

June 29, 2001.

Mr. Salvatore Frisina,
Legal Counsel,
Sears Canada Inc.,
Department #766 Legal Services,
222 Jarvis Street,
Toronto, Ontario M5B 2B8

Dear Mr. Frisina,

RE: T. Eaton Records, Winnipeg Store, Portage Ave.

Please consider this my request for a letter of permission to copy the above-mentioned records for research purposes.

I am currently a graduate student with the Faculty of Architecture, University of Manitoba, Landscape. The Eaton Building, 320 Portage Avenue, Winnipeg, is my thesis project. The proposal represents a study in Urban Fabric to create a mixed use project to revitalize the downtown core of Winnipeg. Programming will include light commercial, entertainment, office space, housing and atria leading onto roof gardens. In order to complete my project it is of utmost importance that I acquire original drawings.

I would greatly appreciate your grant of permission to copy the required drawings from the Archives of Ontario. Included in the set are the following: Winnipeg Drawing Site Plan, Winnipeg Drawing Key Plan, Winnipeg Property Company Property Plan, Winnipeg Property Main Store Plan, Winnipeg Property Building Perspective Site Plan, (all 500 series), Winnipeg Property Building Perspective approx. Ca. 1918 (300 series), and from the textual records Winnipeg Building Construction Floor Plan, Winnipeg Building Construction Floor Plan (1935-1936), Winnipeg Building (appears to be 6th floor Plan), Winnipeg Building Basement Plan (1935-1936) which represent changes in the building.

Thank you for your anticipated cooperation in this matter and a speedy reply would be extremely appreciated.

Kathleen Bolton



EXECUTIVE OFFICES

July 31, 2001

Ms. Kathleen Bolton
Apt 212-2965 Pembina Highway
Winnipeg, Manitoba
R3T 2H5

Dear Ms. Bolton:

RE: T. Eaton Records, Winnipeg Store

This will acknowledge receipt of your letter of June 29, 2001 addressed to Mr. Salvatore
Frisina of Sears Canada Inc.

This letter will provide you with permission to copy the drawings noted in your letter of
June 29, 2001 for research purposes.

We trust this is satisfactory.

Yours very truly,

SEARS CANADA INC.

Sharon M. Landry
Manager, Trade-marks
and Administrative Services
Legal Services - D/766
Phone: (416) 941-3481
Fax: (416) 941-2321

SML:nmb

Apt. 212, 2965 Pembina Hwy,
Winnipeg, Man. R3T 2H5
September 26, 2001.

Insurance Advisors Organization,
Room 303,
428 Portage Ave.,
Winnipeg, Manitoba.

ATTENTION: Mr. Richard Adey.

Dear Mr. Addie,

RE: Insurance Reports, Eaton Building, Thesis Material.

My name is Kathleen Bolton, and I am currently a student with the Faculty of Architecture, University of Manitoba. My thesis is the Eaton Building - I have been working on this since January of 2000 but only in earnest since March of 2001. I have been to the Eaton Archives in Toronto, Ontario and have accessed several thousand files of which will prove to be immense help in my research.

Currently I am in the process of making sure that I have not missed any information that may be relevant to my thesis, my reason for contacting you. Ms. Kara Kwan of the Provincial Archives of Manitoba has informed me that I require written permission to copy any insurance records for research purposes. The sheets that I am requesting are as follows: involving three series of time periods - Sheet 105, Vol 1., 1918, with Revisions Jan. 1927, and Dec. 1955.

Thank you for assistance in this matter. Kara has also advised me that you may fax the letter of authorization to her directly,
Should you require any further information from myself
you may contact me :

Sincerely

Kathleen Bolton

IAO Commercial & Residential Risk Services

A Division of Insurers' Advisory Organization (1989) Inc.

September 27, 2001

Kathleen Bolton
Faculty of Architecture (student)
University of Manitoba
Winnipeg MB

Dear Kathleen:

RE: Use of IAO Fire Insurance Maps

Regarding your email of September 26th, I have the following comments on the above referenced subject being our Sheet #105 of our plans dated 1918, 1927 and 1955 for the City of Winnipeg.

We have no objection to you or your representatives using the maps for the purpose mentioned in your letter. This permission is granted on the understanding that use of the maps by you or your agents is for non-commercial purposes and that the following acknowledgement is made:

"Reproduced with the permission of Insurers' Advisory Organization Inc.
who are copyright holders of these plans."

Please feel free to give me a call if you have any questions or require further clarification of our position.

Yours truly,

Richard Adey
Winnipeg Customer Service Centre

CC: Kara Kwan, Manitoba Provincial Archives

RA:lg

PHOENIX RISING

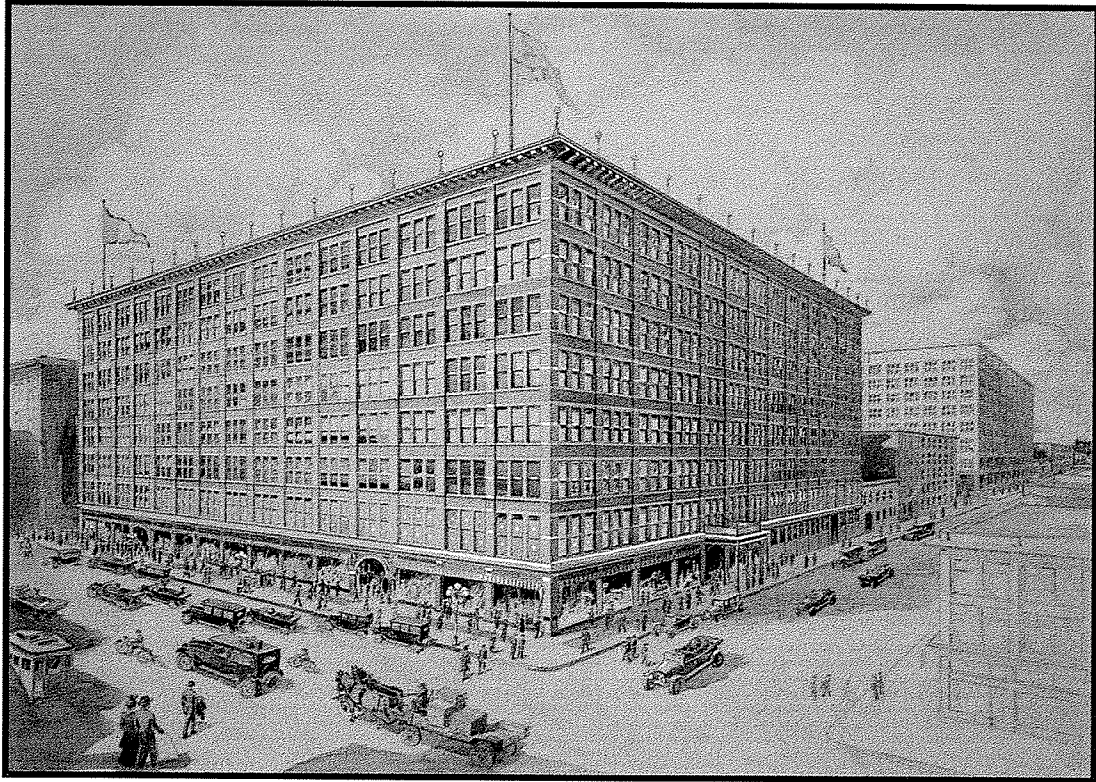


Photo of Original Drawing C. Woodburn, c.1929, 36x48 pencil and watercolor on paper, Eaton Archives, Province of Ontario with permission from Sears Canada Corporation.

EATON GARDENS

A CASE STUDY OF A FORMER RETAIL PROPERTY –A REDESIGN PROTOTYPE FOR REVITALIZATION OF AN URBAN CORE

PHOENIX RISING

Eaton Gardens

**A Case Study of a Former Retail Property –
A Redesign Prototype for
Revitalization of an Urban Core**

By

KATHLEEN MARIE BOLTON
BSc, ARCT, BFA

A Practicum
Presented to the University of Manitoba
In partial fulfillment of the
Requirements of the degree of
Masters of Landscape Architecture
In
The Department of Landscape Architecture, Faculty of Architecture, University of
Manitoba

Winnipeg, Manitoba, (c)Kathleen Marie Bolton 2002



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PHOENIX RISING
EATON GARDENS
A CASE STUDY OF A FORMER RETAIL PROPERTY –
A REDESIGN PROTOTYPE FOR
REVITALIZATION OF AN URBAN CORE

BY

KATHLEEN MARIE BOLTON
BSc, ARCT, BFA

A Practicum submitted to the Faculty of Graduate Studies
Of the University of Manitoba in partial fulfillment of the
Requirements of the degree of

MASTER OF LANDSCAPE ARCHITECTURE

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be printed or otherwise reproduced without the author's submission.

Posthumously To

Professor Carl R. Nelson Jr. who passed away August 17, 2002. Over the three years I was associated with Professor Nelson he was there as a friend, mentor, teacher, practicum chair and advisor. He opened his mind and heart to accept my practicum when he was extremely busy, and, was unfortunately unable to see the project to completion...

Professor Nelson -

... used to ride a 'doodle bug' when he went to MIT... (I have a drawing hiding in a file)

... designed the Fort Whyte Centre...

... loved his wife and family and talked about them all the time even when we were "having a crit"...

... was always ready to have a cappuccino with a student....

... always drawing on the student's drawings.....

... appreciated the landscape...

... enjoyed watercolors... and woodworking....

"What did you do that for?"

Thank you for teaching me to think

This one is for you.

ABSTRACT

The downtown core of many North America cities is currently undergoing a transition. What was once a vibrant hub of activities is increasingly becoming stagnant and devoid of activity producing urban blight. Given the fact that demographics have drastically changed since the invention of the automobile and in particular in the last century, urban core areas have changed and the CBD has shifted. Cities have become a conglomeration of suburbs and malls, which may or may not be effective, but leave the downtown area increasingly empty. Effective reuse of space is a very real issue.

As economics change and large retail organizations cease to exist, they leave empty buildings. Since many of these buildings represent the heritage of the downtown area, they once again present opportunities for the city. This study begins with a review of the issues involved in the redevelopment of a downtown area. The summarized review covers physical planning involved in gentrification, market housing, loft housing, infill housing and the policies for promoting development in the downtown core.

The first goal for a redevelopment in the downtown area is to provide an integrated systems approach to the case study. The Landscape Architect's contribution is through climate-sensitive design – cost effective solar heating, creating favorable microclimate within the building context. Effective use of former retail space converted to a mixed-use –commercial, office and housing space with emphasis on the solar gain from the photovoltaic cells within the roof structure. The microenvironment of the atrium is the major area of concentration involving the possibilities of how the building reacts with the environment. As the study evolved a roof garden emerged.

The reuse of an empty retail building as a multi-use complex promotes energy conservation simply by reducing the extensive use of the automobile. Parking is a major consideration in any urban design and can easily be accommodated with the parking arrangements that are currently attached to the Eaton building. A major portion of the design criteria deals with the public open space throughout the property.

PREFACE

Events not to be controlled have prevented me from making any serious effort in what under happier circumstances would have been the field of my choice...

- Edgar Allan Poe

This practicum began in January 2000 with a brief proposal and a few introductory contacts. The Eaton building and property was currently empty and presented an opportunity for a unique housing development.

During the process of the following years I personally attended all three case studies, toured the buildings and surrounding areas. Thereafter, I contacted related experts in their fields and architectural firms. Extensive research was conducted at the Eaton Archives, which are currently housed at the Provincial Archives in the Province of Ontario. Further research was done at the City of Winnipeg Archives. Permission was required, requested and granted for access to original drawings for educational purposes.

The key objective for this practicum was a housing project. Market infill housing was researched for North American Cities. Density for the City of Winnipeg was investigated. The Eaton building presented a feasible opportunity for a mixed-use project.

The building envelope dictated the program and the prototype involved an integrated system approach. Ecologically an open courtyard, atria, interior landscape fountain systems, and roof gardens were incorporated to create public open space for the tenants.

Unfortunately since the conception to completion of this practicum, the Eaton building is now in the process of being demolished.

Time waits for no man.

- Author unknown

ACKNOWLEDGEMENTS

In recognition of their insight and helpful advice, I wish to thank my practicum committee: committee chairman – Professor Charles H. Thomsen Department of Landscape Architecture, University of Manitoba; for stepping in and keeping the momentum of my project going under extreme circumstances, and advisors – Professor Alan Tate, Department of Landscape Architecture, University of Manitoba, for coming on board a quasi completed practicum and Mr. Dudley Thompson, Prairie Architects Inc., Winnipeg, Manitoba.

This practicum began with a brief proposal in January 2000 that was mentioned in passing to Professor Ted McLachlan, Department of Landscape Architecture, University of Manitoba, who directed me to Professor Carl R. Nelson. Thank you for this advice.

I would also like to acknowledge the helpful information given to me by the following experts in the respective fields: Professor Alex Rattray, formerly of Department of Landscape Architecture, University of Manitoba, for counseling me before entering graduate studies, Professor Richard Perron, Department of Landscape Architecture, University of Manitoba, for his sense of humour, Dr. Dan Nuttall, Department of Landscape Architecture, University of Manitoba, for allowing me to assist at Field Ecology, Mr. Doug Clark, Downtown Winnipeg Biz City of Winnipeg, for the insight for this particular practicum, Mr. Stan Hutton, Senior Urban Designer, City of Winnipeg, Property and Development Services Department Planning and Land Use Division, Mr. Greg Hasiuk, Number 10 Architects, Ms. Shelley Bruce, Historical Buildings Officer, City of Winnipeg, Planning, Property and Development Department, Planning and Land Use, Mr. Giles Bugailiskis, Senior Planner, Heritage, City of Winnipeg, Planning Property and Development Department, Planning and Land Use Division, Mr. Ed Wilmott, City of Winnipeg, Planning Property and Development, Planning and Land Use Division, Mr. Rick Enns, City of Winnipeg, Planning, Property and Development, Mr. Jacob Austrug, Ziedler Roberts Architects, Toronto, Ontario, Ms. Danna L. Locke, Senior Project Officer, Development Services, BC Housing, Vancouver, BC, Davidson, Yuen & Simpson,

Architectural Firm, Vancouver, BC, United Properties, and Ms. Sonja M. Breyfogle associate, Minneapolis, Minnesota, Mr. Martin Krawitz formerly of Emerald Property Management, Mr. Curtis Fortowsky, Emerald Property Management, Winnipeg, Manitoba, Ms. Christine Bourolias, Archivist, Archives of Ontario, Toronto, Ontario, Winnipeg City Archives, Ms. Kara Kwan, Manitoba Provincial Archives, Mr. Rodney McDonald of CIER, Winnipeg, Manitoba, Legislative Library, Manitoba Heritage Society, City of Winnipeg Historical Society, Mr. Richard Addie, Insurance Advisors Organization, Winnipeg, Manitoba, Azon Publications for numerous print jobs and in particular for printing gray scales on mylar which theoretically cannot be done, Professor Terry Walker and the staff in the Cadlab for plotting numerous boards for me, to the library and office staff for their help when called upon, Ron Pearsman in the woodshop, Ms. Heidi Smithson, University of Regina for editing when she should have been writing, the management, staff and friends at Home Depot and McDiarmid Lumber for allowing me to work eccentric hours while completing the first four years of my graduate studies.

