, touch versus key pad interface, symbolic menus, scrolling menus used for bill-boarding) to make their units as useful and attractive as possible.

(d) This provides improved leverage for negotiation with Expo '86 or the third party concerning the features, quality and cost of a videotex service since the Federal Agencies will have a clear alternative.

### 7.5.2 Independent Federal Development

It is clear from this report that just the provision of any videotex system for the Federal Agencies is far from guaranteeing success.

The success of a videotex service depends not only on system architecture but also on the detailed user features (overall attractiveness of the terminals, i.e., packaging ,ease of use, clarity and attractiveness of the individual displays, response speed). Therefore, the Federal agencies have a considerable interest to ensure that any system, whether developed by them, or using an external service is sufficiently attractive to be successful.

Since it will probably take some months before an Expo '86 or other videotex service can be demonstrated and evaluated, it would be wise for the federal agencies to use this time interval to experiment with a small independent system to develop an attractive package. If a third party eventually provides the videotex service for the federal agencies, the experience so gained can be used to set the standards or requirements for the third party. If no third party service is offered or accepted, the federal agencies would have the experience to provide their own system based on actual experience.

An independent videotex experiment could be located at Vancouver Airport since this facility is now in operation and airport management have expressed interest in a videotex directory for airport users. Much of the experience gained from such an experiment should be applicable to Canada Place and other locations later on.

7.5.2 Independent Federal Development (Continued)

Such an experiment could begin with a single videotex console in the center of Level 3 facing the Up Escalator. However, at least two consoles, one for level 3 and another for level 2, would be preferable so that the special needs of visitors, departing and arriving passengers can be catered to and the use of these consoles can be separately evaluated. It would also be desirable to group several (2-4) units together, so that when the first unit is in use, other units are still available (similar to banks of telephones). To attract attention to the units larger overhead monitors might show duplicates of the displays during use of the corresponding interactive display and when not in use announce the interactive facility by means of billboarding graphics and show flight and other information of general interest.

Initially, a level 3 directory would provide directions to terminal facilities and concessions as listed in Section 7.3. Later on, the directory could be extended to ground transportation and accommodations in the Vancouver region and for this purpose two or more additional videotex terminals might be situated on the lower levels near the arrival areas.

For the directories, simple to understand plans of the three levels would be prepared on which would be superimposed the location of the facility(ies) (e.g., washroom, restaurant, airline counter) in flashing form, together with the path from the videotex terminal to the facility requested.

7.5.2 Independent Federal Development (Continued)

The method of attracting attention to the videotex terminal and its use must be considered very carefully. A large "information" sign together with explanation of how to use the unit should be attached to the front (and possibly sides and rear) of the unit.

If a touch sensitive screen is used, it might be divided into squares with the symbols used by the airport instead of a regular menu in writing, i.e.:

| | | |
|---|---|---|
| Toilets | - | male and female symbols (also handicapped symbol) |
| Restaurants | - | knife and fork |
| Airline | - | airline symbols for Air Canada, CP Air, etc. together with name of airline. |

etc., etc.

The screen could be divided into an array of 12 or more squares, some of which could provide for direct access to the most frequently queried services (washrooms, restaurants) and the remainder to call up menus of the less frequently queried - list of shops, other airlines, (CP Air and Air Canada would be in the main menu) etc.

The unit would provide a record of overall use and frequency of use of the various menus and frames.

7.5.2 Independent Federal Development (Continued)

The project should provide for experimenting with and evaluating the following features:

user access - keypad, touch screen, voice command to select item from scrolling menu, other;
menu layout - i.e. graphics versus directory type frame design, optimum menu length and structure;
unit design - screen size, unit height, advertising; billboarding features
information content
unit location

Therefore, rather than just commissioning a fixed pre-determined unit, with a fixed database, the project should provide for continuing modification, testing and evaluation of various features over a six month period so that the most cost-effective design be developed. This means that the budget should provide for substantial modifications of hardware, software, menu and frame design and for thorough assessment of these features. Evaluation should include:

- measuring frequency of use overall and for each information frame
- observing users, perhaps by means of a video camera
- interviewing a balanced sample of users after each major change.

7.5.2 Independent Federal Development (Continued)

We believe that many of the problems of previous videotex installations are due to overemphasis on the technology and not enough experimentation and analysis leading to the combination of user-oriented features which may make a videotex system as attractive and successful as possible.

For example, one of the problems with menu oriented videotex systems is the time-consuming need to select menu after menu before reaching the information originally required. In general, the number of menu searches required will vary logarithmically with the size of the database, i.e. number of frames and inverse logarithmically with the number of classifications listed in each menu on average. For example, if a database has 1,000 frames and each menu has 10 classifications, then three menu searches will be required before reaching any particular frame of interest. If in order to reduce the complexity of the menu each menu list were reduced to two classifications only, ten menu searches would be required. Since it is desirable to:

1. have a large comprehensive database;
2. keep menus clear and short; and
3. have as few menu searches as possible,

an optimal compromise between size and menus (i.e., classification system) and number of menu searches must be developed.

7.5.2 Independent Federal Development (Continued)

This problem may be alleviated by using a symbolic rather than numeric menu to make it easier to identify the item of interest (i.e., washroom, restaurant, airline counter) and to facilitate presentation of a large number of choices (10 to 20) simultaneously.

These and other factors which can make a great difference to the success of a public videotex system need to be thoroughly explored.

The results of this experiment can then be used to develop an independent federal system or to set requirements for an outside service.

7.5.3 Extensions - Information

Logical additions to the information and functions of the initial videotex unit would be:

- airline departures and arrivals in order of time or alphabetically in order of destination or origin within airline, or intermixed in order of time or destination and origin for all airlines;

- hotels near the airport;

- downtown and other regional hotels, possibly with indication of vacancies;

- ground transportation services, cost, schedules.

### 7.5.4 Extensions - Features

Some of the following features might be considered for adding to the attractiveness of the initial units apart from the detailed experimentation outlined above.

#### Video Disks

A video disk unit might be added which shows video images of the airport facilities and how to get there from the location of the videotex unit. This could show actually how to walk from the videotex unit to the nearest washroom, the restaurant, gate, etc.

The concessionaires, hotels, restaurants, etc. by means of videodisk, could provide more attractive advertising of their offerings (menus, wares) and an actual picture of their facilities.

#### Hybrid Videotex/Videodisk System

In such a system, the video output from the videodisk player is mixed with the video output from the videotex decoder. Both the player and decoder are under software control from either a local microcomputer or a central database computer, and the video output from both devices is viewed on a single monitor.

7.5.4 Extensions - Features (Continued)

This system overcomes the inherent limitations of both the videotex and videodisk technologies. For example, the menu pages would be generated by the decoder, as well as any information which would change periodically or frequently, such as restaurant menus, concert schedules, etc. Information about tourist sites, facilities, etc. would be given as a video presentation of 10 to 20 seconds, or several minutes in length. For example, the menu choice "What is Canada Place" would lead into a short presentation, complete with narration, about the project, perhaps with exterior views of the building. At the end of the presentation the narrator might say "Here is today's schedule of events...", and a videotex frame would be displayed listing the events.

Unlike the videodisk, the videotex frame could be updated on a daily basis. Specialized software would have to be developed to control the two devices simultaneously. The videodisk presentations might only be updated on a 6 month or yearly basis.

Currently, there are several companies marketing interactive videodisk information systems. These are primarily focused on point of sale marketing. However, there are currently no public trials of such a system in place, and no research has been done into the best ways of mixing the two technologies, from a user access point of view.

EXHIBIT 7.26

INTERACTIVE VIDEODISK/VIDEOTEX PUBLIC INFORMATION UNIT

The experimental program will be designed to accommodate changes in hardware and to maximize flexibility. Over the six month experiment, new hardware and software would be installed in increments, as follows below.

1. BASIC VIDEOTEX - KEYPAD ACCESS

   One or more public information terminals will be installed with a database stored on an internal microcomputer. The database would be stored on floppy disk, but loaded onto a RAM disk for speed of access during normal operations.

2. EXTERNAL DATABASE GATEWAY

   The database access program will be modified to auto-dial external NAPLPS databases from a menu-page. The user will make a menu selection only to access the service; dialing, sign-on, etc. will be handled by the PC.

3. VIDEODISK/VIDEOTEX ACCESS

   A videodisk player will be installed in the unit. The microcomputer will have various components installed to allow it to mix the video signal from the NAPLPS decoder with the video signal from a videodisk player.

   Previous to the installation of these components, a videotape will be created with video segments for each item in the video "database". This tape will be used to create a videodisk master, from which the individual disks for the display units will be pressed.

OPTIONS

If stages 1 and 3 are combined, the requirement for an external videotex decoder within the display unit is eliminated. Instead, the microcomputer itself stores and decodes into video images the NAPLPS graphics. This would permit very rapid drawing of the pages, if used in combination with the RAM disk. However, graphics from any external database would be drawn at normal speed, due to the speed limitations of conventional dialed telephone lines.

A fourth stage can be introduced, that being the use of a touch screen rather than the keypad for user entry. However, the keypad should be retained for access to external databases which will not support access from a touch screen.

7.5.4 Extensions - Features (Continued)

This system could work with either keypad, touch screen, or voice command data entry. Because of the presence of the videotex decoder, the user would still have gateway access to other systems and services if this access was made available.