I would also like to thank my family, to Carl and Eleanor Miller for instilling in me an appreciation for the landscape and a 'love of land and nature', Carlan Grant Miller, a future architect, and Catherine Josephine Miller, my little munchkins for always wanting Auntie Kathy to come home, to Murray 'super tech and confident', to Maiclaire my little 'golden girl', to Shawn, Judy and especially to *Jessica Paige*, my 'little angel', may she one day experience an integrated roof garden system.

There are always a number of class colleagues that require a thank you and although I am not a 'studio' person I do wish to thank fellow students and in particular Dennis Kwan and Melanie Johnson Kwan for insight since the passing of Professor Nelson. To Ruth, longtime friend and former colleague in my professional volunteer days, who has listened with patience and support since the beginning of the first of four degrees and although believes she has three children probably has a fourth when we all start checking in at the end of a very stressful academic week and - if angels walk among us - for keeping me out of 'harms way'. Thank you.

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Until lately the best thing that I was able to think of in favor of civilization, apart from blind acceptance of the order of the universe, was that it made possible the artist, the poet, the philosopher, and the man of science. But I think that is not the greatest thing. Now I believe that the greatest thing is a matter that comes directly home to us all. When it is said that we are too much occupied with the means of living to live, I answer that the chief worth of civilization is just that it makes the means of living more complex; that it calls for great and combined intellectual efforts, instead of simple, uncoordinated ones, in order that the crowd may be fed and clothed and housed and moved from place to place because more complex and intense intellectual efforts mean a fuller and richer life. They mean more life. Life is an end in itself, and the only question as to whether it is worth living is whether you have enough of it. I will add but a word. We are all very near despair. The sheathing that floats us over its waves is compounded of hope, faith in the unexplainable worth and sure issue of effort, and the deep, subconscious content which comes from the exercise of our powers...

Oliver Wendell Holmes, Jr.



Photo No. 00 Downtown Winnipeg Eaton building in the foreground Photo compliments of Emerald Property (2000).

INTRODUCTION

*"The Garden is the paradise of nature,
And the City is the paradise of culture.
Or at least it could be...
Today, both are out of balance.*

*If we build the ecocity we will regain
The Garden and finally aspire to the full
Ideal of the City---the City built with,
Not against, nature.*

*Then, when we hold in reverence
that which we cannot build, which is given to us by
The Earth herself, we will create not just
A home for ourselves but a future
For all who follow"*

*--Richard Register
Ecocity Berkeley: Building Cities in Balance with nature
For a Healthy Future (1943)*



Photo No 0.2

Source: Jeffrey, Stanton, *Habitat 67*.

Introduction

There is emerging amongst some architects, a new way of thinking about how the built environment can be created. It embodies an ecological awareness, a systems understanding or holism and it incorporates participating procedures

-Warwick Fox, Bob Fowles, *Ethics and the Built Environment*, (2000).

The ecological planning method is primarily a procedure for studying the biophysical and sociocultural systems of a place to reveal where specific land uses may be best practiced

-Fredrick Steiner, *The Living Landscape An Ecological Approach to Landscape Planning*, (1991).

This practicum design rationale supports an appropriate level of detail for the design process required to address the issues of mixed-use development for the Eaton building and surrounding property.

The Winnipeg core is suffering from decline driven by urban sprawl supported by a joint effort of city council and land developers and the development of regional shopping centers. Currently, there is an abundance of vacant and underutilized property in the downtown core of Winnipeg. Many of the current businesses are marginal retail and do not promote downtown shopping. A consolidation and renewal of the downtown property is required to promote revitalization of Winnipeg's urban core.

When developing a redesign for the downtown core, historical market housing, developing a locational sense of place, and developing a workplace as living space could be considered. The background for this document outlines issues driving mixed use and ecological design. There are many considerations including the health, safety and welfare, as well as the needs of client user group. Security and space organization are primary considerations.

Assuming that Winnipeg is on the verge of coming out of economic decline and with the inclusion of the downtown area, the Eaton building is an ideal location to investigate revitalizing the downtown area. The case study becomes the Eaton building and adjacent Eaton property. This study is a physical feasibility study that could provide an integrated system approach to a landscape design for a former retail building and property. It could create a green environment within the building.

Chapter One presents the pre-design process including the site analysis and planning context. The program is developed with the case study of the Eaton building in Winnipeg, Manitoba. The development of the atrium and courtyard sections present ecological design considerations. The practicum is based on the belief that the Eaton

building could have provided a prototype for revitalization in the downtown of other North American cities.

Chapter Two introduces the background and problem and reasons for this particular case study. The intent, scope and limitations and study content are presented. Chapter Three discusses the design principles within the context of the study. Chapters four, five, and six present the case studies and proposals for the redevelopment of the site. A case study approach to the programming is supported and outlined. Figure 0.1 shows the location of the Eaton building and property in the context of the downtown study core area.

City center 'neighbourhood' is often accessible to public transit and close to employment centres. In this case, direct routes can access the connection between the University of Winnipeg, Red River College, and the Health Sciences Centre. The Eaton property is on the main bus route as well as central on the connecting bridges. Providing diverse housing could promote the possibility of attracting more people to the downtown core. Although inner-city schooling can be problematic, there is still the potential market for single people, the young, empty nesters or gay couples, couples without children, and the elderly.

Market infill housing could offer a potential for sustainable community development. It could encourage long-term investment by increasing market value. Redevelopment in the form of market housing could generate an increase in long-term tax revenues. By supporting building restoration, trade, retail, and the service industries, market housing could create employment. Potentially it could provide new commercial opportunities. Market housing could provide new opportunities for housing within and adjacent to the area while providing improved housing for existing residents. The reuse of the Eaton building could create a viable community while retaining the heritage fabric of the downtown core.

Although there are many possible positive effects from a redevelopment proposal of this type there could be some adverse effects included which is displacement of poorer families. Statistics show that currently in the immediate vicinity of the Eaton property there are only approximately nine hundred residents (Thomas Mcleod). The possibility of creating a viable housing community within the Eaton property outweighs

any displacement that could occur. Gentrification could possibly occur but human presence in the downtown core is a strong determinant for revitalization.

Market dynamics driving residential development differ from city to city. The potential for infill housing is greater in urban areas where the demand for housing is generally strong and prices for housing are high, relative to incomes.

The city is the real and symbolic centre of the region, the physical embodiment of the city's history, character, and business reputation; the centre can be a source of civic pride or of embarrassment to all area citizens. Within the context of the historic centre of the city stand the architecturally distinctive buildings, monuments and plazas that evoke a city's unique history and character

-Diane Suchman, *Developing Infill Housing in Inner-city Neighborhoods, Opportunities and Strategies*, (1997).

The Eaton building and property could be part of this historic character. Taking housing back to the downtown area could increase the public participation and could motivate the use of public open space.

A good mingling of the old buildings must remain and in remaining they will have become something more than mere decay from the past or evidence of previous failure. They will have become the shelters, which is necessary, and valuable to the district, for many varieties of middling, low and no-yield diversity. The economic value of new buildings is replaceable in cities. It is replaceable by the spending of more construction money. But the economic value of old buildings is irreplaceable at will. It is created by time. This economic requisite for diversity is a requisite that vital city neighborhoods can only inherit, and then sustain over the years

- Jane Jacobs, *The Death and Life of Great American Cities*, 1961.

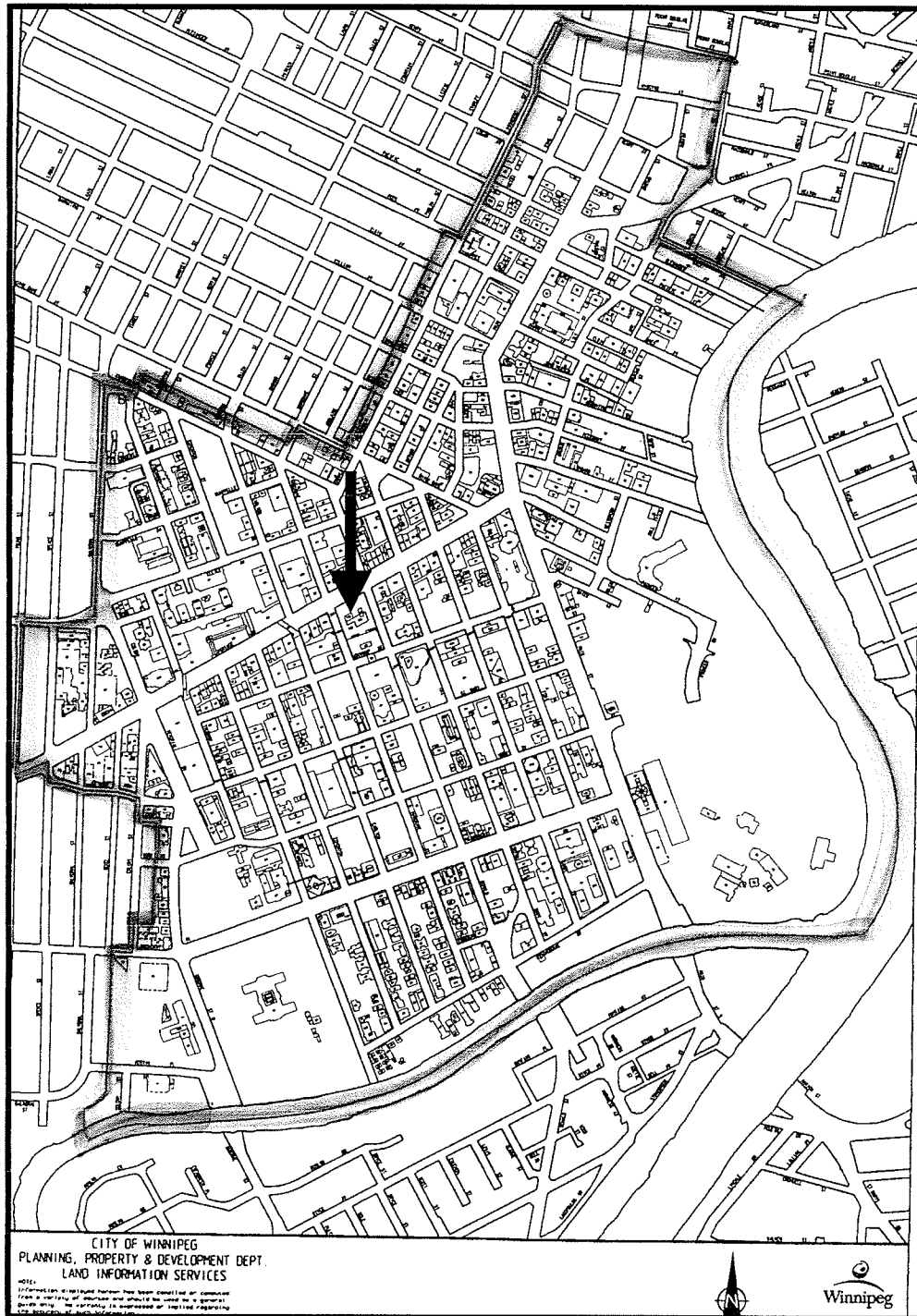


Figure 0.1 Plan of Downtown Winnipeg Study Area and Eaton Property (2001)
Source: City of Winnipeg, Planning, Property, & Development Dept.

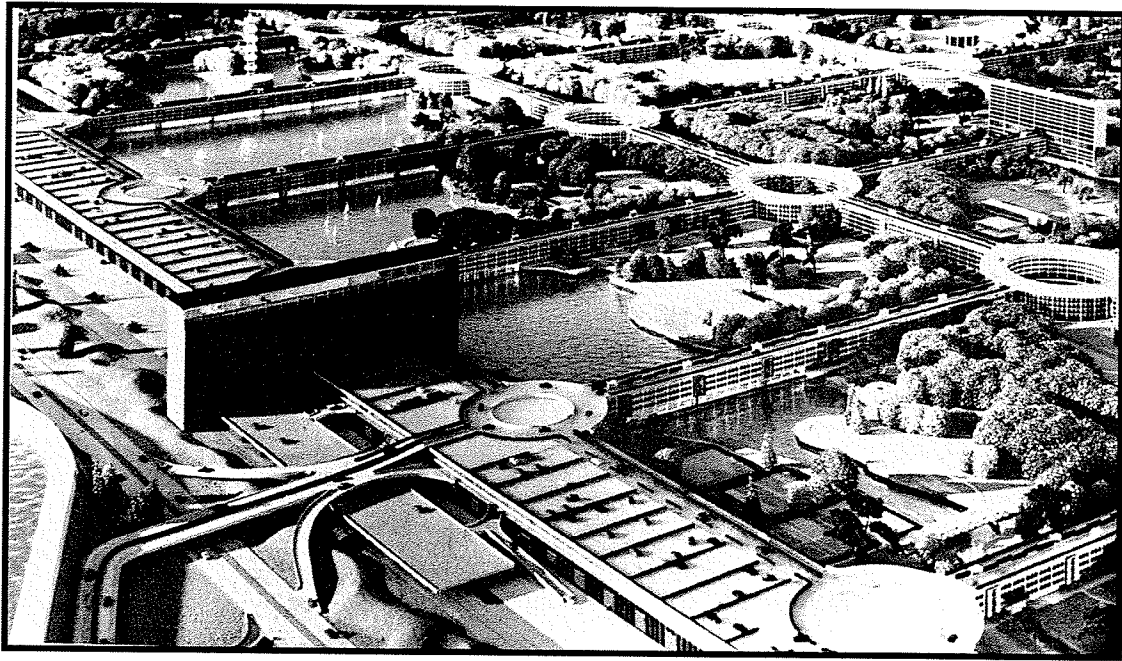


Photo No.1.0 Motopia, Source: Geoffrey Jellicoe, *Motopia; a study in the evolution of urban landscape*, 1961.

1.0 PRE-DESIGN STAGE

1.1 Introduction

To develop an understanding of contemporary cities and their relationship to the natural environment, it is important to note that cities are not simply ecological spaces and social domination by capital.

In respect to ecological forces, various types of plant and animal life attempt to reclaim ecological space in such places as cracks in the pavement and abandoned lots – birds, raccoons, and insects adapt to the human-built environment – while earthquakes, storms, and other natural disasters also modify cities. In respect to social forces organizations concerned with a wide range of social-justice and ecological issues attempt to reproduce spatial forms that promote equitable social and ecological relations among people and between people and the natural environment. Capital requires the control of urban space and the destruction of ecological space

- Doug Aberley, *Futures by Design, The Practice of Ecological Planning*, (1994).

City dwellers then become agents who seek to transform their spaces into environmentally and socially sustainable cities.

1.2 SITE ANALYSIS

1.2.a. Geographical Location

The T. Eaton building is geographically located at Latitude - North 49.53
Longitude – West – 57.09, 320 Portage Avenue, Winnipeg, Manitoba.

1.2.b. Geotechnical Information

Geological research from The Geological Engineering Report for Urban Development of Winnipeg as done by Baracos, Shields, and Kjartanson indicates the following information relevant to this project.

Geology is applicable to many aspects of urban development because in any physical environment, the overall interdependent natural systems are built on the geologic framework. The need for effective land use planning to ensure the orderly development of urban centres has created a much greater demand for geologic information

-Kathol and McPherson quoted in *Geological Engineering Report for Urban Development of Winnipeg*, (1983).

The Winnipeg area is situated at the confluence of the Red and Assiniboine Rivers, in the broad plain of the Red River valley. A portion of this plain has been formed by erosion. Bedrock mantled with till and glaciofluvial deposits of sand and gravel typically project from the plain.

Stratigraphically, Winnipeg is located on the northeast fringe of a sequence of gently dipping sedimentary rock units which overlay Precambrian basement rocks (Render, 1970). Preservations occur in the Paleozoic strata in the form of erosion wedges overlying younger formations. The Manitoba escarpment, the first major topographical break west of Winnipeg, was formed mainly because of the more durable, siliceous shale caprock that protected the softer underlying formations.

According to Teller, (1976), when the glaciers retreated northward for the last time about 13,500 years ago, they created a lake basin between the ice front, the Manitoba escarpment, and the heights of land to the east in north-western Ontario and to the south in Minnesota. Thus, the pro-glacial Lake Agassiz was formed. In a complex series of advances and retreats of the ice margin, near the Winnipeg area much of the time, water-laid tills were deposited directly on the bedrock surface or over dense basal tills. Glaciolacustrine silty clays and silts, containing frequent ice rated materials in the lower sections followed this. Extensive glaciofluvial deposits, such as the Birds Hill complex, were also laid down during this time.

With time, Lake Agassiz levels gradually dropped and the land began to emerge. Beach ridges to the north of Winnipeg mark successive stages of lake drainage. Silts and fine sands were deposited over the earlier lake deposits. Aerial photographs show where icebergs left scour patterns in the form of deposits as they scraped the lake bottom.

The average thickness of the surficial deposits in the Winnipeg area is from 15m. to 21m (50 feet to 70 feet). In recent times, changes have involved natural river erosion and the formation of alluvial deposits, as well as the formation of swamp lands in lower lying or depressional areas, due mainly to the poor drainage characteristics of the lake bottom sediments.

An extensive confined aquifer occurs in the fractured and jointed upper 15 m (50 feet) of the bedrock underlying the Winnipeg area. The recharge areas are located in the uplands along the borders of the Red River Basin. The major aquifer underlying the Winnipeg area, called the upper carbonate aquifer, occurs in the top 15m to 30m (50 ft

to 100 ft) of the Paleozoic limestone and dolomite. The aquifer is partially confined above by the glacial drift and below by the slightly pervious underlying carbonate rock. In western Winnipeg major water flow zones occur in the central segments of the carbonate rock. These aquifer zones have generally been included within the upper carbonate aquifer but could properly be named the Middle Carbonate aquifer. A relatively minor aquifer, called the Lower Carbonate aquifer, occurs in the bottom 7.5m to 15m of the Red River formation, along the contact with the upper shale unit of the Winnipeg formation. The Winnipeg formation contains an Upper Sandstone aquifer, 6m to 12m thick, and a Lower Sandstone aquifer 3m thick. Both of the sandstone aquifers contain saline water. Recharge occurs through the glacial till and glaciofluvial deposits located in the uplands along the border of the Red River Basin and in the Birds Hill, Manitoba.

During the early development of Winnipeg, the Upper Carbonate aquifer was an important source of municipal and industrial water. From 1900 to 1919 pumpage from the aquifer fulfilled the water requirements of the first city-owned water system. Groundwater usage declined dramatically following the opening of the Lake of the Woods aqueduct in 1919. Subsequently the pumpage has risen steadily because of private well development. The 1980 estimated annual pumpage of 111.8 billion liters (1.6 billion gallons) per year is approximately fifteen percent of the total annual water consumption for the metropolitan Winnipeg area. Because of its constant low temperature, groundwater is mainly used for commercial and industrial cooling.

A number of the cooling systems recharge the spent water to the aquifer by means of a return well. During the late 1970's interest occurred in using the groundwater for heating purposes. The heating systems withdraw heat energy from the well water by the heat pump method and return the spent water to the aquifer. Two successful heat pump systems are still operating in the Winnipeg area. There are ninety commercial wells operating in the city (Baracos, et.al.). The Eaton building was no exception; the first well drilled was in the upper aquifer in 1912 and the second well drilled in 1936 was in the second aquifer (Eaton Archives Text Document).

Winnipeg lies in the zero seismic zone but the geology and environmental conditions affect the design and construction of underground works and excavations; however, soil and groundwater water conditions require special attention to excavation,

foundation design, tunneling and site location with respect to rivers and streams. This special attention is reflected in regulatory and design requirements. In the case of the Eaton building, Annex, and Powerhouse, no excavation design is being considered in this study except in the form of the fountain system. The site selected does not lie in the flood zone.

1.2.c. Climatic considerations

Climatic considerations include the mean annual temperature and mean annual rainfall. Considering the fact that part of the development of the site will include roof top development in the form of atria and roof gardens, one must consider the environment from that perspective. Extreme winter temperatures accompanied with the north; northeast winds and drifting snow on the prairies present a particular situation for the development of the roof area.

Temperature varies over wide extremes through the year. Temperature ranges from a mean of -15 deg.C in January to 22 deg.C in July. The average date of last frost in spring is May 25 and the first frost in fall is September 21, giving an average frost-free period of 118 days. The average period during which the area experiences killing frost (0 deg.C) is 131 days. The average date of the break-up of the Red River is April 9 and the average date of freeze-up is November 26. July has the brightest sunshine with 320 hours and December the least with 81 hours. Average snowfall is 132mm. with precipitation of 53mm. annually. Most of this precipitation falls as heavy showers, sometimes referred to as deluge rains, during the summer months from April to October. Thunderstorm activity reaches a peak during July, but hail is infrequent in the area. (Annual Meteorological Summary – Winnipeg, Manitoba Atmospheric Environment Service Environment Canada). Due to the restrictions of building mass around the courtyard and the roof top garden plaza area the of the Eaton building proposal, sun angles are particularly important for planting material in courtyards and on roof gardens. Figure 1.0 shows the sun angle charts for the Winnipeg area. There will be further discussion in chapter six.

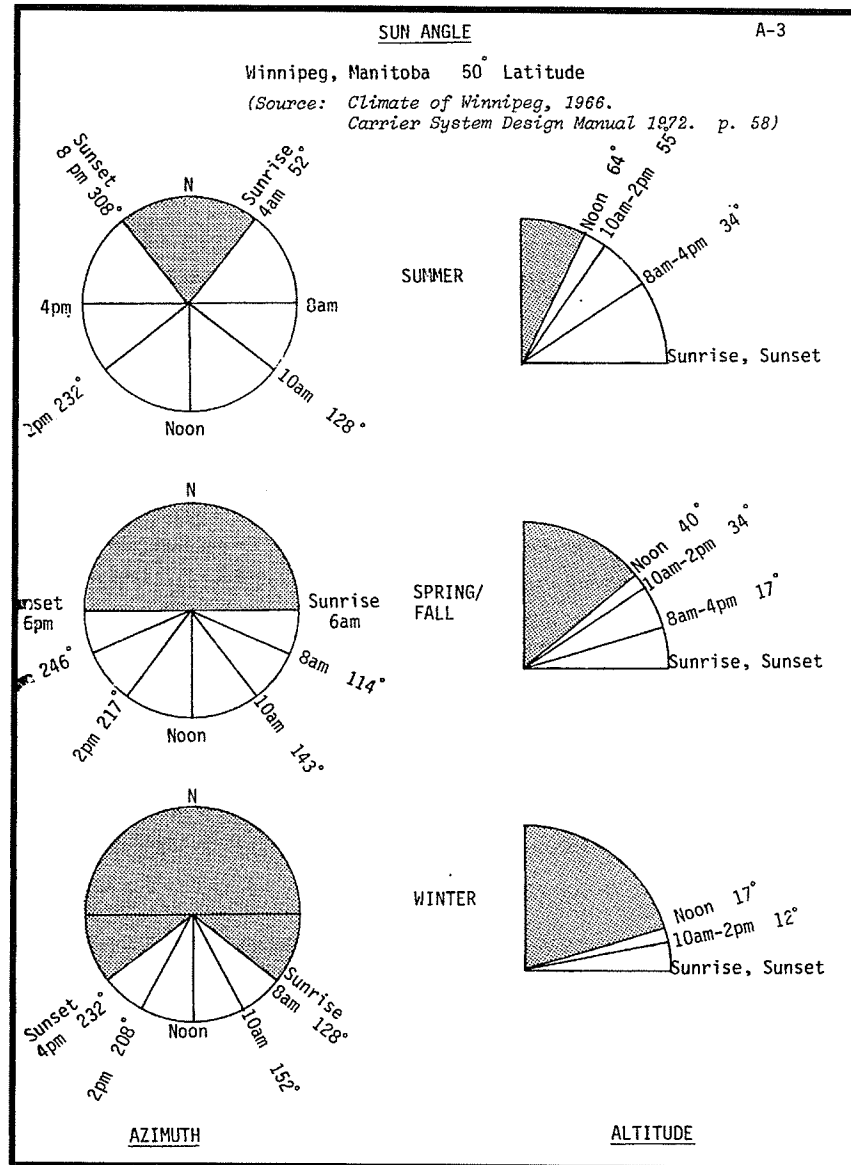


Figure 1.0 Source: *Climate of Winnipeg, 1966 Carrier system Design Manual 1972, p.58*. in Lee, Ting (1982).

1.2.d. Circulation and Parking

Parking and circulation within the immediate area of the Eaton property is shown in Figure 1.1. There are a total of 1269 parking spaces attached to the Eaton property. Connections via skywalks are shown together in Figure 1.1 with existing walkway, proposed walkway and parking. The Eaton property is directly connected to the rest of the immediate downtown area.

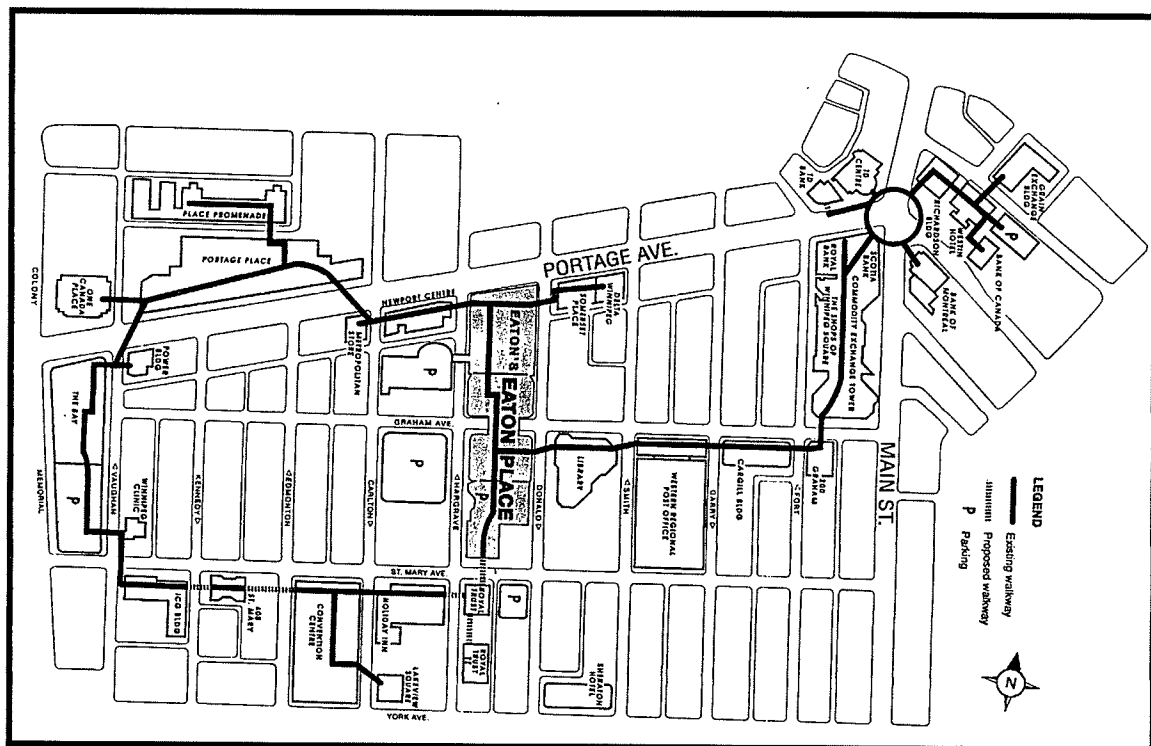


Figure 1.1 Circulation and Parking Source: Compliments of Emerald Properties Management, (2000).

In the entire downtown parking system, CentrePlan (1991) states that there are 16,802 parking spaces in parking structures, 18,606 in surface lots and 2,011 on street metered parking spots. Figure 1.2 shows the location and type of downtown parking in the immediate are of the study site.