Sound System

The videotex unit could be coupled with a multilingual unit which would provide voice information coordinated with the visual information provided by the unit.

Mobile Unit

Consideration could be given to having a mobile low power robotic unit moving along a track in the airport terminal and flashing signs as well as announcements ("please ask me"). While this would draw considerable attention to the unit, the sensors would have to be tested extremely carefully and the propulsion would have to be of very low power so the unit would automatically stop or walk around any person or other object, and it would also permit people to push the unit out of the way or change its direction. If moved away from a track painted or fixed into the Terminal floor, the unit would move in any direction until it again encountered a track.

Outline of an Experimental Installation

Exhibit 7.26 provides an outline for an experiment designed to maximize the user appeal and attractiveness of a public videotex unit at the airport and Canada Place.

# INFORMATION/COMMUNICATIONS STUDY

## CHAPTER 8

## COMMON SYSTEMS

October 1984

Teleride
Corporation
Limited

6477 Knight Drive
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October 29, 1984

Mr. Terrance P. Tetreault
Liaison Officer
Pacific Region
Government of Canada
Department of Communications
Suite 1900, 800 Burrard Street
Vancouver, British Columbia
V6Z 1J7

Teleride

Dear Mr. Tetreault:

**DRAFT CHAPTER 8 - COMMON INFORMATION/COMMUNICATIONS SYSTEMS**

Attached is Chapter 8 which addresses commonalities among the information systems proposed in the previous Chapters 3 to 7, each of which is addressed to one of the participating agencies. The Pacific Region of Communications Canada may wish to take the initiative to stimulate the common approach by the participating agencies to the systems identified in this chapter.

Yours sincerely,

TELERIDE CORPORATION

Josef Kates
President

CANTEL ENGINEERING ASSOC. LTD.

Mark Lopianowski
Principal

JK/ML:zb

# CHAPTER 8
# COMMON INFORMATION/COMMUNICATIONS SYSTEMS

## TABLE OF CONTENTS

EXHIBIT 8.1

SYSTEM COMMONALITIES

| System | Commonalities |
|---|---|
| Large Signs<br>Portal Sign(s)<br>Variable Signs in:<br>Airport<br>Canada Place<br>Cruise Ship Terminal<br>Passive CRTs | Should periodically display information about events in Canadian Expo '86 Cruise Ship arrivals/departures, DRIE Business Development Centre, and overall status of airport operations, as well as other information. |
| Videotex/Videodisc System | Primary Bill Boarding for each of the agencies, i.e. Canadian Pavilion, Cruise Ship Terminal, BDC, Airport; but should also provide information about the other agencies as well as general Expo '86 and Vancouver region information. |
| Operating Centre(s) | To achieve the above these systems should be either:<br>a) controlled from a common computer but accessible from subsidiary controls located at each of the agencies; or<br>b) controlled by individual agency computers but providing interconnections (network) among these computers. |

# 8.0 COMMON SYSTEMS

## 8.1 INTRODUCTION

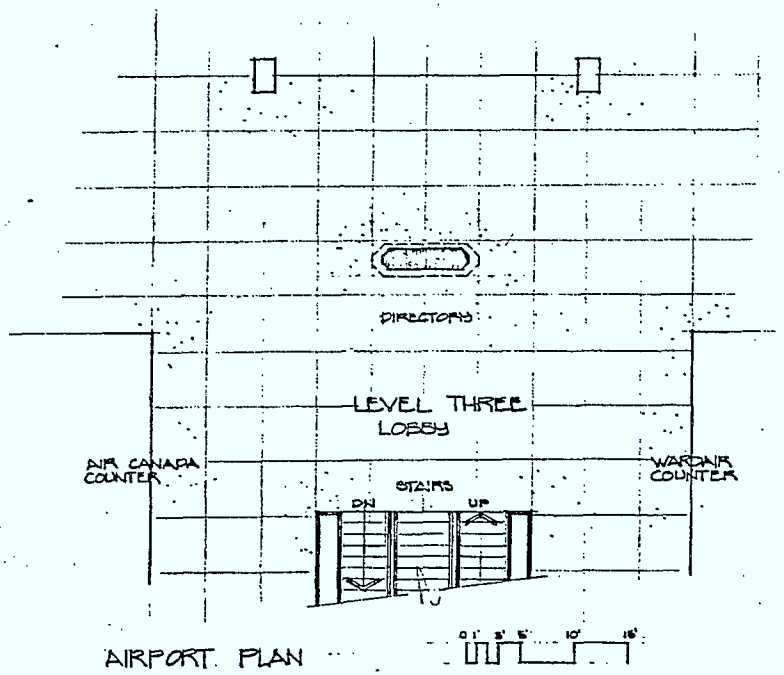
Chapters 3 to 7 of this report have separately addressed the Communications/Information requirements of the six agencies participating in this study. Several of these requirements are similar and, therefore, suggest that a common approach be taken to these similar requirements possibly coordinated by Communications Canada. Also it would be desirable that a number of the systems recommended provide for interconnection or common controls for the various agencies so that information provided for or of interest to one of the agencies can be made available through the information systems of another agency.

These commonalities or common considerations are listed in Exhibit 8.1 and discussed below.

## 8.2 PASSIVE DISPLAYS

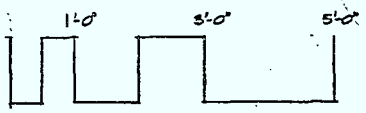
A number of passive displays had been proposed in the previous chapters ranging from large "portal" signs at the gateways to Canada Place, through large text or video boards in Canada Place and at the airport, to overhead CRTs. Each group of these displays should be primarily controlled by its own lead agency, i.e., the portal signs and the display at the entrance of the Canadian Pavilion should be controlled by the Canadian Pavilion, the signs and displays in the Cruise Ship Terminal should be controlled by the operators of this terminal, the information systems in the Business Development Centre should be controlled by DRIE and the displays in the airport should be controlled by Airport Management. However,

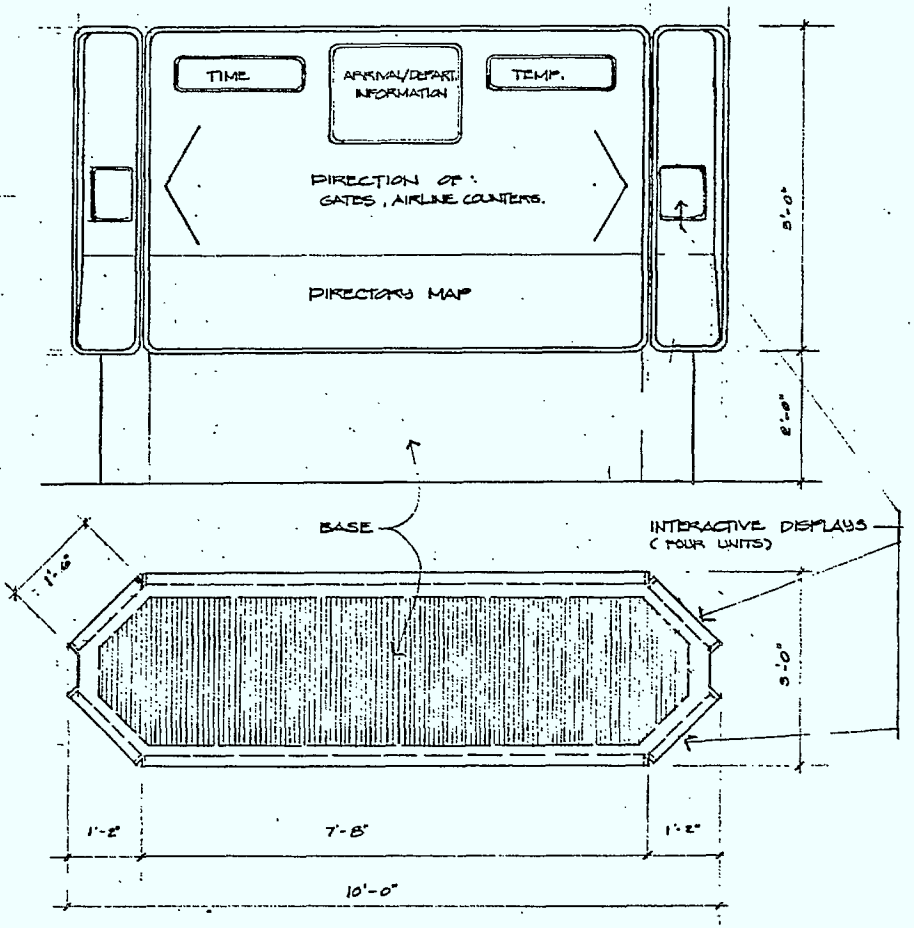
EXHIBIT 8.2




AIRPORT PLAN

DIRECTORY CENTRE
plan : elevation



8.2 PASSIVE DISPLAYS (Continued)

it will be desirable that there be time and/or space slots in these displays to provide information about the other agencies. For example all of the displays at Expo '86, in Canada Place and at the Airport might make periodic announcements about the Business Development Centre and Cruise Ship arrivals and departures. Conversely displays at the airport might draw attention to Expo '86 generally and the Canadian Pavilion in particular.

8.3 INTERACTIVE VIDEOTEX/VIDEO DISK SYSTEMS

Videotex/video disk systems have been proposed for all of the agencies. This may be a system provided by the Provincial Expo '86, a third party operator located in Vancouver or by the Federal Agencies themselves. To ensure that previous problems are overcome and a state-of-the-art system be provided, a development program situated at Vancouver International Airport has been proposed in Chapter 7.

It would be desirable that the videotex systems used by the Federal Agencies as well as by Expo '86 and other users be based on a common system and provide access to a common database. However, even if this is accomplished, it would also be desirable that the billboarding of these systems draw primary attention to the information specific to each of the agencies. In other words at the airport the billboarding would draw primary attention to directories oriented to the airport as outlined in Chapter 7, at the Cruise Ship Terminal to locations and events at the terminal, etc. However, the menus would be arranged so that information about the other agencies as well as general information such as Expo '86 events, hotel accommodation, transportation information, etc. can be readily obtained.

## 8.3 INTERACTIVE VIDEOTEX/VIDEO DISK SYSTEMS (Continued)

If touch screen rather than push button technology is employed for accessing these interactive terminals, one way of accomplishing this objective is to provide for each of the agencies a primary touch screen divided into areas corresponding to local directories such as gates, toilets, restaurants, etc. One or two areas on the touch screen would then be used to access information for directions or events pertaining to other agencies.

## 8.4 COMMON INFORMATION KIOSKS

Exhibit 8.2 illustrates an information kiosk proposed in Chapter 7 for Vancouver International Airport. Similar kiosk might be located in the Canadian Pavilion initially and later on in the Convention Centre as well as in the Cruise Ship Terminal. Therefore, the agencies may wish to commission a common design for such an information kiosk.

## 8.5 OPERATING CENTRE(S)

To achieve the above interconnections, all of the systems proposed in the previous chapters may either be:

(a) controlled from a common computer system located at one of the Federal Agencies. In this event subsidiary control consoles might be located at the other agencies from which these agencies could control the information provided by or for these agencies by the common system, or

## 8.5 OPERATING CENTRE(S)

(b) each of the agencies could control their system with a smaller computer system but a common interconnection design would provide for communicating the information from each of the agencies to the other agencies possibly through a common communications device or node.

A more detailed design study would be required to evaluate the above two alternatives.

# INFORMATION/COMMUNICATIONS STUDY

## CHAPTER 9

## VIDEOTEX

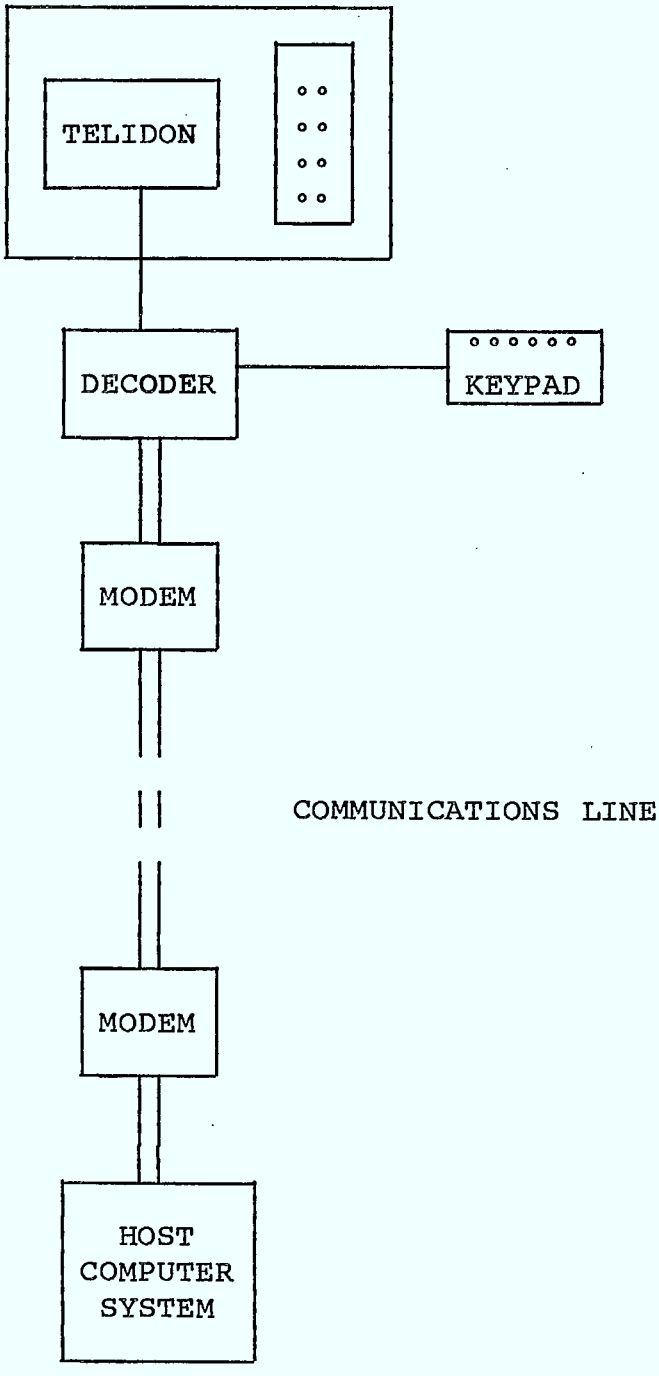
TELERIDE CORPORATION

CANTEL ENGINEERING

October 1984

EXHIBIT 9.1

TYPICAL VIDEOTEX (TELIDON) SYSTEM



# 9.0 VIDEOTEX SYSTEMS

## 9.1 INTRODUCTION

The five Federal Agencies participating in this communications/information study have indicated particular interest in videotex systems which may provide a wide range of information to visitors of their facilities and also illustrate advanced Canadian information technology. Accordingly, Sections 9.2 to 9.14 discuss applicable videotex systems in general and Sections 9.15 to 9.22 discuss specific costs and other considerations, applications and strategies for the Federal Agencies. Those readers familiar with videotex technology may, therefore, start reading from Sections 9.15 onwards.

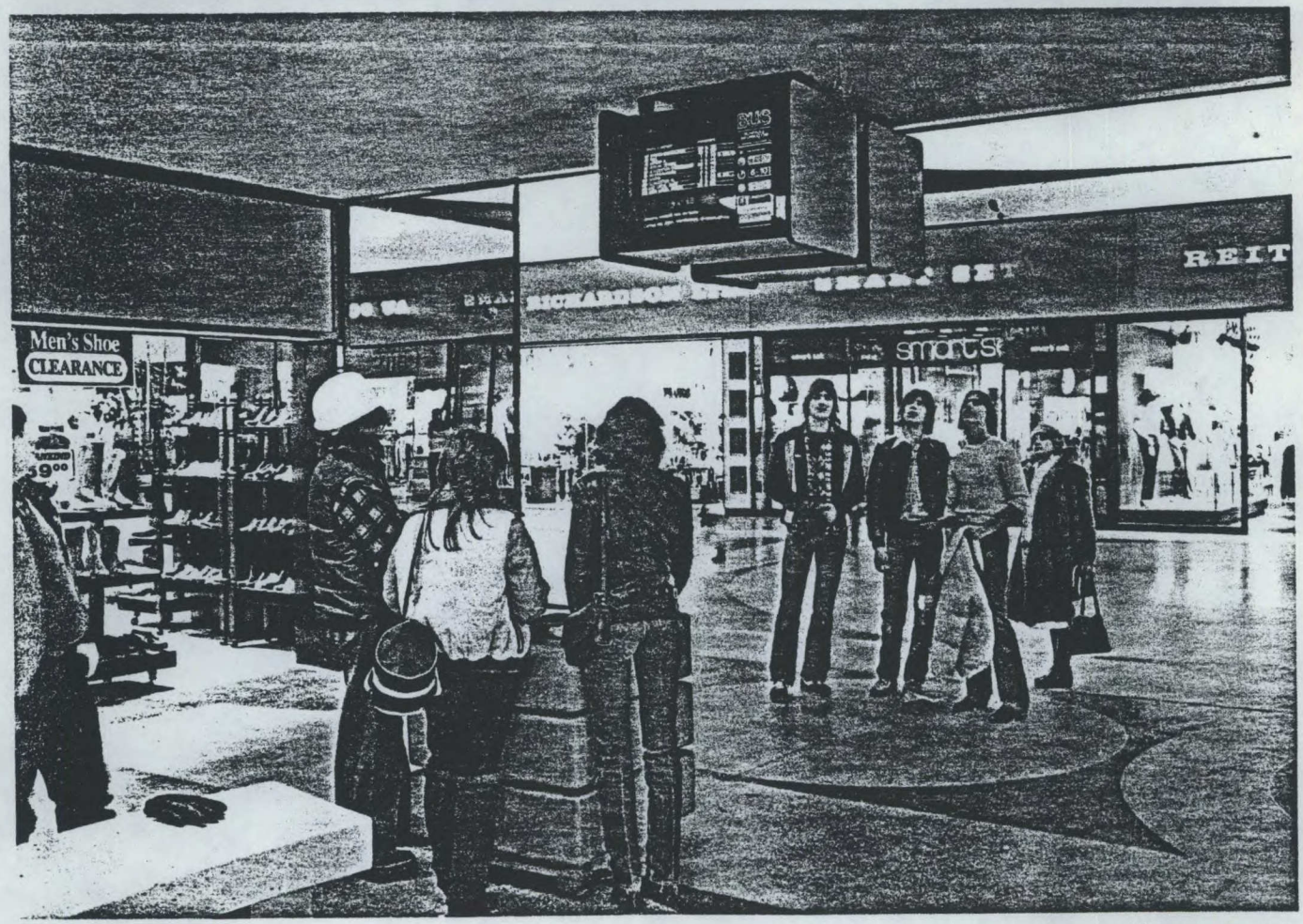
## 9.2 GENERAL

Videotex systems are graphic display systems in which a computer displays information on TV screens. A typical system is illustrated in Exhibit 9.1. This is a type of computer communications network which consists of a main computer and communication links out to remote terminals each of which consists of a TV set and possibly a keypad or similar device. The TV set and possible input device are connected to the communication link via a "decoder" which interprets the information from the computer and converts it to video signals accepted by the TV. It may also accept information from the keypad and transfer it back to the central computer. The configuration just described is a two-way interactive system with centralized computer and database; however, there are a number of other possibilities and they will be discussed.