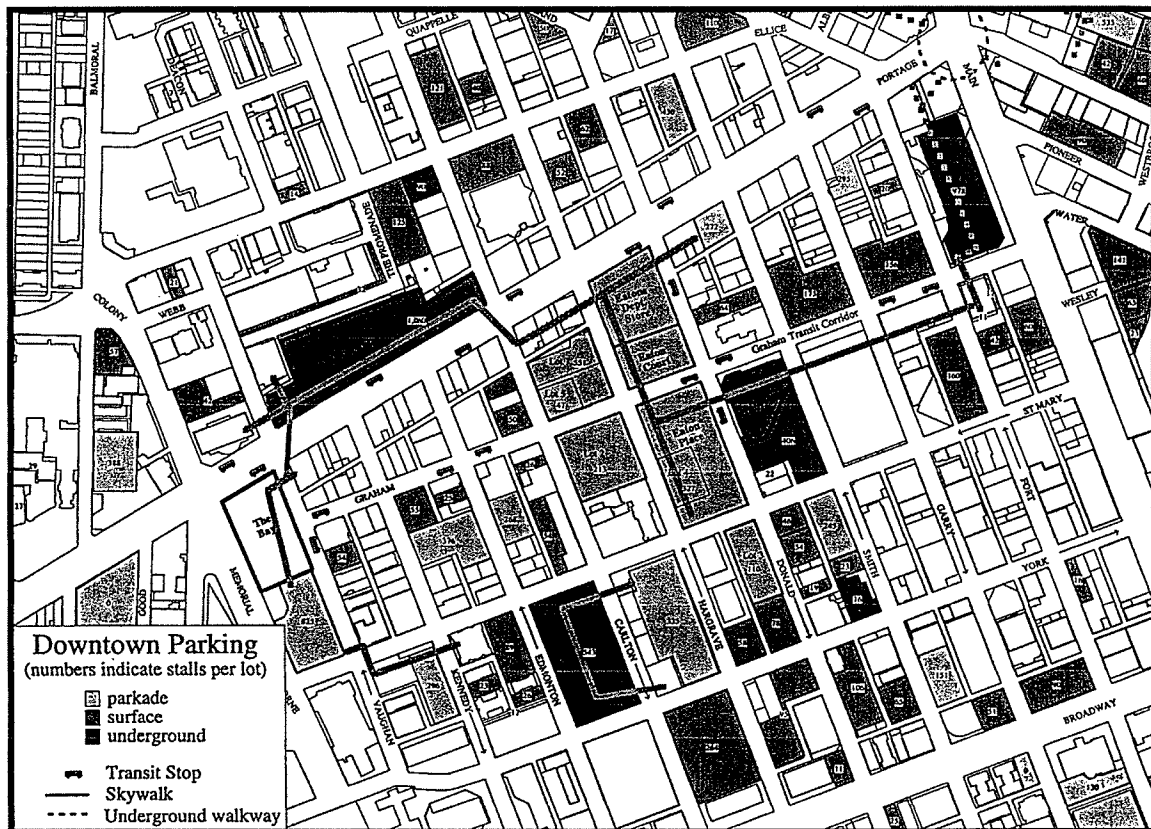


Figure 1.2

Downtown Parking Source: Emerald Property/City of Winnipeg (2000)

1.2.e. Surrounding Neighborhoods

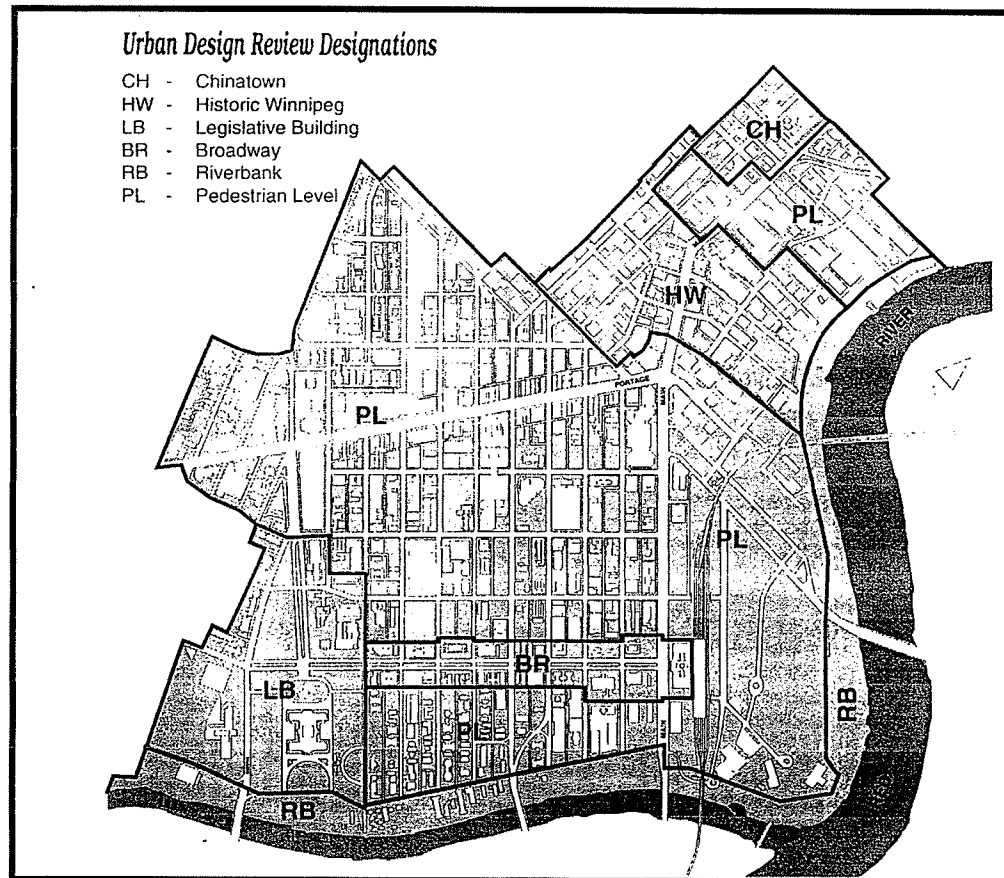


Figure 1.3 Surrounding Neighbourhoods Source: CentrePlan, City of Winnipeg (1991)

City of Winnipeg By-law #4800 (which is currently under review) designates five recognizable “character” areas surrounding The Eaton property, each of which is a thematic unit. These are: Broadway –BR for use/setback, Chinatown – CH for ethnicity, Historic Winnipeg – HW for building age – including The Exchange District, Legislative – LB for ownership and materials, Riverbank –RB for natural environment part of which includes The Forks area, and the non-descript areas of the downtown collectively have been designated as Pedestrian Level – PL. The Forks is also included in the pedestrian level areas (CentrePlan).

1.2.f. History of the Eaton property.



Photo No. 1.1 Eaton Archives Province of Ontario with permission from Sears Canada Corporation, c.1904.

In 1904 the site for the Eaton building was decided on and is shown in Photo No. 1.1. It is located on the corner of Portage and Hargrave, and Portage and Donald. John Woodman of the Woodman and Cubbidge Architectural Firm, Winnipeg, was chosen to design the building.

John Woodman, originally from Oshawa, Ontario, was born in 1860 and came to Winnipeg with the Canadian Pacific Railway (CPR) in 1880. Thereafter, he became the chief engineer of the western division by the late 1890's. He also worked for the Northern Pacific and Manitoba Railway as an engineer and superintendent of construction. In 1901 he retired from the railway to establish a private practice. He was a pioneer in the new technique of reinforced concrete construction that was new to the City of Winnipeg. This building technology was, however, already being used extensively throughout North America. This was one of the deciding factors in the selection of the architect for the Eaton Building. From 1904 – 1920 he was also one of the Hudson Bay Company's principal architects.

In 1911, John Woodman formed a partnership with Raymond Carey when they designed many structures in Winnipeg and the surrounding area. In 1917 Woodman entered a new partnership with AE Cubbidge. He retired from practice in 1927 and died in Winnipeg in 1944. (Giles Bugailiskis, Senior Planner, City of Winnipeg).

John Woodman designed many other projects including the Northern Pacific and Manitoba Railway Engine House; The Forks, Allen or Wilson Building, 288 McDermot Ave.; 1905; Sommerset Building, 294 Portage Ave., 1906; Breadalbane Apartments, 379 Hargrave St., 1909; The Hudsons Bay Company Wholesale Building, 77-93 Main St., 1911; the Lindsay Building 228 Notre Dame, 1911 addition in 1912 to name a few.

1904: Photo No. 1.2 shows the Southeast corner Portage Avenue and Hargrave Street one week after the sod turning ceremony. These buildings disappeared within two weeks after the photo was taken.

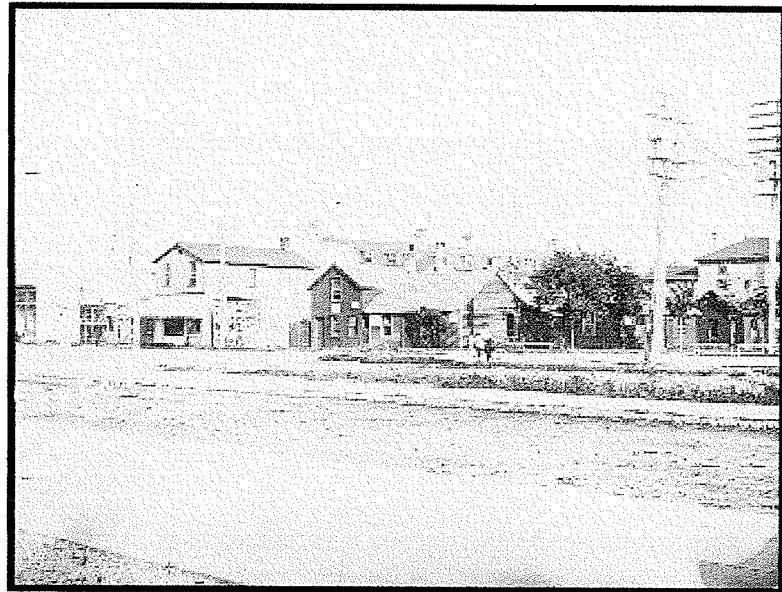


Photo No. 1.2 (Ryder Family Fonds Album, Eaton Archives, Provincial Archives of Ontario c.1904).

Photo No.1.3 shows Donald Street looking north next to Strevel Mansion (1882-1890), the Eaton Store is in the background. The Strevel Mansion (1881-1890) was used as executive offices in 1904-1905.

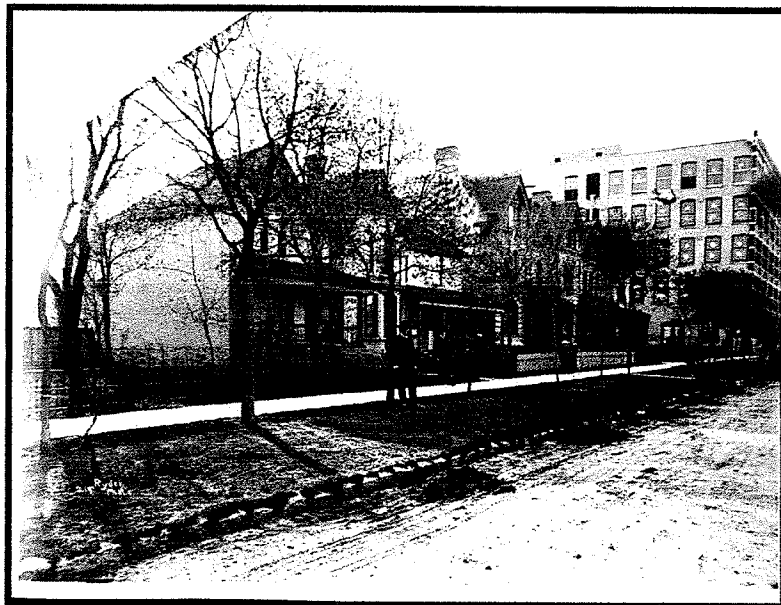


Photo No. 1.3 Donald Street, Eaton Archives, Province of Ontario, c.1904

**1.2.g. Construction of the Eaton
building.**

July 27, 1904: at 7:00 a.m.
the first sod was turned on
the property and basement
excavation began with
numerous men digging
the Manitoba gumbo. It was
hauled away by horse-drawn
wagons (Winnipeg
Real Estate News, Friday
March 7, 1997).

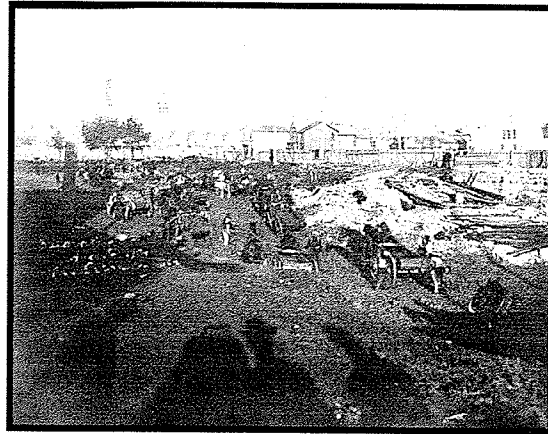


Photo No. 1.4 Moving Manitoba Gumbo

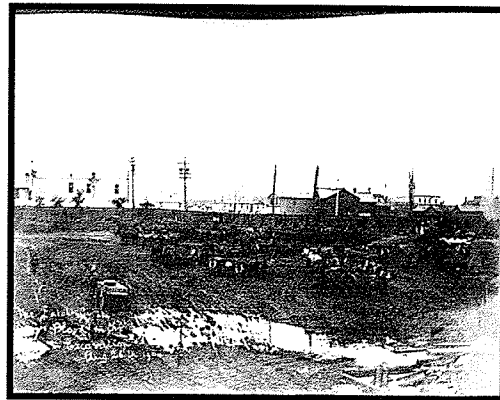


Photo No. 1.5 Teams and Horses

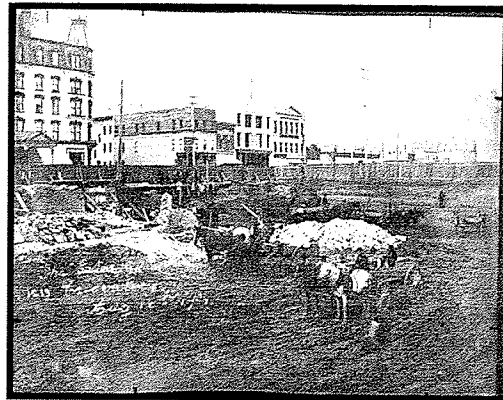


Photo No. 1.6 Moving Manitoba Gumbo

A huge Pioneer tractor owned by RD Lang of Stonewall, Manitoba, one of the largest tractors in Winnipeg in 1904, was contracted by the T. Eaton Company to help do the work (Contacts Magazine, November 1999, Journal). In the beginning, sod was moved at a rate of 800 loads per day. This increased to 29,000 loads of mud per day by the end of the excavation.

(Photos from Eaton Archives, Provincial Archives of Ontario, Ryder Family Photo Album c. 1905).



Photo No 1.7 Basement Digging



Photo No. 1.8 Construction Basement Pillars

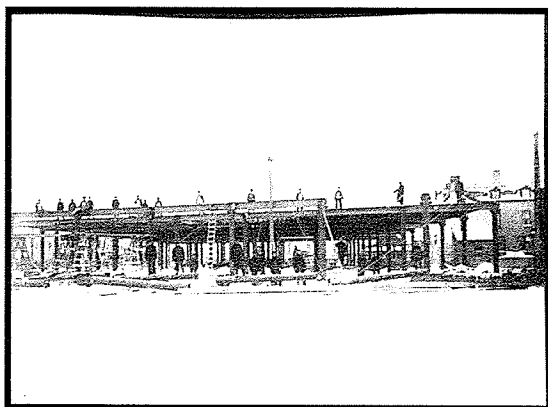


Photo No. 1.9 Construction Main Floor

From Mr. Harry McGee's diaries
we have the following
documentation on construction:

January 7: iron men were
working but stopped for cold
weather.

January 20: the Northern
ironworkers have cast all the
second floor square columns.

January 21: delivery of second
floor column work finished.

January 25: iron work on
punching beams.

January 28: derrick work.

February 5: started the fourth
floor.

February 16: all the round
columns were erected on the
third floor and started delivery
on the fourth floor.

March 17: the first brick was laid
(Winnipeg Free Press).

March 20: brickwork began on the
rear wall.