EXHIBIT 9.2

Example of Passive Overhead

Videotex (Telidon) Display




*St. Laurent Shopping Centre—Ottawa, Canada*

9.2 GENERAL (Continued)

Videotex was pioneered in England in the seventies. Canada has significantly contributed to it by the invention of a concise geometric method of encoding images (called Telidon) and by developing numerous systems that have been used in various trials throughout Canada.

Videotex systems may be classified according to:

1. interaction allowed: interactive or passive;

2. direction of communication: broadcast (one-way) or interactive (two-way);

3. distribution of computing: centralized, remote or hybrid;

4. availability (volatility) of information: static database, dynamically changing information;

5. transactions: transactions allowed or not;

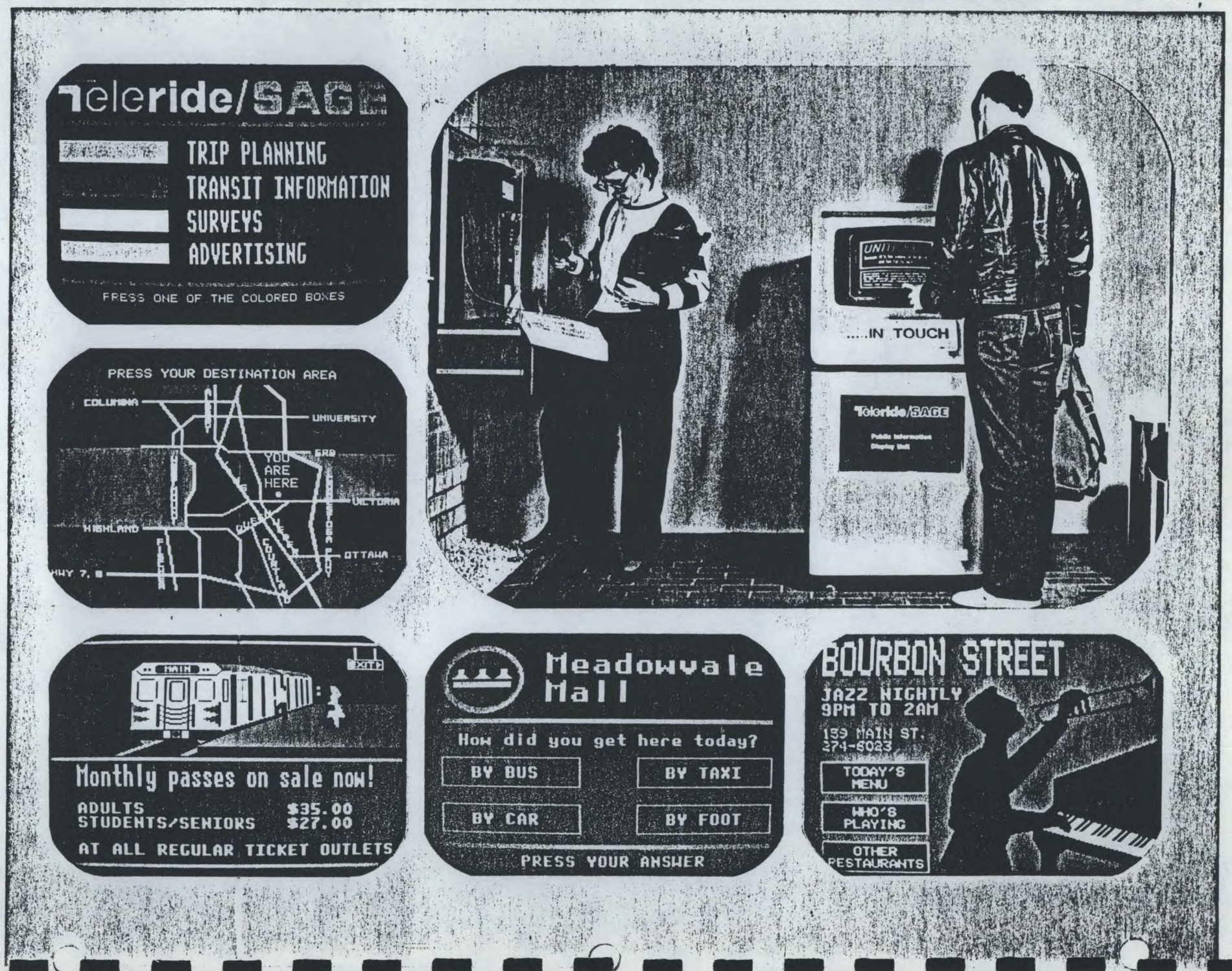
6. input device: keypad, keyboard, touch screen, light pen;

7. method of storing and transmitting graphical images: ASCII, Telidon, NAPLPS, encoded video signal;

8. structure of database;

9. method of presenting user choices: menu, keyword search, forms, question/answer;

EXHIBIT 9.3 Example of Interactive (Touch Screen) Videotex (Telidon) Console and Displays




- 9.3A -

9.2 GENERAL (Continued)

10. billboarding;

11. Canadian content and availability;

12. Applications.

We discuss each of these alternatives:

9.3 INTERACTION

Passive system as illustrated in Exhibit 9.2 typically have larger (19" - 24") screens and are visible by many people at a time. Nearly anyone who passes by the screen will be willing to make use of the information as long as it is presented in an easily understood manner. It is much less intimidating, reaches more people per terminal than an interactive system but is limited in the amount of information it can give.

An interactive system as illustrated in Exhibit 9.3 usually consists of a console with a small (11-15") video screen a simple key pad or a touch screen.

Interactive systems allow the user of the system to specify what he wants to do or see by using some sort of keypad, touch screen, etc. Interactive systems only allow one person to use a particular terminal at a time although several people can use several terminals simultaneously. Interactive systems require greater involvement on the part of the user than do passive systems. Those potential users

9.3 INTERACTION (Continued)

who are more sophisticated will more likely be willing to try an interactive system whereas less sophisticated users may not wish to and will be intimidated by the need for learning how to interact with the system, even if the interaction is fairly simple. On the other hand, since interactive systems allow choice on the user's part, a greater amount of information can be made available since only a portion of the available information will be displayed at any one time. Also, some interactive systems allow transactions such as registering the user's name and address so that he can get further sales information on certain products, make reservations, purchases, banking transactions, etc. Thus, interactive systems allow a larger database, give the possibility for transactions but have a smaller audience and are more intimidating.

9.4 DIRECTION OF COMMUNICATIONS

In a system with a central computer and remote terminals there may be communication from the central computer to the terminals and communication from the terminals back to the computer. If both occur the dialogue is two-way. For example, in an interactive system, the central computer may direct the terminals to display a menu of options, the user will then select one of the options and the number of the the chosen option is then sent back to the central computer. The term videotex is sometimes used only to refer to two-way systems; however, it is also used in other places as a generic term covering both two-way and one-way systems. In Europe, two-way systems are called "viewdata" systems.

9.4 DIRECTION OF COMMUNICATIONS (Cont'd.)

Another possibility is called a broadcast system or "teletext". Here, the computer cyclically sends each picture in its database to every terminal at the same time. The terminal has an intelligent device so that when the user requests a certain picture, the terminal waits until the desired picture is broadcast, grabs that picture and displays it. In a teletext system there is no communication back to the central computer. Nevertheless, it may still be an interactive system. Teletext systems typically communicate over unused portions of TV signals. (The signal that is currently sent to television sets in North America includes an unused portion, called the "Vertical Blanking Interval" that sits above the actual picture. Normally the set is adjusted so that this portion cannot be seen; however, by adjusting the vertical hold on a television set it can be brought into view.) Each terminal would receive the TV signal from the airwaves or via cable TV. There are several teletext systems currently in operation in North America including the CBS teletext system and the TV Ontario teletext system. They are not widely used by the public since the cost of a teletext decoder for a television set is currently several thousand dollars.

In England two teletext systems have been in operation for a number of years: the Ceefax and Oracle Systems.

Teletext systems do not require communication lines and the associated equipment so that the marginal cost per terminal is potentially less (or at least will be when mass production of teletext decoders makes them sufficiently inexpensive). Also, the power that is required of the central computer is the same no matter how many terminals in a

## 9.4 DIRECTION OF COMMUNICATIONS (Cont'd.)

broadcast system whereas in a two-way system the computer must process the requests from each terminal individually and so must be more powerful if more terminals are involved. On the other hand, the initial cost of setting up the broadcast network is more expensive. Also, permission to use the Vertical Blanking Interval (which is the free space that every TV channel has associated with it) must be acquired from the authorities. The size of the database is inherently more limited in a teletext system and the response time that users face will get worse and worse in these systems as the database grows (since it will take longer to send out a complete cycle). Also, sophisticated two-way communication such as the recording of transactions is impossible in a broadcast system. In general, unless a few thousand terminals are envisioned, a teletext system would not be considered.

Another possibility is a hybrid system called "User Interactive Teletext" that is like teletext except that instead of cyclically sending a fixed database over the airwaves some of the slots are addressed to particular users. Users can communicate back to the host computer over telephone lines to select particular series of information.

## 9.5 DISTRIBUTION OF COMPUTING

The database of images may either be located on a central computer or a copy may be stored at each terminal. If only one central source exists then it is easy to update the database. If each terminal has its own copy then each copy must be updated when information changes. If the terminals are attached to the central computer via communication lines

9.5 DISTRIBUTION OF COMPUTING (Cont'd.)

this can be done automatically. If they are not connected by communication lines then maintenance personnel must manually update the recording medium (for example, by inserting a new floppy disk which contains the updated database) at each terminal (or each cluster of terminals if several nearby terminals share the same data).

If redundant copies of the data are kept for each cluster of terminals then there is an obvious extra expense involved. On the other hand, response times will be less because it will not be necessary to communicate the images over slow communication lines. Keeping local copies of the database for each cluster of nearby terminals would require that a micro computer be located with the database to process it.

Another possibility is a hybrid scheme whereby some of the data is stored locally and other data is stored on the central computer. The micro would then access the central computer's database via a gateway (a special communications arrangement), just as the central computer would in turn access the databases of other computers via gateways.

In general, all schemes require a "decoder" which is a machine that translates incoming signals to a form that is understood by the TV set. This decoder normally has a microprocessor within it; however, the microprocessor in the decoder is obtained off-the-shelf as a preprogrammed unit. In the case of a distributed database where information resides locally at each cluster of terminals it will be necessary that each cluster have a microprocessor that is programmed by the developer of that particular system. Thus, videotex systems are computer networks in

## 9.5 DISTRIBUTION OF COMPUTING (Cont'd.)

which the computing is distributed among the remote sites and the central site; however, the remote site processing may be of a fairly minor nature unless the database is distributed too.

## 9.6 VARIABILITY (VOLATILITY) OF INFORMATION

The simplest system would be one in which each image is prestored and can be retrieved for viewing. A limited amount of animation is also possible. The next level of complexity would be "dynamic" information which changes such as the time. A next step would be dynamic information which also requires the access of external information sources via gateways for weather reports, stock quotations, etc.

## 9.7 TRANSACTIONS

A system providing transaction capabilities might allow such actions as:

1. users leave their address so advertising could follow up with further detailed information;
2. users could purchase products by leaving their charge card number;
3. users could buy tickets and make reservations.

There are many specialized transaction devices in existence such as automated banking tellers, merchandise ordering systems, airline ticketing machines and automated information and transaction applications are growing very rapidly portending a future 'self help' society.

## 9.8 INPUT DEVICES

Passive systems do not require any input device at all. Interactive systems can obtain information from the user via numeric keypads, full typewriter keyboards, voice recognition systems, joysticks, touch-sensitive screens, or other devices currently in the research stage such as touch-sensitive LCD panels. Keypads and touch-sensitive screens tend to be the most popular input devices. Touch sensitive screens are particularly easy to use but do have the problem of fingerprints on the screen. Also, it is sometimes not apparent to those passing by that a touch sensitive screen can be interacted with by touching it since people are used to looking at screens on TV and in the movies but touching them to get information is a foreign experience. Keypads are not quite as easy to use but do have the advantage that their use is more obvious.

## 9.9 METHOD OF STORING GRAPHICAL IMAGES

A graphic image is called a "frame". If frames contain only text then the frames can be stored as a sequence of characters using a standard computer code such as ASCII. In some videotex systems, notably the British ones, the character set is extended to include characters which have various shapes so that when placed side by side a picture can be composed. This is called "alphamosaic" coding of images. In the seventies, Canada devised a geometrical rather than character-based way of storing images. This method is called Telidon and is the predecessor of the current North American standard called NAPLPS (North American Presentation Level Protocol Systems). The NAPLPS geometric encoding

9.9 METHOD OF STORING GRAPHICAL IMAGES (Cont'd.)

method stores frames as sequences of Picture Description Instructions (PDIs) which are of the form: Set Colour to Blue, Draw Line From Here to There, Draw Arc Thru These Three Points, etc. The main advantage of geometric encoding schemes is that a picture can be described quite concisely in terms of these instructions so that only a small amount of information needs to be sent over communication links as compared to other ways of describing images. Despite this condensation of information it still takes about 2 to 10 seconds to display a typical videotex page given the speed of typical communication links. NAPLPS images are generally created by an artist using a "Page Creation System" which consists of a microcomputer, NAPLPS decoder and TV monitor, computer terminal, a graphics tablet and appropriate software.

As well as the above, NAPLPS also defines another way of storing pictures called "bitmaps" or "incremental" mode. In this method, the picture is subdivided into a fine rectangular grid and each rectangle is given a number according to its colour. To store images using this alternate method requires a huge amount of information to be stored and sent down the line. Therefore, it is rarely used. If it is desired to convert photographs or preexisting drawn material to be stored in a NAPLPS database, then the "bitmap" method must be used destroying the principle advantage of NAPLPS. Thus, it is not really practical to create a large percentage of the database from photographic images.

## 9.10 VIDEODISK

If the database is stored in close proximity to the terminal then high speed communication can be provided readily and other methods for storing information may be used. Videodisk stores images as video signals similar to the more familiar videotape but with the advantage that any image may be directly accessed (whereas with videotape images are accessed sequentially). Unlike NAPLPS which describes pictures via a series of Picture Description Instructions, Videodisk NTSC signals are fairly straightforward electronic encodings of photographic images and videodisk databases can be constructed simply from existing photographs, maps, drawings, etc. without having them artistically reconstructed via a NAPLPS Page Creation System. The other advantage of videodisk is that a large number of images may be stored on one disk (typically 50,000) and retrieval is fast. The speed is typically from one to three seconds (based on the specifications of the Pioneer Videodisk system). The actual speed depends on the position of the image that is wanted next compared to the location that the reading arm is positioned over at the moment. For example, if the database has only 10,000 images then all images can be stored in fairly close proximity on the disk, arm movement will be minimal and one second response time can be assumed.

The advantage of huge storage capacity at a lower marginal cost per disk and convenient reproduction from photographs is offset by several disadvantages. Firstly, unlike other computer media which can be updated, information on videodisk cannot be modified after being written with current

## 9.10 VIDEODISK (Cont'd.)

technology. A master disk must be pressed at a cost of several thousand dollars everytime information needs to be modified. Also, the method of storage makes it impractical to send videodisk images over slow communication lines so each local cluster of terminals would have to have its own videodisk. Updating the disk requires pressing a new one and replacing the old disks with the new one at each cluster.

Hybrid schemes can be employed to overcome the inherent problems in videodisks. In particular, images on a screen can be composed of both videodisk and videotex images at the same time. For example, a written statement of the weather might appear on the screen via NAPLPS while a picture with that weather condition is superimposed from the videodisk. Another possibility is to have some images come entirely from the videotext system while others come from the videodisk system. To replace an image on the videodisk one would replace it with a videotex image. Hopefully this would substantially reduce the number of times that the videodisk would have to be replaced.

## 9.11 STRUCTURE OF THE DATABASE

The database of frames is generally structured as a tree with each menu leading to a sequence of branches that end in frames (possibly other menus) that are lower down in the hierarchy. Users can generally move down one of the alternative branches by selecting a menu item; move up one

9.11 STRUCTURE OF THE DATABASE (Cont'd.)

level in the tree or move back to the root of the entire tree. Some databases also have cross-links so that several menus can lead to the same frame. For example, the place of interest in area A menu and the restaurant menu may both have a branch to a restaurant in area A. Another feature that some data systems have is direct frame access. Each frame is numbered in one corner of the screen and the user can directly access that frame from any point by just typing in that number. Thus, a frequent user of the system may want to know what is playing at Cinema A every week. If he knows that Cinema A is on page 1234, then he just types in 1234 and directly gets to the indicated frame. Also, as he traverses the tree during his session he can try to remember the numbers of certain frames to which he wishes to return. One last feature is a previous frame feature. Pressing the previous frame button will take one back to the frame that he was at before the current frame. One can successively back up by pressing this button successive times.

One problem with menus is that it is often difficult to know which menu item a particular piece of information is under and even worse it is often not apparent what information is available at all. It will, in general, be difficult for people to make good use of the database if they cannot quickly know what information is there to be obtained. For example, the main menu on one videotex system is: Stores and Services, Plaza Information, City

9.11 STRUCTURE OF THE DATABASE (Cont'd.)

Information, Provincial Information. From this it is not likely that the user of the system would have any idea at all that he could find out the current value of the Canadian dollar, the weather, how to get to the beach, etc. These questions might never be asked because it is not only an unfamiliar experience to question a machine about these things, but even if you did start using the machine the extent of its database is not apparent. One solution to this problem is to place a large sign on or above the videotex terminal that outlines the information available. For example, the following might appear on a sign on the terminal:

Airport Menu
- Flight Departure Information
- Flight Arrival Information
- Transportation
  - Car Rental
  - Bus from Airport
  - Bus to Airport
  - Limousine
  - Taxi
  - Parking
- Airport Maps
  - Airline Companies
  - Arrivals
  - Baggage Pickup
  - Currency Exchange
  - Departures

9.11 STRUCTURE OF THE DATABASE (Cont'd.)

- Elevators
- First Class Lounges
- Food
- Gates
- Government & Airport Offices (Canada)
    - Agriculture Canada
    - Communications Canada
    - Customs Canada
    - Environment Canada
    - Health and Welfare Canada
    - Immigration Canada
    - Transport Canada
    - R.C.M.P.
- Lockers
- Lost and Found
- Nursery
- Shops
- US Government
- Religious Services

The disadvantage of adding the fixed sign is that the sign can become inconsistent with the tree structure of the database if the database is changed and the sign is not.