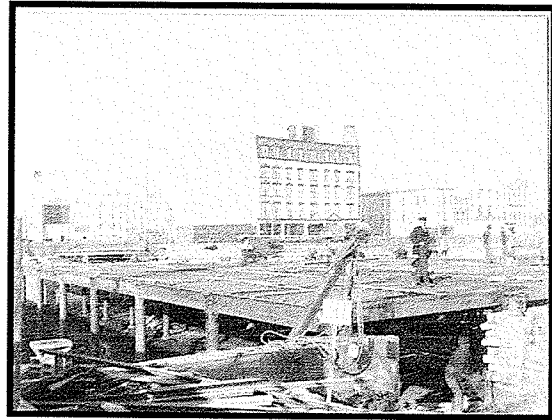


Photo No. 1.10 First Floor Construction

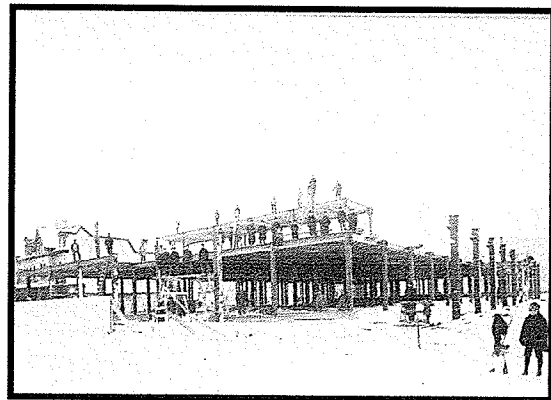


Photo No. 1.11 Second Floor Construction

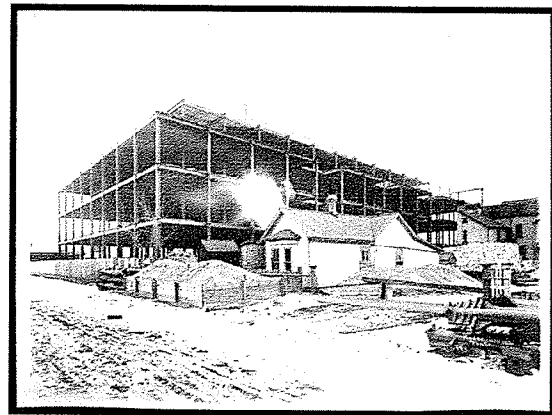


Photo No. 1.12 Third Floor Construction

March 24: the sod was turned for the powerhouse.

March 25: the last column and beam was in place on the store, and the last square joist started painting the ground floor columns.

April 3: started erecting the roof of the store.

April 13: they began laying red-pressed brick on the front of the building. J.J.

McKinnon started working on the pipefitting.

April 17: the ground was still frozen in some areas and 175 Hargrave Cottage was removed.

April 18: stonework on the Powerhouse and the tunnel From the powerhouse to the Store began excavation.

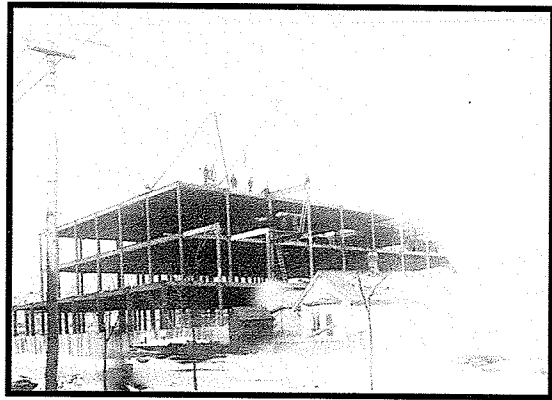


Photo No. 1.13 Third-Fourth Floor Construction

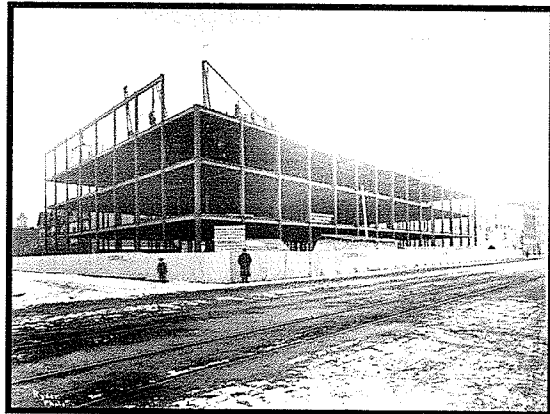


Photo No. 1.14 Fourth Floor Construction

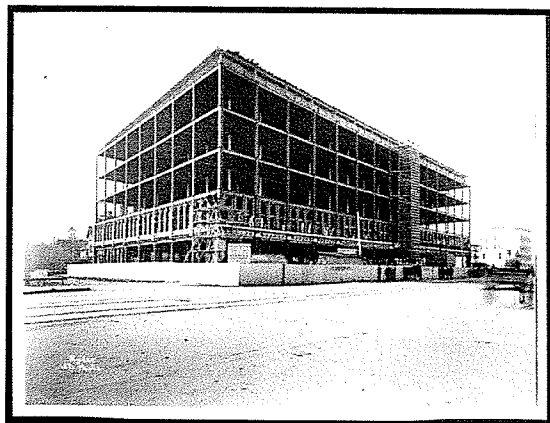


Photo No. 1.15 Fifth Floor Construction

April 18: the brickwork was completed and the metallic awning was in place. The installer was Ormsby.

May 1: Vulcan Iron Co. Was responsible for the powerhouse columns. C. Thompson did the plastering.

May 3: maple flooring arrived in the city.

May 17: front of the building was complete except for the last piece of the top cornice.

May 20: the powerhouse was started.



Photo No. 1.16 Construction Basement Walls

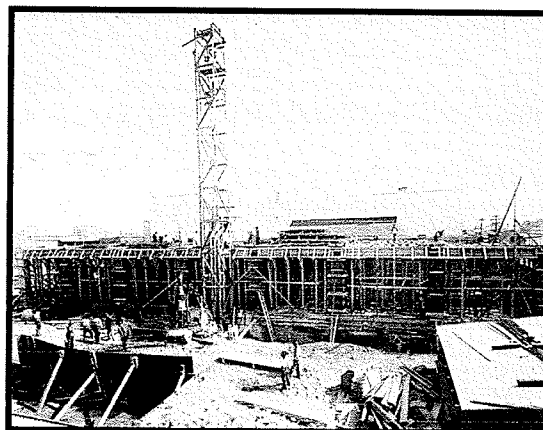


Photo No. 1.17 Construction Walls

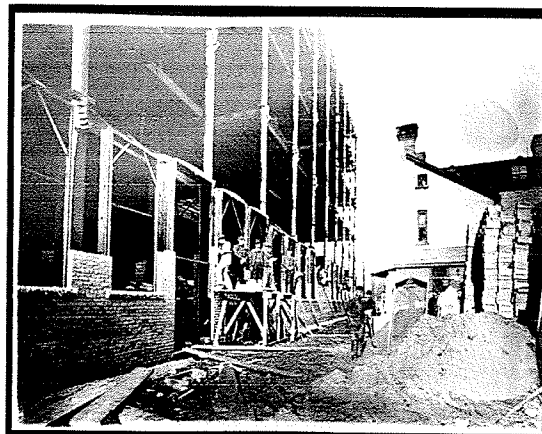


Photo No. 1.18 Construction bricking back wall

May 31: The staff had begun to arrive and started grading the delivery shed. The concrete mixer was in place on the site for the smokestack.

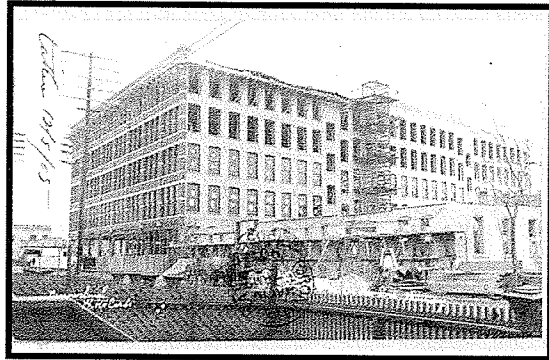


Photo No. 1.19 Finishing the annex

June 1: the last column for the powerhouse was placed. The rear yard was leveled and McNab & Roberts began work on the lunch room ovens.

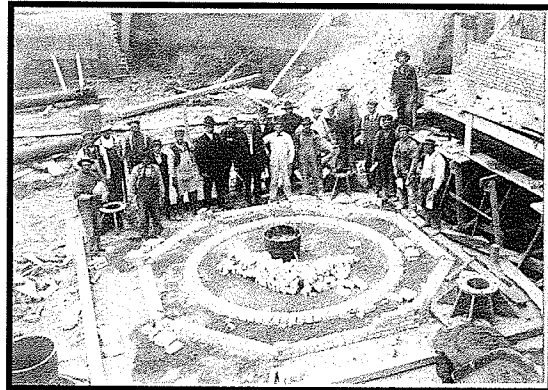


Photo No. 1.20 Foundation for Smokestack

June 2: the brick layers were building walls in the powerhouse and the new boarding house was started.

June 9: excavation was started for the cellar of 259 Hargrave street.

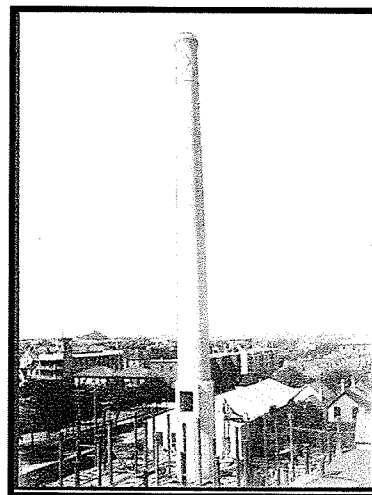


Photo No. 1.21 Power house pillars, Smokestack complete

(1904 photos Eaton Archives, Province of Ontario with permission from Sears Canada Corp.)

June 19: the sprinkler system was being tested, the floors finished.

June 21: the first elevator was running.

June 22: the offices were moved from Strevel house to the third floor

July 8: the flagpoles were in place on the rooftop and the lights were in place in the basement.

July 17: last brick placed on top of the building.

Deliveries were first made by stagecoach.

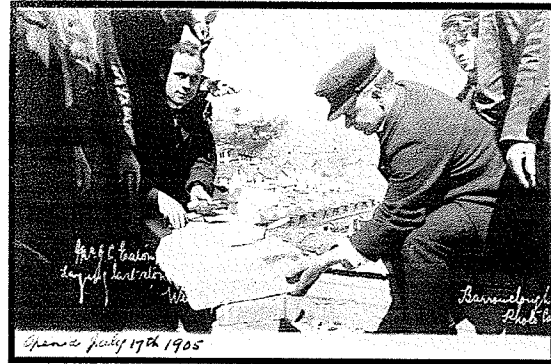


Photo No. 1.22 Last Brick

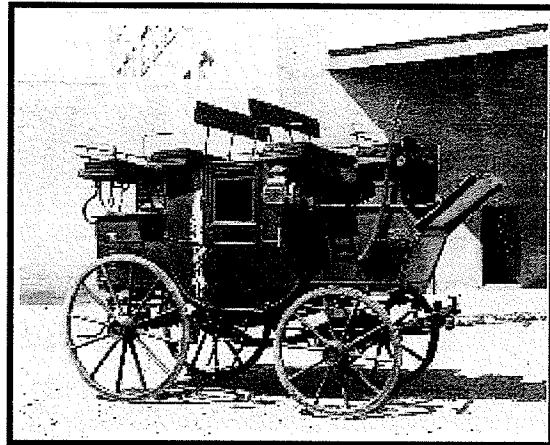


Photo No. 1.23 (Photos from Ryder Family Fonds Album, Eaton Archives, Provincial Archives of Ontario c. 1905).

When the store opened on July 15, 1904 with 25,000 shoppers there were five stories, the basement and the powerhouse on the east side of Hargrave Street. There were 700 employees.

There were four passenger elevators and five freight elevators. The power plant consisted of 1000-horse power of boilers and 1000 horsepower of engine-driven generators. There were also 2230 horse power of boilers equipped with mechanical stokers and forced-draft capable of developing 3800 horse power.

The delivery shed was also built about this time. In 1905 an old stable was converted into a Blacksmith shop with Duncan Matheson in charge of construction. A few months after the store opened employees were increased to 1200 and plans were being made for construction of the sixth story.

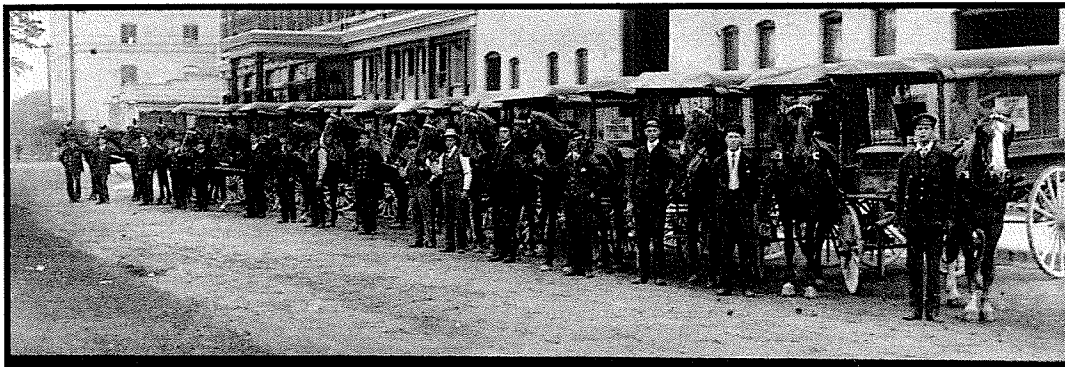


Photo No. 1.24 Lineup of delivery Vans c.1905 (Photos from Eaton Archives Provincial Archives of Ontario).

New developments were on going for the next nine decades. Many proposals were submitted but not all were accepted. Photo No. 1.25 shows the exterior of the completion of the sixth floor. The sixth floor plan is attached in the appendix.

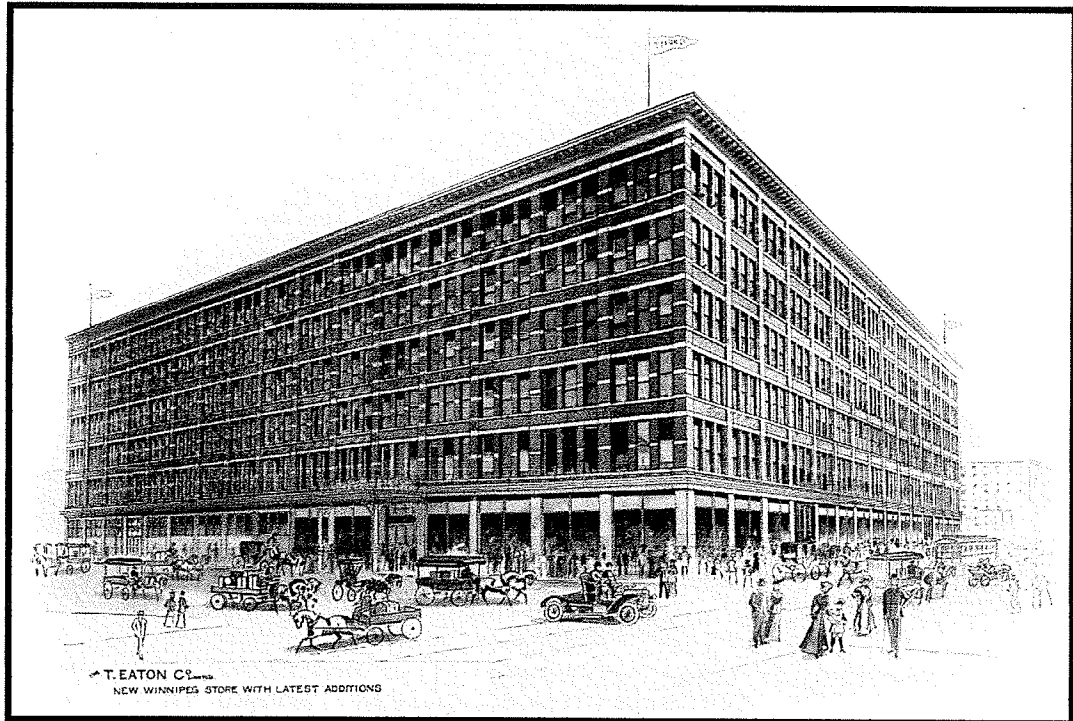


Photo No.1.25, From original drawings C. Woodburn 1906 (Eaton Archives, Provincial Archives of Ontario, with permission of Sears Canada Corporation Ltd.).