Other database structures are possible (eg. relational or tabular databases) but nearly all existing systems use the tree structure or tree with cross-links.

## 9.12 METHOD OF PRESENTING USER CHOICES

In interactive systems, a menu of choices can be displayed and the user can enter the number of the desired choice on a keypad or touch the screen over the desired choice on a touch screen. If the database is arranged in a tree-like hierarchy then choosing one menu choice will likely yield a second frame with yet another menu and so on until the information is narrowed down to precisely the needed item.

Another possibility is to present the user with choices by successively displaying choices and having the user press a NOW button (or verbally say NOW) when the desired choice is displayed, opposite an arrow or mark.

More complex methods of interaction include keyword search where a user is given a typwriter-like keyboard and types in a word associated with the information that is desired. The computer then displays it or a menu of further choices that refine this idea. Transactions may present the user with a blank "form" on the screen which the user fills out using a keyboard and keys which allow movement from one field to another. Another form of communication is natural language. There are computer programs in existence that can accept requests phrased in ordinary English such as "Give information about the weather". Although this type of interaction might seem to be ideal, the requirement of a typewriter-like keyboard and the fact that it is so unstructured may cause difficulties for many users. In the future, voice input will allow the typewriter keyboard to

9.12 METHOD OF PRESENTING USER CHOICES (Cont'd.)

be eliminated; however, the ability to automatically recognize a large vocabulary regardless of speaker is beyond current technology.

Despite the above choices, nearly all existing systems use a menu.

9.13 BILLBOARDING

When no one has interacted with the system for a few minutes, some systems revert to a "billboarding" mode in which a sequence of frames giving information or inviting further use of the system are displayed.

9.14 CANADIAN CONTENT AND AVAILABILITY

There are a number of interactive and passive Canadian videotex systems, both two-way and one-way (i.e. teletext). Also, the Telidon standard of geometric encoding of images (from which NAPLPS was derived) is a Canadian development. Videodisk technology is entirely American and Japanese though some software to control this medium will undoubtedly be developed in Canada. A number of Canadian companies have some experience with videodisk. There are no large public access systems based on this medium; however, there are some small videodisk demonstration systems.

EXHIBIT 9.4

# Ceefax on BBC1

Contents: Page 100 (BBC-1)

**NEWS**



**FINANCE**



**SPORT**



CEEFAX provides a rapid service of news, results and background.
CEEFAX Sports Specials, covering major sporting events, begin on 151.

**FOOD GUIDE**



**ENTERTAINMENT**



**WEATHER AND TRAVEL**



**NEWSFLASH** 150

Turn to this page to watch television programmes - when something important happens a NEWSFLASH will appear on the picture.

**ALARM CLOCK PAGE** 160

This page can change every minute. It can also be used as a silent alarm clock.
Turn to page 160 for instructions.

**SUB-TITLES** 170

The BBC is experimenting with various ways of sub-titling programmes. This page shows how sub-titles could look.

**LATEST PAGES** 190

As each new page is put in the magazine it is also put on 190 where it alternates with a news summary.

**OTHER PAGES**



FULL INDEX



**WANT TO KNOW MORE ?**

Write to:
CEEFAX Newsroom (7059)
BBC Televieion Centre,
LONDON, W12 7RJ

# Ceefax on BBC2

Contents: Page 200 (BBC-2)

**NEWS**



**FINANCE**



These pages provide a service of background information about the world of business and finance.

**SPORT**



This section lists major forthcoming sporting events including football, cricket and racing.

**FAMILY FUN** 240

A selection of jokes and puzzles designed to amuse and entertain the whole family.

**HOME AND AWAY**



Car tests, places to visit, gardening - a changing mixture to browse through at your leisure.

**ENTERTAINMENT**



**NEWSFLASH** 250

Turn to this page to watch television programmes - when something important happens, a NEWSFLASH will appear on the picture.

**ARTS**



News about the world of the arts. Exhibitions to visit, and reviews of books, films, music, and the theatre.

**ALARM CLOCK PAGE** 260

This page can change every minute. It can also be used as a silent alarm clock. Turn to page 260 for instructions.

One of the great advantages of CEEFAX is its flexibility. Old pages can be removed and new ones put in virtually instantly. For this reason, CEEFAX pages can vary from day to day as new ideas are tried out. To help you find your way around, there is a full index towards the end of each magazine - pages 193-195 for Magazine 1 (BBC-1) and 293-295 for Magazine 2 (BBC-2).

## 9.15 PROBLEMS WITH EXISTING VIDEOTEX SYSTEMS

Originally, there were great expectations that videotex would quickly permeate teh home TV and other markets. So far progress has been much more gradual. It is unlikely that some form of videotex or wired home will not emerge but it is difficult to predict when and of what form this will ultimately take. Some problems with existing public access systems appear to be as follows:

1. Unknown Contents - It is generally not apparent what information is in the database. To get a good feeling might a person often has to experiment with the system for quite a long time. It is not possible to effectively use the tool without knowing its capabilities in the first place. People are also just not in the habit of coming to the units with specific queries. Most user sessions tend to consist of "browsing" through the available pages.

2. Fear - Any new technology which represents a change in the way we do things will be met with some public resistance.

3. Response Time - The excessive amount of time that it takes the system to display a page of information tends to cause frustration. This is especially true if one must traverse a sequence of pages to get to the desired one. If one page takes 10 seconds to display, then it would take an entire minute to see a sequence of six pages, not counting the time it takes to read them. What is more, the number of pages viewed may be considerably more than the ones needed and the consequent time to view them will be increased.

## 9.15 PROBLEMS WITH EXISTING VIDEOTEX SYSTEMS (Cont'd.)

4. Size of Audience - Only one person can use an interactive videotex unit at a time. Often the units will be monopolized by children playing with them so that it can be hard to get access to them at times.

5. Resolution - The technology originally grew out of the desire to transform the home television set into an interactive medium. Therefore, the technology was developed to run on TV sets which in turn have relatively low resolution. That is to say, one cannot get much information on one screen and still have it show up clearly. One might need half a dozen screenfuls or so just to display the information that can fit on one ordinary typed page. However, increased resolution and display clarity would make the units more expensive.

6. Aesthetics - The graphics tend to look artificial and computerized. This is a consequence of describing images in terms of dots, lines and polygons as opposed to photographic images and is also partly because of the low resolution. The housing that the unit sits in is typically rather unattractive as well. One might contrast the videotex systems with the modern arcade games which have much better quality images, have animation rather than just still pictures, and are more interactive (via joysticks and directional buttons).

7. Minimal Entertainment Appeal - Whereas newspapers have comics, puzzles, entertainment reviews, etc. and radio and television are overwhelmingly dominated by entertainment, existing videotex systems are limited in this respect. Of course, increasing the entertainment value of the units might cause them to be monopolized even more by people who are not seeking specific information items.

## 9.16 APPLICATIONS

Applications include information retrieval, commercial transactions (such as shopping, paying bills, banking), advertising (possibly with the ability for a patron to leave his name and address for further follow up), electronic mail, teleconferencing, computer-aided instruction, computer games, access to general computer facilities, remote monitoring (e.g. burglar alarms).

Exhibit 9.4 shows the information that is available on the British Ceefax teletext system.

The following lists likely contents of a Videotex database for the Federal Agencies in Vancouver.