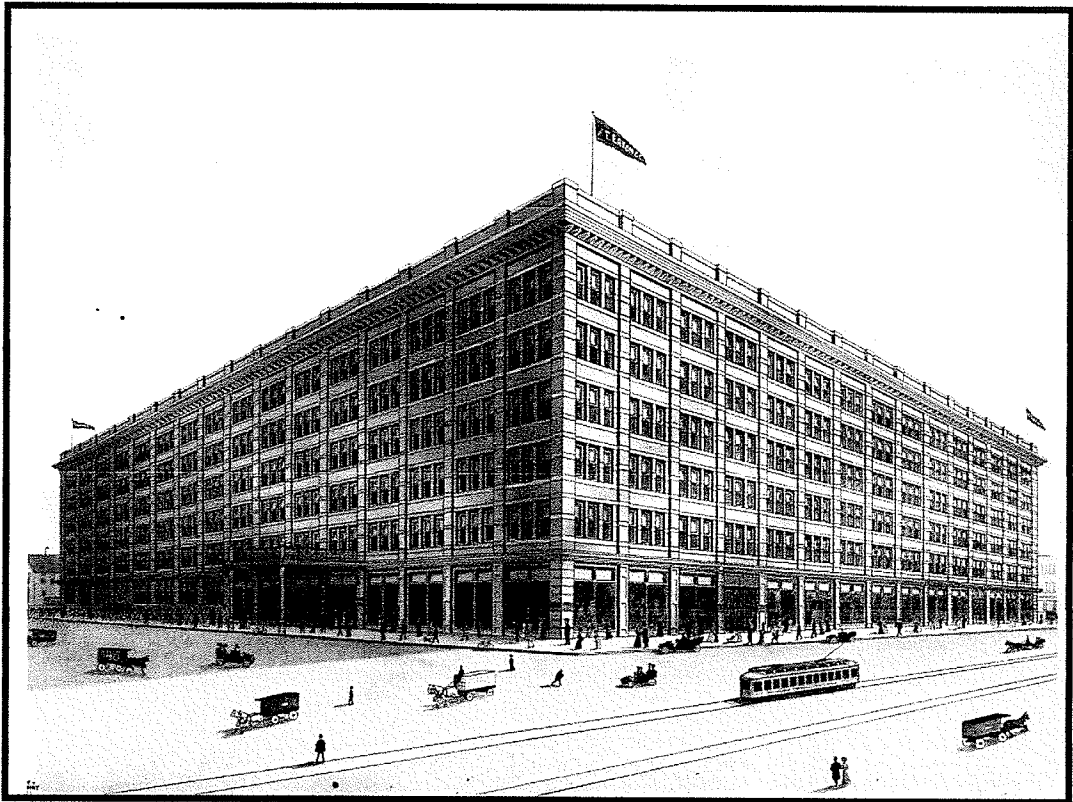


Photo No. 1.26 1907 note the change in the Cornice layer up from 1906 From original drawings C. Woodburn 1907 (Eaton Archives, Provincial Archives of Ontario, with permission of Sears Canada Corporation Ltd.)

Time was required to secure the square columns for outside construction as well as the brick face so completion did not occur until 1906. Also, in 1906, interior additions included two more passenger elevators.

In 1907 the Donald Street extension of 152 feet by 104 feet was in place with a basement and two more passenger elevators. (Plans are attached see Appendix I). The seventh story was put on the store. In 1908 a garage was built but it was later replaced with another building.



Photo No. 1.27 c. 1909 Seventh Story completed (Eaton Archives, Province of Ontario).

1909: New construction included the building that was used for the employee lunchroom, time office, and automobile accessories.



Photo No. 1.28 Photo from an original drawing (Eaton Archives, Provincial Archives of Ontario, with the permission of Sears Canada Inc., c. 1909).

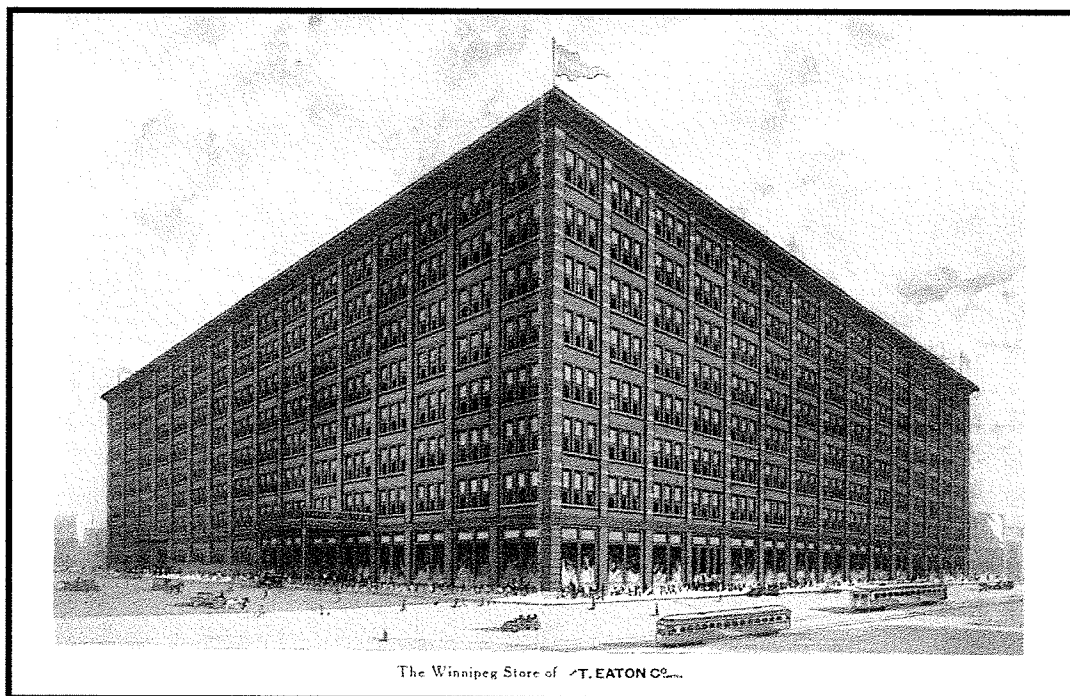


Photo No. 1.29 1910 Eight Stories, from a series of original drawings by C. Woodburn , (Eaton Archives, Provincial Archives of Ontario with permission of Sears Canada Inc.)

1910 there was a further expansion being the eighth story put on the store, the Hargrave extension, 122 ft. by 4 ft. added and four more passenger elevators installed. In the same year the powerhouse was erected, the Grill Room and Kitchens were fitted up, a creamery established on the third floor, and a pumping plant installed in the centre of the basement.

1912: the old powerhouse was pulled down and a second Hargrave extension was added, squaring up the rear of the store building.

1916: a proposal was made for an entirely new building complex. (Photos attached in Appendix I). The proposal was never approved and instead more additions were made with the Mail Order Building No. 1. It was erected to afford relief for the rapidly growing mail order department and to release space in the store for city business. In the main store, two duplex escalators were installed near the centre of the store to operate from the main to third floors. These were the first escalators in Western Canada and are still in operation from the third to the fifth floor.

1918: – the present stable was erected, 103 by 120 feet. (Plans attached See Appendix I).



Photo No. 1.30 1920 - 8 stories and exterior changes to the entrances. (Photo from Eaton Archives, Provincial Archives of Ontario c.1920)

1920- mail Order Building No. 2 was erected, nine stories and basement. It was equipped with elevators and conveyors to make it one of the most efficient buildings in the world designed for that purpose (Eaton, Contacts Magazine, 1934).

1923 - four more escalators were added to the Eaton store.

1924-the pump room, which stood near the centre of the basement and contained various machines, tanks, and switchboards to make way for the Groceteria but gave a better layout for fire protection.

1926 - the printing building was erected – 162 feet by 119 feet – two stories and basement. The garage building at Graham and Carlton 100 feet by 120 feet four stories. In 1926 the furniture warehouse was erected on Alexander Avenue 418 feet by 119 feet. By that time the buildings had 26 passenger elevators, 18 freight elevators and 11 passenger escalators.

Interior alterations were ongoing from 1926. Eaton's staff included, among others, journeymen, electricians, and carpenters so many renovations were not documented. The original building when opened on July 15, 1905 housed 27,841 square feet with five floors. The total height was 59 feet, main to second 16 feet, second to third 15 feet, third to fourth 14 feet, fourth to fifth 14 feet and an additional 13 feet in the basement to main. Tunnels were excavated for ease of delivery with carriages. Building construction consisted of stone piles, cast-iron pillars to the fifth floor, maple hard wood, and tin ceilings. Asbestos is present on all levels. (Appendix I)

Three more floors were added to bring the total height of the building to 129 feet. Floor five to six -14 feet, all wood construction 1905-1906.



Photo No. 1.31 1940 - Store with canopy changes to front windows, mail order building seen in the back. (Photo from Eaton Archives, Provincial Archives of Ontario c. 1940)

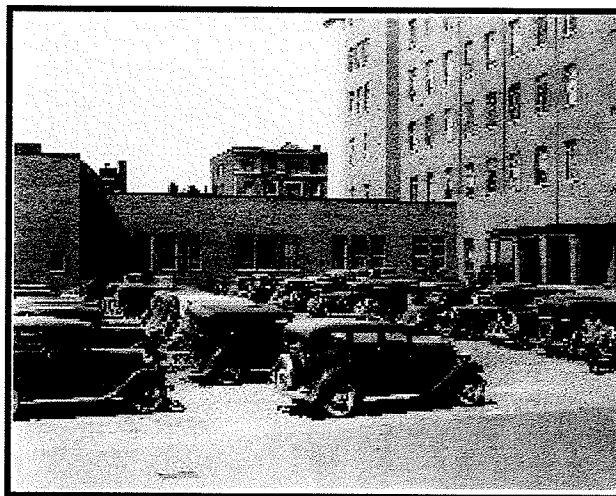


Photo No. 1.32 Store parking still accessible. (Photo from Eaton Archives, Provincial Archives of Ontario c. 1940).

A coal-fired furnace supplied the original heating system until 1950. Lighting was incandescent and arcs until 1958 when fluorescent system was installed (Winnipeg Real Estate News, March 7, 1997). In approximately 1980 the building was given facelift at an

approximate cost of \$2m. This included cleaning the brick and tyndal stone, replacing 963 windows, and polishing the brass. The work was completed by Kraft Construction (1978) Co. Ltd., (Winnipeg Free Press, April 5, 1989, page 57).

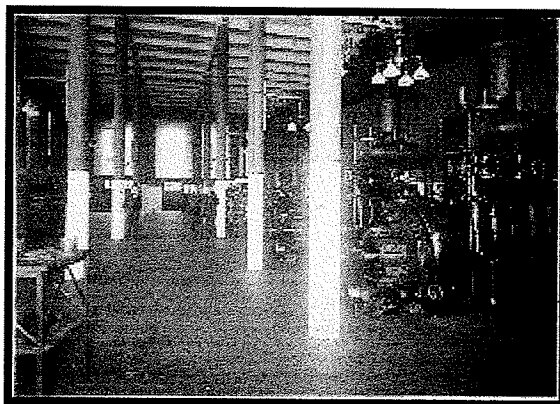


Photo No. 1.33 Power House and generators
(Eaton Archives Provincial Archives of Ontario
c. 1940).

1.2.h. Cultural History

Throughout the years the Eaton store was not only a place of employment but also a cultural centre. The building had numerous uses from the beginning with the original executive offices on the fifth floor. The wainscot and fireplace were still in place in April, 2000.

Merchandising changes with the growing economy of Winnipeg range from the earliest years of butter churning, harness making, and mail sorting to later years with the groceries in the basement. Eaton's was always fashion conscious and buyers brought in merchandise from all over the globe. The fabric and drapery department was an excellent example. Notice the use of chandelier lighting. (Photos from Eaton Archives, Provincial Archives of Ontario).

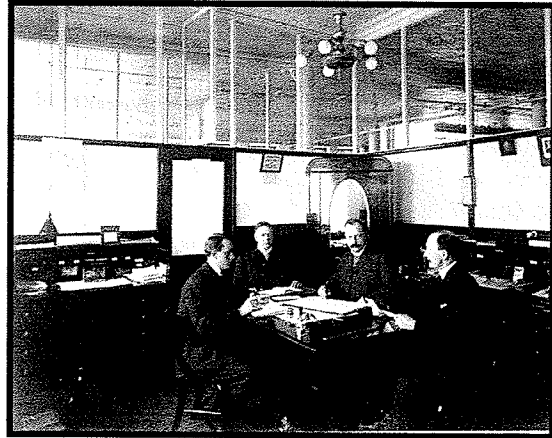


Photo No. 1.34

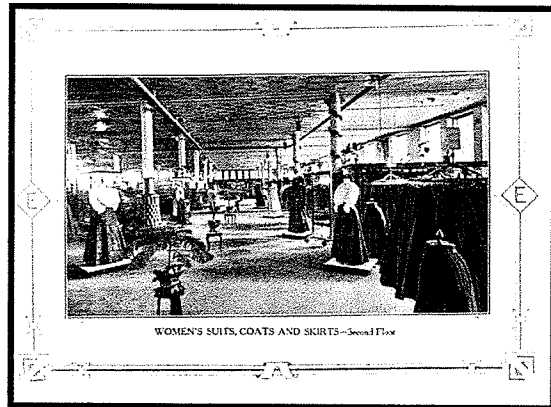


Photo No. 1.35



Photo No. 1.36

Entertainment was part of the cultural aspect of being an employee. From the opening banquet to dinner in the private dining room on the fifth floor Louis XV decor. Both this room and the Grill Room were decorated in Old English oak wainscot.



Photo No. 1.37

Over the years, Eaton's has been a place to meet and greet and shop. From the soda fountain of the early 1900's, to the coffee bar of the 1930's, to the farmer's waiting room and later the Grill Room of 1940 there was always a place to meet friends for a cup of coffee.

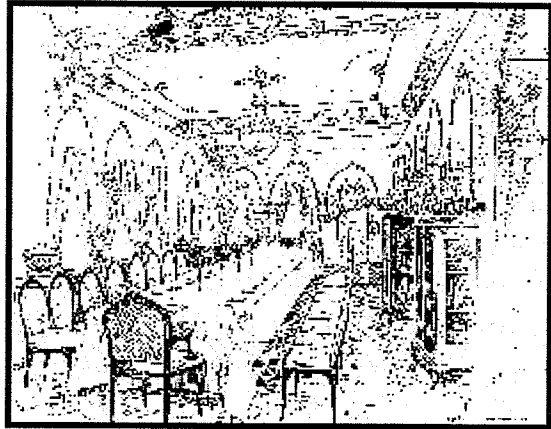


Photo No. 1.38

Dining Room c. 1905 drawing (Compliments of City of Winnipeg Archives.)

Soda Fountain c. 1908 (Photo Eaton Archives, Provincial Archives of Ontario).



Photo No. 1.39

The Grill Room c. 1940 (Photo Eaton Archives, Provincial Archives of Ontario).

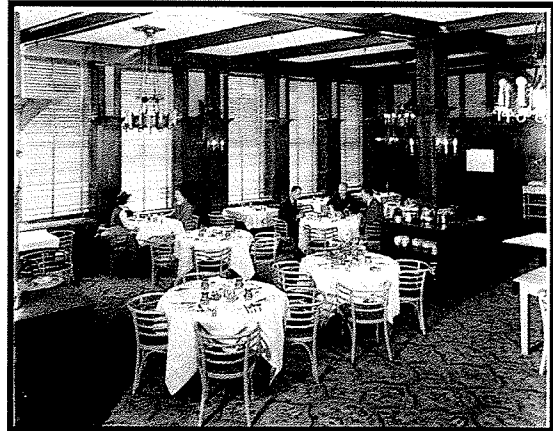


Photo No. 1.40

The Eaton Building also had numerous services for shoppers and employees ranging from the hair salon to the hospital.

Of particular interest was the assembly hall on the seventh floor where numerous employee committees and groups met. The hall was also available for use by the general public free of charge and was used extensively over the history of the store.

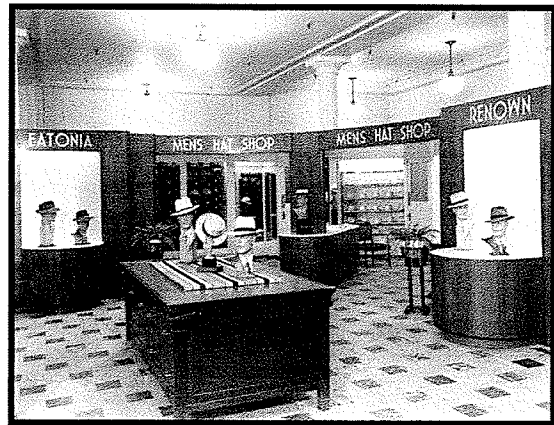


Photo No. 1.41



Photo No. 1.42

Merchandising was important on all levels. The first floor was dedicated to men's fashions on the philosophy that businessmen would pass through on their way to the office.



Photo No. 1.43

The second floor was dedicated to women's fashions with the upper floors housing the housewares, china, furniture, and accessories that women might purchase for their homes.

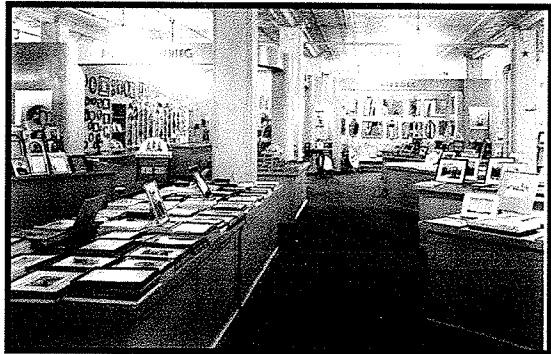


Photo No. 1.44

All floors featured the traditional tin Ceilings with the diamond "E" inscribed. The fifth floor was home to Santa's village beginning in 1905 with a log house and workshop to take care of the letters (photo not available). The Fifth floor was used as storage for the props used in the parades until it closed. The first Santa Claus parade occurred in 1906.

The seventh floor held the photo studio, numerous departments and an assembly hall. The eighth floor was dedicated to business offices as well as furniture merchandising.

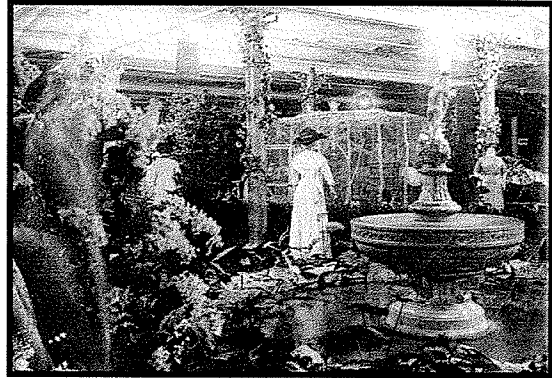


Photo No. 1.45

Springtime was display time – photos of the spring festival for fashion (compliments of Archives of University of Manitoba).

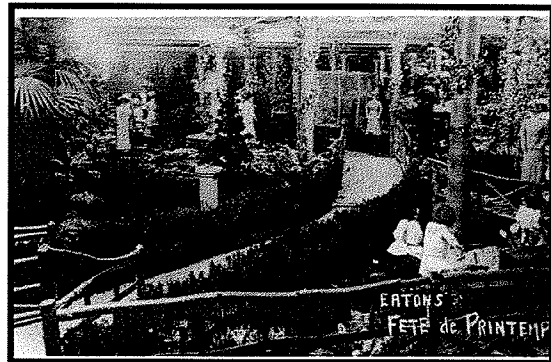


Photo No. 1.46

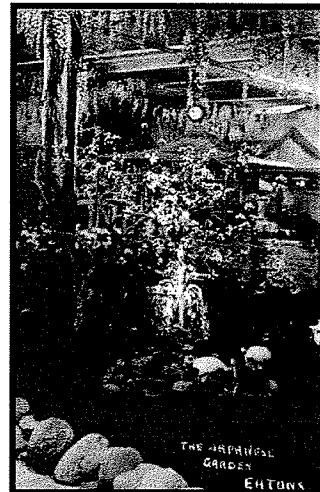


Photo No. 1.47

1.2.i. Current Building Condition

The footprint of the building is 264.3 feet on the west side, 311.75 feet on the east side, 259.85 feet on the south side and 264 feet on the north totaling 74,580 square feet (structural drawings 1910). With the annex, basement, and roof penthouses there are approximately 700,000 square feet of floor space.

Construction included three wythes of red-pressed brick on the exterior facing two wythes of clay brick. The building is entirely brick with a concrete cornice and tyndal-stone faced lintels. The tyndal stone came from the Eaton quarries at Garson, Manitoba, and the brick is from Ontario. (Diary of Harry McGee, 1904-1905).

The building is steel framed with Douglas Fir joist floors and cast iron columns with a stepped foundation (see diagram Appendix I). Interior columns range from 18' normal centres with columns varying in size from 14" on the main floor to 6" on the eighth floor. The roof is a 2 X 12-fir joist at 16" centre and spans 18', which is sufficient to resist current snow loading requirements. The roof membrane itself is currently requiring significant repair. It leaks in many places and requires replacing (guided tour witnessed the leaking structure).

The current heating system is supplied by a high-pressure steam system still housed in the original powerhouse. Estimated costs require two engineers (\$60,000.00 per year to operate). A low-pressure steam system could well be reinstated (per interview security staff). The steam plant includes four natural gas-fired, high-pressure steam boilers. Fresh air provided building cooling during the winter and chilled water in the summer. The chillers were located directly under Hargrave Street. Originally, the water was accessed from the property's own well (see plans 1936 Appendix I) at a depth of 266 feet. This is the second of the system in the history of the building with the original was from a shallower well and was replaced due to increasing demand. In March 2001, there is a security system in place with security guards on duty 24 hours. Lights have been "shut off" to reduce energy consumption. Only the main connecting corridor through the building, which connects to Portage Place, Sommerset Place, and the Parkade, is currently open to the public.

Fire Safety is secured by wet pipe sprinkles, standpipe and hoses, fire extinguishers, electric and diesel forced pumps. Building and fire code would require an upgraded system.

Currently, there are five existing passenger elevators adjacent to the Portage Avenue and four freight elevators on the south side of the building. Passenger elevators on the Portage Avenue side are rated four thousand pound capacity. Of the five cars, number one and five are still manual. The security staff reports that all are in good working order. There are, in addition, two banks for four sets of escalators at each floor forty-eight inches in width.

Egress was exited by way of three main stair halls and two, sixty-inch wide, additional stair halls that access the main floor. The north stair halls go to the main floor only. The other stair halls access the main floor surrounding and exit directly outside (see Fire Insurance Plans, City of Winnipeg, Appendix, I).

1.3.a. PLANNING CONTEXT AND GUIDELINES

When addressing any revitalization program, one could use an holistic approach to develop an integrated system. Urban centres develop and function within regional centres. All aspects integrate within one another to form a unique network. As we have seen historically in North America, from the advent of the automobile to the development of suburbia to changes in the regional landscapes, each integrated element has a causative effect on the other. This practicum is based on the following issues:

1. long-term investment can be encouraged by increasing market value,
2. creation of employment by supporting building restoration trades, retail and service industries and providing new commercial opportunities,
3. providing new opportunities for housing within the adjacent area while improving housing conditions for existing residents;
4. reinforcing and supporting the surrounding neighbourhoods, in particular, the Exchange District and the Forks, which in turn are important as tourist destinations,
5. encouraging appropriate uses through the design strategy,
6. the relationship with adjoining areas could be part of the vision statement both historically and functionally including the greenways and urbanways, existing cornice and parapets add architectural distinction to the urban core and form a distinct part of the urban fabric,
7. creating a more viable community while retaining the heritage fabric of the existing community,
8. providing services for local resident population within the market housing that balances the needs of the existing residents and the improvements to housing conditions which could occur within the Eaton building; the adaptive reuse of the Eaton building will demonstrate a commitment to a sustainable community which in turn strengthens and revitalizes the existing neighborhoods and community,
9. strengthening the residential component to supply housing that might strengthen the sense of community,

10. adaptive reuse of the Eaton building could generate an increase in long-term tax revenues. (Adapted from a report on the City of Vancouver, www.Van.ca, 2002).

Currently The City of Winnipeg has several planning guidelines in operation. The Downtown Winnipeg policy includes:

1. CentrePlan Vision & Strategies endorsed in 1994,
2. CentrePlan Development Framework endorsed in 1999,
3. CentreVenture Development Corporation established in 1999, and
4. Plan Winnipeg 2020 Vision adopted in 2001. (Planning Property & Development Department, (2002).

1.3.b. City of Winnipeg Bylaw NO. 4800 the study area for this practicum is defined by the planning guidelines as outlined by Zoning By-law No. 4800. Applicable guidelines are observed. By-law 4800 at the time of this practicum (2002) was under review relevant to zoning in the downtown core.

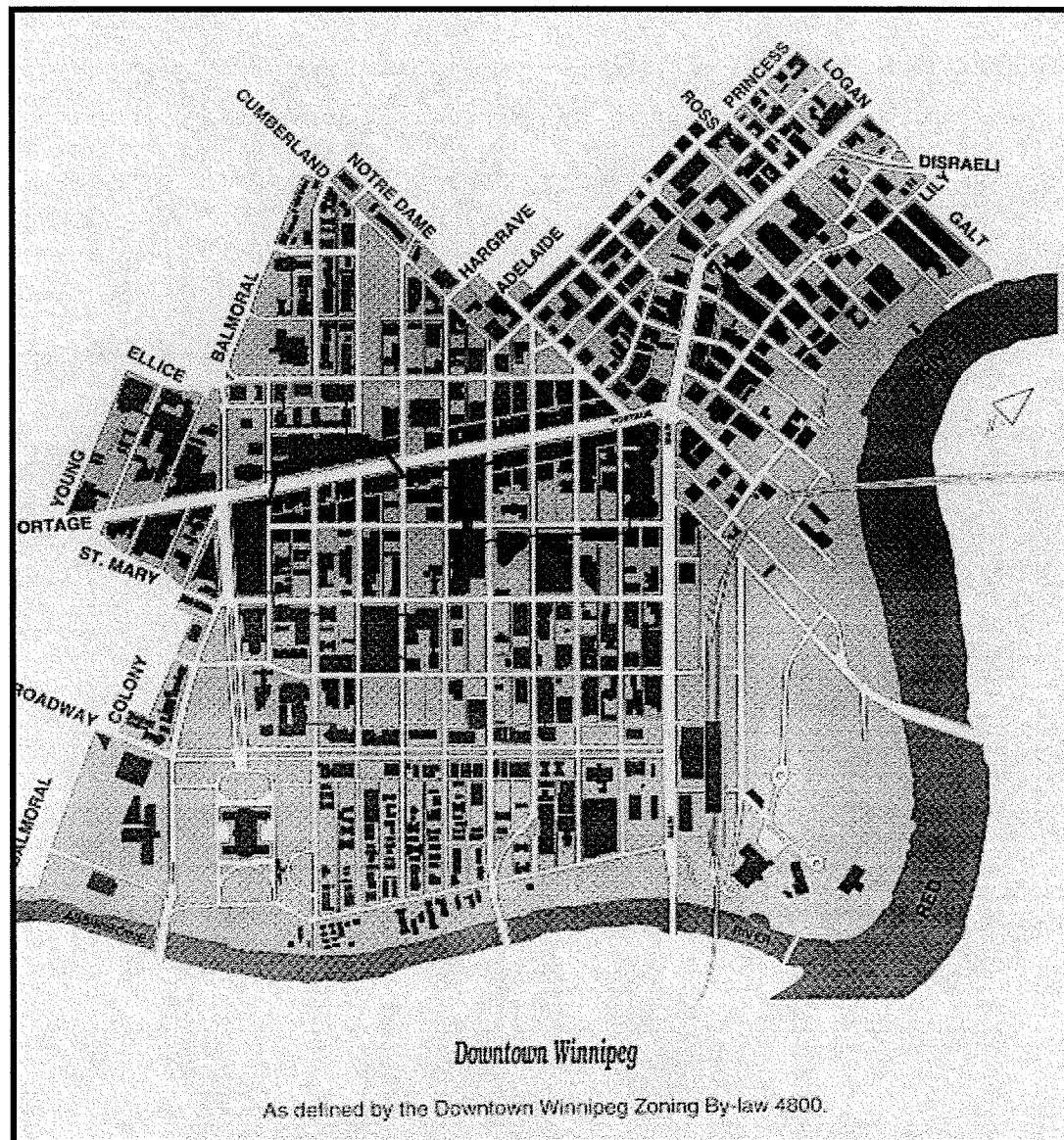


Figure 1.4

City of Winnipeg, downtown Core, (1991).