Airport Menu
- Flight Departure Information
  - Airline A (gate, flight no., time, early/late, destination)
  - Airline B (gate, flight no., time, early/late, destination)
- Flight Arrival Information
  - Airline A (gate, flight no., time, early/late, origin)
  - Airline B (gate, flight no., time, early/late, origin)
- Transportation
  - Car Rental
    - Company A
    - Company B
  - Bus From Airport
    - Area A
      - Schedule
      - Route Map
    - Area B
      - Schedule
      - Route Map

9.16 APPLICATIONS (Continued)

- Bus To Airport
  - Area A
    - Schedule
    - Route Map
  - Area B
    - Schedule
    - Route Map
- Limo
  - Company A
  - Company B
- Taxi
- Parking

Airport Maps

- Airline Companies
- Arrivals
  - Domestic
  - International
  - U.S.
- Baggage Pickup
- Currency Exchange
- Departures
  - Domestic
  - International
  - U.S.
- Elevators
- First Class Lounges
- Food
  - Cafeteria
  - Restaurant/Bar
  - Snack Bar

9.16 APPLICATIONS (Continued)

- Gates
- Government and Airport Offices (Canada)
  - Agriculture Canada
  - Communications Canada
  - Customs Canada
  - Environment Canada
  - Health and Welfare Canada
  - Immigration Canada
  - Transport Canada
- Lockers
- Lost and Found
- Nursery
- Shops
  - Banks and Bank Machines
  - Barber Shop
  - Books
  - Chocolate Shop
  - Drug Store
  - Duty Free Shop
  - Flowers
  - Gift Store
  - Newstand
  - Post Office
  - Travel Insurance
  - Travelers Cheques
  - Video Games
- U.S. Government
  - U.S. Customs
  - U.S. Immigration
- Washrooms

9.16 APPLICATIONS (Continued)

- Canada Place
  - Customs Information
  - Events
  - Maps
    - Ballroom
    - Crusie Ships
    - Customs Canada
    - Hotel
    - Immigration Canada
    - Lost and Found
    - Meeting Rooms
    - Washrooms
  - Restaurants
  - Shops
  - Transportation
    - Bus
    - Cruise Ship
    - Expo '86 Shuttle
    - Limo
    - Parking
    - Taxi
- Vancouver
  - Accommodation
  - Bus Information
    - Routes
    - Schedules

9.16 APPLICATIONS (Continued)

- Entertainment
  - Live Theatre
  - Music
  - Night Clubs
  - Films
  - Singles Activities
  - Television
  - Exhibits
  - Special Events
- Restaurants
  - Canadian
  - Chinese
  - French
  - German
  - Italian
  - Seafood
  - Misc.
- Stores and Services
  - Auto Rental
  - Clothing
  - Books
  - Hair Styling
  - Hardware
  - Stationary
- Convention Facilities
- Maps
  - Area A
  - Area B
- Government Services
- Tour Information
- Points of Interest

## 9.16 APPLICATIONS (Cont'd.)

- Province of British Columbia
  - Convention Information
  - Government Services
  - Maps
  - Tourist Information
- Newspaper
  - Classified Ads
    - Auto
    - Goods for Sale
    - Home
    - Jobs
  - Comics
  - News and Sports
  - Time
  - Weather
- Business Information
  - Currency
  - Futures
  - News
  - Options
  - Stocks

## 9.17 COSTS

This section provides approximate component costs for a videotex system based on Telidon technology. More detailed cost estimates require that a specific arrangement of terminals, user access, database, communications systems, etc. be defined. Terminals can be grouped into clusters in one location so that each cluster will:

1. either be controlled by one local microprocessor;

2. or be controlled from a remote host computer via communications multiplexors, modems and a high speed circuit.

The following shows costs for a terminal cluster controlled from a remote host computer. However, the local multiplexor can be replaced by a small local computer in which case the communications network (multiplexors, modems, remote host computer) becomes unnessary. A small local computer may, however, still be connected to a larger remote host computer via dedicated or dial-up telephone lines, so that the local computers' database can be updated periodically from the remote computer or to provide access to a larger remote database which is infrequently used.

A cluster of videotex terminals may support up to eight terminals as illustrated below.

9.17 COSTS (Cont'd.)

| | |
|---|---|
| Enclosure, decoder, monitor, keypad as illustrated in Exhibit 9.3 | $5,000 per unit |
| Communications equipment for multiterminal cluster | |
| 2 asynchronous multiplexers | $6,000 per cluster |
| 2 synchronous modems | $3,000 per cluster |
| Communications equipment for single terminal cluster | |
| (2 4800 baud leased line modems) | $ 500 per terminal |
| Touch Screen Option | $2,000 per unit |
| DEC Computer that can support | |
| 1 terminal | $10,000 |
| 8 terminals | $40,000 |
| 20 terminals | $100,000 |
| 1000 terminals | $1,000,000 |
| Leased lines | $8/km/month/line (Mississauga rates) |
| Software | |
| 1 terminal | $10,000 |
| multiterminal | $100,000(?) |
| Installation | $1,000 per terminal |
| Project Management | 10% of entire project |
| Database Creation | $10-200 per frame |
| Page Creation Unit | $15,000-$35,000 |
| System Maintenance | $25/terminal/mo<br>$35,000 per year for large systems and DBMS managers |
| Site preparation for large central computer | $10,000 - $25,000 |

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# Communiqué

PRESS RELEASE # 4

Montréal, August 26th, 1983

The TELIDON-videotex system: a unique feature of the Palais des congrès de Montréal

Delegates and visitors to Montréal's new Palais des Congrès will have access to a unique communication service found in no other convention hall in the world.

To get information on events scheduled inside the hall, on shows currently playing in town, on restaurants in the area or on public transportation rates, they need only to consult one of the 72 television screens located throughout the Palais des Congrès. for more complete information, they can punch in specific questions at one of the ten TELIDON-videotex interactive terminals placed at strategic locations in the hall.

The Palais des Congrès' TELIDON-videotex system is one of the most sophisticated of its kind in the world. It integrates several elements and components which, until now, had never been used together for information and communication purposes.

The system which cost over $1.6 million can now provide 2000 pages of electronic information. This is only the beginning. The system's memory bank can actually store up to 100,000 pages of information.

2.

A visitor entering the Palais des Congrès will be guided to his destination by the television monitors of the TELIDON system. As he gets closer to his destination, the information on the monitors will become more precise.

Delegates attending a specific event will need only to follow the instructions on the screen showing the name or the logo of their organization. They will also be able to get a synopsis of a conference or a workshop, or note down last-minute changes or special bulletins from their convention organizers. The information on the screen will never be outdated since it can be changed instantaneously, whenever needed.

During breaks in activities, visitors and delegates will be able to question one of the ten interactive terminals and get information on many topics such as sport and cultural activities taking place in the city. The system will also tell them how to get there and the cost of their tickets. It will even suggest a few quiet restaurants!

But this is only the tip of the iceberg. In a few years time, the system will be linked to all the major Montréal hotels. Visitors will have access to all this information - in the comfort of their own room.

The system goes even beyond these on-screen information services. the data-processing capability will soon be used to computerize the Palais des Congrès' accounting, registration and billing operations.

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For information:

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9.17 COSTS (Cont'd.)

Teletext System

| | |
|---|---|
| Data Insertion Unit (i.e. central computer) | $85,000 |
| Public Access Terminal | $7,000 |
| Home Decoder/Keypad Unit (user would hook this up to his TV set) | $3,500 but might be as little as $100 if manufactured in large quantities |

9.18 MONTREAL CONVENTION CENTRE - VIDEO DISPLAYS

As part of our study we visited the Montreal convention centre in the Palais des Congrès. This centre is equipped with a large number of Telidon displays which provide directions for visitors to the centre. This system is described in Exhibit 9.6.

The video displays are very compact and attractively packaged so as not to be unsightly when mounted on the ceiling. They are tilted to reduce glare from ceiling lights, and to improve the viewing angle. They are located in high traffic areas (lobbies, escalators) and in front of each convention hall. This helps in reaching a large audience.

On the other hand, the screens are about 12". The colour reproduction is of low quality (dull, poor area definition). The screens are single-sided providing at most a 100°-120° viewing area. The resolution of the graphics used restricts the sharpness of logos and graphical illustrations.

9.18 MONTREAL CONVENTION CENTRE - VIDEO DISPLAYS (Cont'd.)

The information content of the screens is very limited. They are strictly directional aids with no information content. By following arrows on the screen, one can find the way to one's particular session. The information does not provide for the viewer:

1. directory of sessions;
2. session description;
3. session cancellation, changes;
4. interactive enquiries;
5. directory to convention centre services.

The screens are updated about every 60 seconds. It takes roughly five seconds to paint a new screen. Screens are updated even if the information has not changed which unnecessarily interrupts the screen content.

If a similar Telidon directory were considered for Canada Place, the above deficiencies should be rectified by:

9.19 VIDEOTEX DEVELOPMENTS IN TORONTO - REVENUE POTENTIAL

In general, the videotex information service can be paid for as follows:

1. By governments or other organizations as a public service;

9.19 VIDEOTEX DEVELOPMENTS IN TORONTO - REVENUE POTENTIAL (Cont'd.)

2. By the user for a flat monthly fee or a usage charge which depends on the length of time the user is connected to the system or the amount of information he has taken from the system or a combination of these;

3. The information provider, principally advertising agencies.

The largest commercial urban system in Canada is the Teleguide system in Toronto operated by Infomart but subsidized extensively by the Ontario Government. Teleguide has the objective of becoming self-sustaining. The revenues are derived from charges to the advertisers as follows:

| | |
|---|---|
| Listing Fee | $200 annually |
| Page Storage Fee | $150 annually |
| Page Creation Fee | $ 45 per hour |
| Update | $ 15 per page |

As in the case of other mediae advertising rates will depend on the medium, the number and demographics of persons reached by the medium. Therefore, the advertising rate achievable by a videotex system will depend on the number of terminals available, their frequency of use and the user characteristics. For example, the multimillion dollar costs of a recently installed LED sign system in the Toronto Subway which carries approximately 200 million riders annually is fully paid for by advertising plus a share of the revenues for the Transit Commission.

9.19 VIDEOTEX DEVELOPMENTS IN TORONTO - REVENUE POTENTIAL (Cont'd.)

There are at present 600 number of Teleguide terminals in the Toronto region, mostly in pairs installed in hotels, airports, shopping centres and other high traffic areas. This system currently stores 15,000 frames on two VAX 780 computers. It typically takes two to 10 seconds to display a page.

9.20 VIDEOTEX DEVELOPMENTS AT EXPO '86

Expo '86 have agreed that IBM will be the official supplier of computer systems to Expo '86; we believe that IBM will supply a host computer and 200-400 terminals using an IBM 4361 mainframe for installation at Expo '86 site as well as in regional hotels, transportation terminals and other public locations.

It is expected that this equipment will be supplied to Expo '86 free or on favorable terms.

For this purpose, IBM has reviewed user requirements with Expo '86 for a few weeks and is currently preparing a proposal.

It is not clear what hardware, software, and services the IBM proposal will include, at what costs, and what will happen to the IBM system after Expo '86.

## 9.20 VIDEOTEX DEVELOPMENTS AT EXPO '86 (Cont'd.)

A local Vancouver Company, Dominion Directories intends to supply to Expo '86 Videotex (Telidon) software, frame creation and management services which would utilize the hardware to be supplied by IBM. Again there does not yet appear to exist a concrete proposal. Dominion Directories are currently providing a test service for driver license applicants using Telidon Interactive Technology. This service uses special terminals located in the license office connected to an IBM mainframe computer located in the Dominion Directories Office.

Dominion Directories have been previously involved in an abortive Telidon Videotex trial in Vancouver. One of the criticisms of this trial was due to the slow response time of the terminals which were connected to the host computer via relatively slow 1024 baud telephone lines. To speed up this service in future, Dominion Directories are currently experimenting with higher speed 2000 and 4000 baud telephone lines.

## 9.21 APPLICATIONS TO FEDERAL AGENCIES

There are several possibilities for a videotex system for the federal agencies:

1. Sharing a Videotex System with Expo '86

   An IBM-sponsored system may materialize in which case the Canada Place/Port/Airport/DRIE/DOC videotex sytsem could be part of the IBM system. It would just be necessary to create database frames as desired. This could be done:

9.21 APPLICATIONS TO FEDERAL AGENCIES (Cont'd.)

1. by the manager of the videotex system (Dominion Directories); or

2. by the agencies themselves who would forward the pages they create to Dominion in machine readable form; or

3. by third parties on behalf of the agencies.

2. The Federal Agencies could purchase or develop their own system. There are two main possibilities here: videotex and teletext.

A videotex system allows for true two-way communication and can support a large database, but requires more computing power as the number of terminals increases. The Canada Place videotex system might serve as the catalyst for a city-wide system of videotex terminals in public places. Such a videotex system would cost approximately $6,000 per terminal assuming at least 100 terminals.

A teletext system allows only a limited number of frames, say 100. It would be broadcast over the airwaves so that anyone in Vancouver who bought a teletext decoder could use the system right from their home. Teletext decoders currently cost about $3,000 to $4,000 so it is unlikely that anyone would buy one at that price; however, with the potential of selling tens

9.21 APPLICATIONS TO FEDERAL AGENCIES (Cont'd.)

or hundreds of thousands of decoders in Vancouver and elsewhere, this price might drop to $100 to $150 per decoder. Thus, initially, it would be used only from public terminals at Canada Place. Here it would be advertised that anyone could get the same capability right in their home by purchasing a teletext decoder. From this a city or region-wide home teletext system could emerge.

As noted earlier this would be essentially a new venture which would require co-operation from Broadcast and/or Cable Companies as well as regulatory approval. Therefore, it may be difficult to introduce a Teletext system in the Vancouver area before Expo '86 other than a demonstration system.

Specifically the various agencies could consider the following approaches:

1. Airport

Transport Canada can consider

- either an independent cluster of up to eight terminals controlled by a microprocessor located at the airport

9.21 APPLICATIONS TO FEDERAL AGENCIES (Cont'd.)

- or videotex terminals controlled from a larger remote computer (Expo '86) via a high speed line, multiplexors and modems as shown in Exhibit 9.5. Application of an Expo '86 videotex system to the airport will depend on what regional system will be offered through Expo or other organizations in the Vancouver area. Until this becomes clear, Transport Canada should keep its options open.

The videotex database for the airport might look something like that shown in the Airport Section of the Section 9.15 of this Chapter. An initial videotex terminal would be at the top of the escalators on the third level to be followed with one terminal at each of the other levels, then one or two in each of the two wings and about a dozen in downtown hotels.

2. Vancouver Port

The videotex database for the Vancouver Port might look something like that shown in the Canada Place section of Section 9.15 of this Chapter. Several videotex terminals might be placed in the cruise ship lobby area on the cruise ship level.

9.21 APPLICATIONS TO FEDERAL AGENCIES (Cont'd.)

3. Canada Place

The videotex database for Canada Place would look something like that shown in the Canada Place section of Section 9.15 Several videotex terminals would be located in the entrance lobby with additional ones scattered throughout the hallways.

4. DRIE

The videotex services for DRIE are discussed in the following Chapter 14.

If any of the agencies wish to do the page creation themselves, they would have to buy a page creation system. This consists of a microcomputer, videotex decoder and TV, page creation software and some facility for transferring the pages to the target system (e.g., floppy disk or communication link). It is also recommended that the system have a graphics tablet for describing the graphics images to the computer. An even more sophisticated system would have the capability of placing a video image of a drawing on the screen for tracing and would, therefore, include a video camera. The cost of a page creation system varies from about $10,000 for an IBM PC-based system with no graphics tablet to about $15,000 for an IBM PC- based system with a graphics tablet to $35,000 for a Norpak system with video camera.

## 9.22 FEDERAL STRATEGY

The Federal Agencies in the Vancouver area can, therefore consider the following alternative strategies concerning the provision by them or on their behalf of a videotex service which would provide information about Federal services and activities of interest to the public during Expo '86 and possibly thereafter:

1. Sharing an Expo'86 or Other Regional Videotex Service

   If the Expo 86 or other regional videotex service does in fact materialize, the Federal Agencies will wish to assess the desirability of utilizing this service, since a large part of the information provided by such a service (e.g., Expo '86 events, regional accommodation, entertainment, restaurant, transportation services, etc.) will be of interest to visitors to the Federal buildings (airports, cruise ship terminal, Canada Place).

   The decision whether to utilize an Expo '86 or third party videotex service in the Vancouver area depends on the following considerations:

   - Ability to include Federal information into the third party database and ensuring such information is prominently drawn to the attention of visitors.

   - Comprehensiveness of the third party database.

9.22 FEDERAL STRATEGY (Cont'd.)

- Quality and attractiveness of the thrid party system - (billboarding, menu structure, frame creation, user interface, speed, etc.).

- Capital and operating costs to the Federal Agencies of utilizing the system.

- Future plans beyond Expo '86 for the videotex services in the Vancouver area.

2. Gateway System

In considering the use of an Expo '86 or third party videotex service on Federal locations, the Federal Agencies need not necessarily be limited to the types of terminals and user interfaces offered by the system operator. For example, if the Federal Agencies would like to use the database available from the third party system, but do not like the terminals offered with this system, they could consider:

i) providing their own terminals and linking them to the third party system, or

ii) setting up their own small micro-based systems at Canada Place and the airport respectively and linking these to the Expo '86 or third party system via a gateway or down-loading link. This link could be bi-directional, i.e., it could provide Expo '86 and other regional information to the two federal systems and conversely supply federal information to the Expo '86 system.

## 9.22 FEDERAL STRATEGY (Cont'd.)

### 3. Indepedent Systems

If the Expo '86 or third party videotex system fails to materialize, or proves to be unattractive financially or due to limited quality, the federal agencies can take the initiative and develop a system, which in turn could be offered to Expo '86 and the region.

## 9.23 THE RECOMMENDED ACTION PROGRAM

As detailed in Section 9.15 there are many problems with current public access videotex systems. In fact, from the previous unsuccessful trials and list of problems it is apparent that unless some changes or enhancements are made to the existing systems any anticipated system will have similar difficulties. Thus, if it is still desired to have some sort of videotex system it is imperative that some experimentation be done first to overcome insofar as possible, past failures. In particular, the following actions are recommended:

### 1. Request Expo '86 Cooperation

The Federal Agencies should inform Expo '86 that they wish to evaluate any concurrent videotex proposal to determine to what degree the Federal Agencies could and would utilize such a system.

9.23 THE RECOMMENDED ACTION PROGRAM (Cont'd.)

2. Prepare Alternative Plans

In the event that the Expo '86 third party service should be delayed or unattractive to the Federal Agencies, the Federal Agencies should initiate plans and trials of independent systems which would have the flexibility of interconnection with an eventual Expo '86 or third party system on which could be expanded to provide services to Expo '86 and the Vancouver region. This would have the advantages that:

a. The Federal Agencies would not delay a videotex development in case there is considerable delay with Expo '86 or third party plans and commitments.

b. The Federal Agencies can ensure that Federal information gets the greatest prominence on their systems.

c. The Federal Agencies can proceed to experiment with various features (bill-boarding, touch versus key pad interface, symbolic menus, scrolling menus used for bill-boarding) to make their units as useful and attractive as possible.

9.23 THE RECOMMENDED ACTION PROGRAM (Cont'd.)

d. This provides improved leverage for negotiation with Expo '86 or the third party concering the features, quality and cost of a videotex service since the Federal Agencies will have a clear alternative.

3. Independent Federal Development

Chapter 7 proposes an independent videotex/video disc improvement project at Vancouver International Airport designed to substantially improve public videotex systems.

COMMUNICATIONS/INFORMATION SYSTEMS FOR CANADIAN EXPO 86 PAVILION, CANADA PLACE, VANCOUVER CRUISE SHIP...