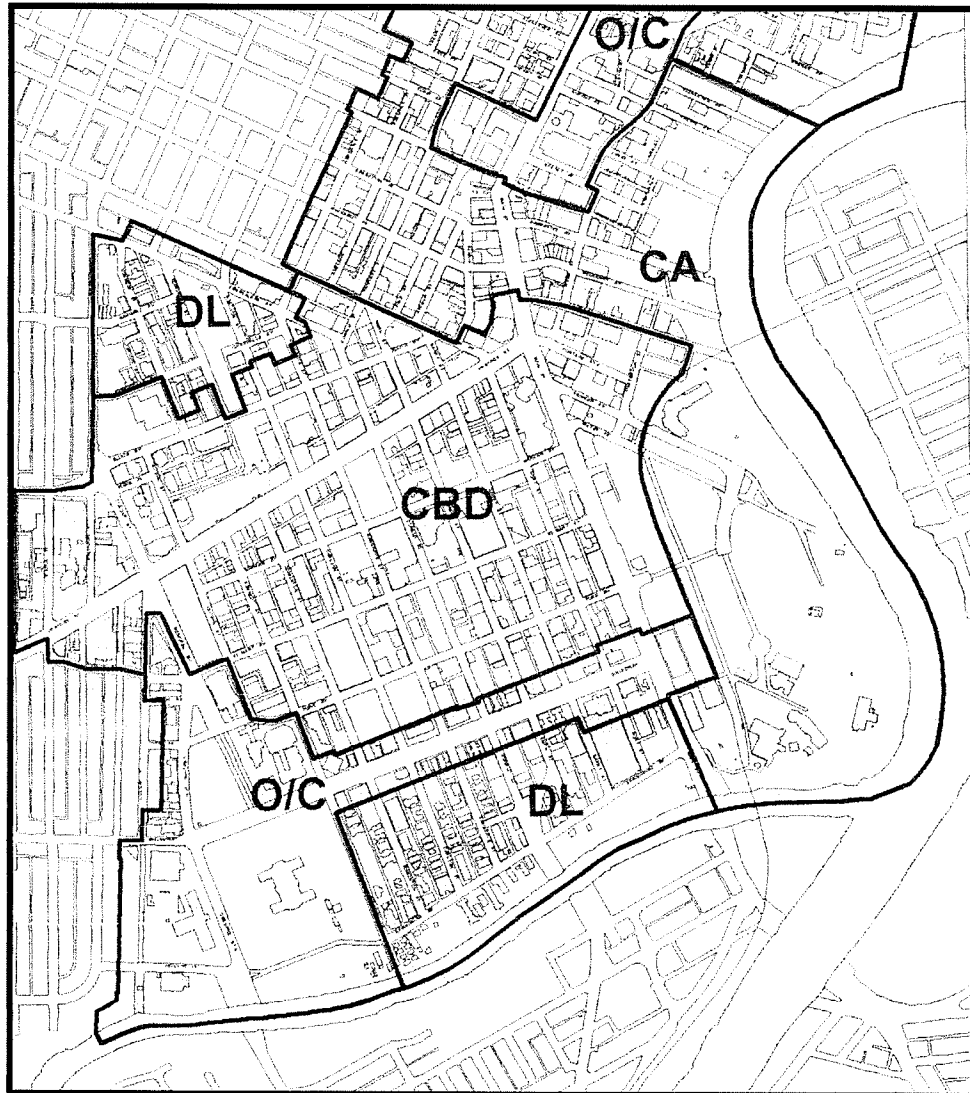


Figure 1.5 Proposed changes to the Downtown Zoning By-law 4800, compliments of Planning, Property & Development Department, (2002).

Figure 1.5 shows the proposed changes to the downtown zoning By-law4800. Residential uses are permitted throughout the downtown. With the exception of Riverbank sub-sectors, the entire downtown encourages compact mixed-used development, although the range of permitted uses varies among the sectors. (Forum notice, Planning, Property & Development Department, City of Winnipeg, 2002).

1.3.c. City of Winnipeg, CentrePlan

The mission of CentrePlan is “to determine how to create an urban lifestyle that will be attractive to people” and part of the Building Blocks Housing Forum to “determine what kind of urban lifestyle people want and what kind of urban lifestyle is possible in Winnipeg”. Housing is part of what is required to create that urban lifestyle and CentrePlan is initiating a number of other projects critical to advancing that goal.

1.3.d. CentreVenture

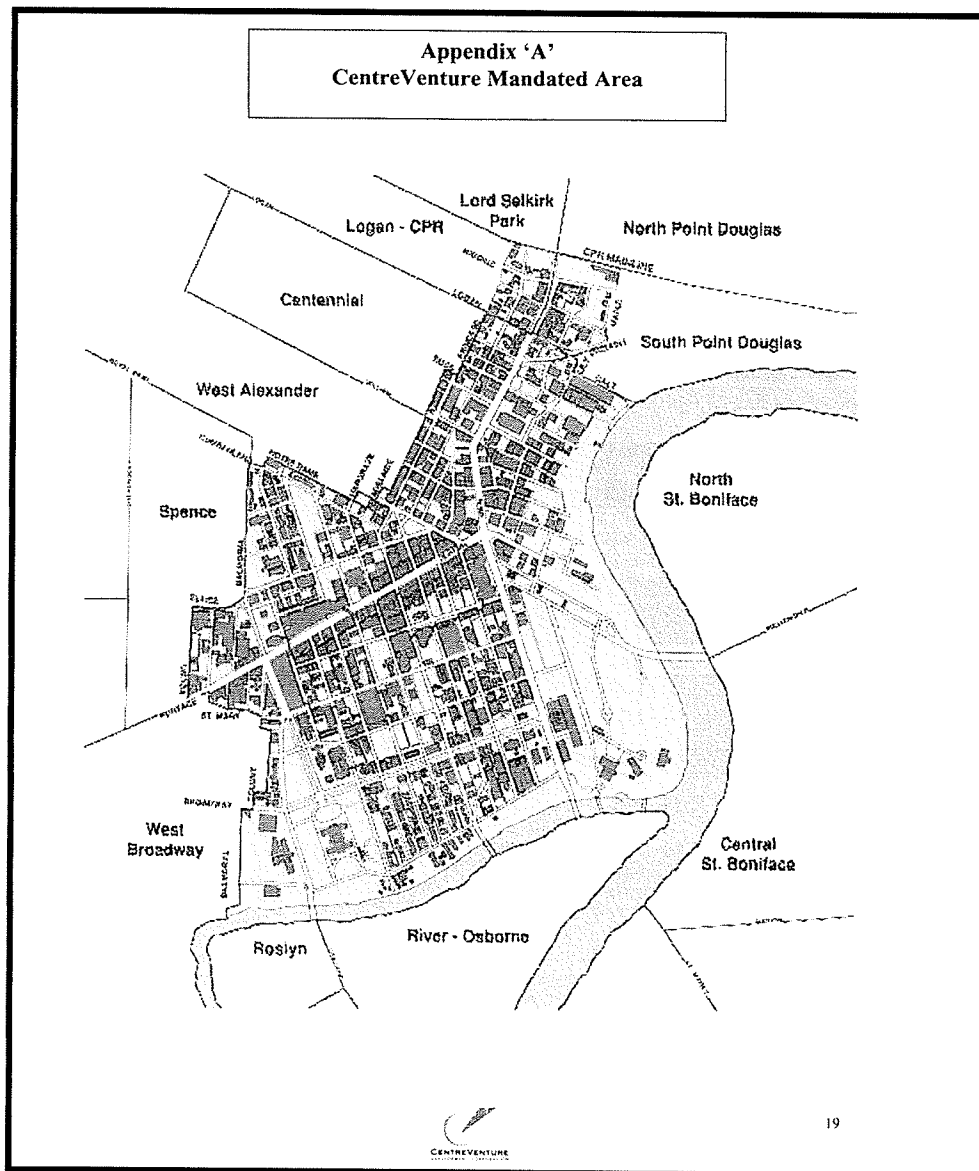


Figure 1.6

CentreVenture Mandated Area, CentreVenture, (2002).

Figure 1.7 shows the mandated area for development in the CentreVenture Start-up Business Plan. As a guideline for downtown redevelopment the vision and strategy are:

1. Business Development and Investment
2. Infrastructure, Housing, and Transportation
3. Arts, Culture, and Entertainment
4. Public Spaces, Safety and Urban Design.

CentreVenture is in agreement with Plan Winnipeg's 2020 Vision "Putting Downtown First". (CentreVenture Development Corporation, 2002).



Figure 1.7 Proposed Expansion of CentreVenture Area, CentreVenture, (2002).

1.3.e. Development Plan- Plan Winnipeg 2020 Vision

Plan Winnipeg is Winnipeg's City Council's long-range policy 'plan in motion', that is, one that the City is working on (reviewed every five years), that reflects the community's vision and City Council's direction for the future of the downtown area. It is a blueprint for addressing physical, social, economic and environmental conditions.

The guiding principles are:

1. Sustainability – planning for the long term over the short term
2. Social Consciousness – committing to equity and diversity
3. Thoughtful Development – looking at the costs and benefits of new developments
4. Partnership and Collaboration – better utilizing and leveraging resources
5. Healthy Living – committing to personal enrichment and improving quality of life
6. Local empowerment – committing to shared decision-making.

Plan Winnipeg reviews policy on the following:

1. Downtown and Neighbourhoods – “downtown first” supporting healthy neighbourhoods through policies that promote neighbourhood revitalization, neighbourhood safety and access to affordable housing.
2. Government and the Economy – emphasizes citizen's participation.
3. Planned Development, Transportation, and Infrastructure.
4. Public Safety, Health and Education.
5. Environment, Image and Amenities.

The Plan's vision spans twenty years in order to describe the future that residents want for their children and themselves. To maintain its currency and relevancy it is due to be reviewed and updated in five-year increments. Using Plan Winnipeg as a guide, the City Council can set priorities, make decisions, with greater consistency, clarity, and predictability. The Plan is intended to assure that the Council and the Winnipeg community can work together to achieve Winnipeg's Plan. All other planning documents must be consistent with Plan Winnipeg (Plan Winnipeg 2020 Vision).

1.3.f. North Portage Redevelopment Plan

The North Portage Development Corporation was established on December 16, 1983. When the corporation was established, it recognized the various components in a mixed-use development relevant to a redevelopment project for downtown Winnipeg.

The dynamic power of the downtown area is maximized by a dynamic mix of retail and non-retail elements. Downtown housing, recreational and cultural facilities, traffic and pedestrian circulation improvements and improvements in the social and aesthetic environment all contribute to a vibrant city centre

- North Portage Development, *Final concept and Financial Plan*, (1984).

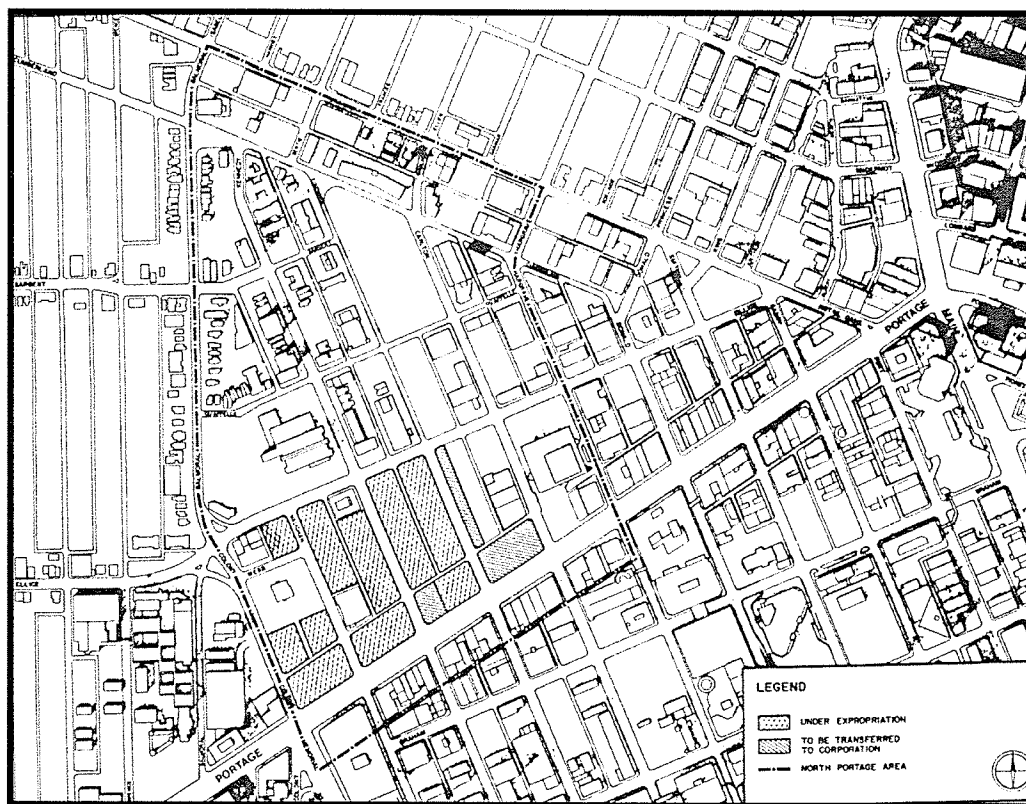


Figure 1.8 North Portage Redevelopment Plan, Final Concept and Financial Plan, 1984.

The corporation also recognized that while the redevelopment of the North Portage area is a necessary condition for downtown revitalization, it is not in itself sufficient and was undertaken with the understanding that:

- a. that it cannot solve all of downtown Winnipeg's problems,
- b. that it must occur in the context of current and future development in the zones of North Portage
- c. the land availability in the North Portage area cannot accommodate all the projects that have been proposed for inclusion, and
- d. the North Portage redevelopment should be considered as one part of a continuing process of overall redevelopment for downtown Winnipeg.

- North Portage Redevelopment

Redevelopment included the following areas:

1. retail and related commercial development,
2. residential development,
3. office space development,
4. hotel development,
5. urban village,
6. union centre,
7. institutional and government – more specifically – Science Place, Science Centre, Fitness Facilities, North of Ellice Neighborhood and Royal Winnipeg Ballet Facility.

From the closing comments of a report to Shareholders by the Board of Directors of the North Portage Development Corporation, May 26, 1984
“The Development Corporations’ borrowing related to Phase I activities is projected to peak in the mid-1990’s and to fall to insufficient levels by the year 2000.”

In 1994 the North Portage Development Corporation merged with the Forks North Portage Partnership. In March 1998 City Scape was sold and One Canada Place was leased to Investors Syndicate with an option to purchase. There has also been other shareholder ownership. The North Portage Development Corporation continues the redevelopment movement of the downtown core and recognizes the need for diversification. With merges and shareholder changes, there is a constant flux of ideas; however, redevelopment and revitalization appear to be a slow process.

1.4. Conclusion

Research indicates the building site is geographically central and geodetically stable. Ample parking is available for a redevelopment project. Proposed redevelopment is in close proximity to a variety of urban amenities and falls within the boundaries of the proposed City of Winnipeg Bylaw 4800 CBD.

The site is linked by walkways to surrounding urban amenities. Considering the heritage of the property, the redevelopment could be an asset to the surrounding heritage neighborhoods – the Forks, Chinatown, the Exchange District, and the Broadway redevelopment. With the current City of Winnipeg plans in place as guidelines, proposed redevelopment of the Eaton building and property could be an asset to the downtown community. This practicum will be an exploration – a case study of the Eaton building and property - an integrated system approach.

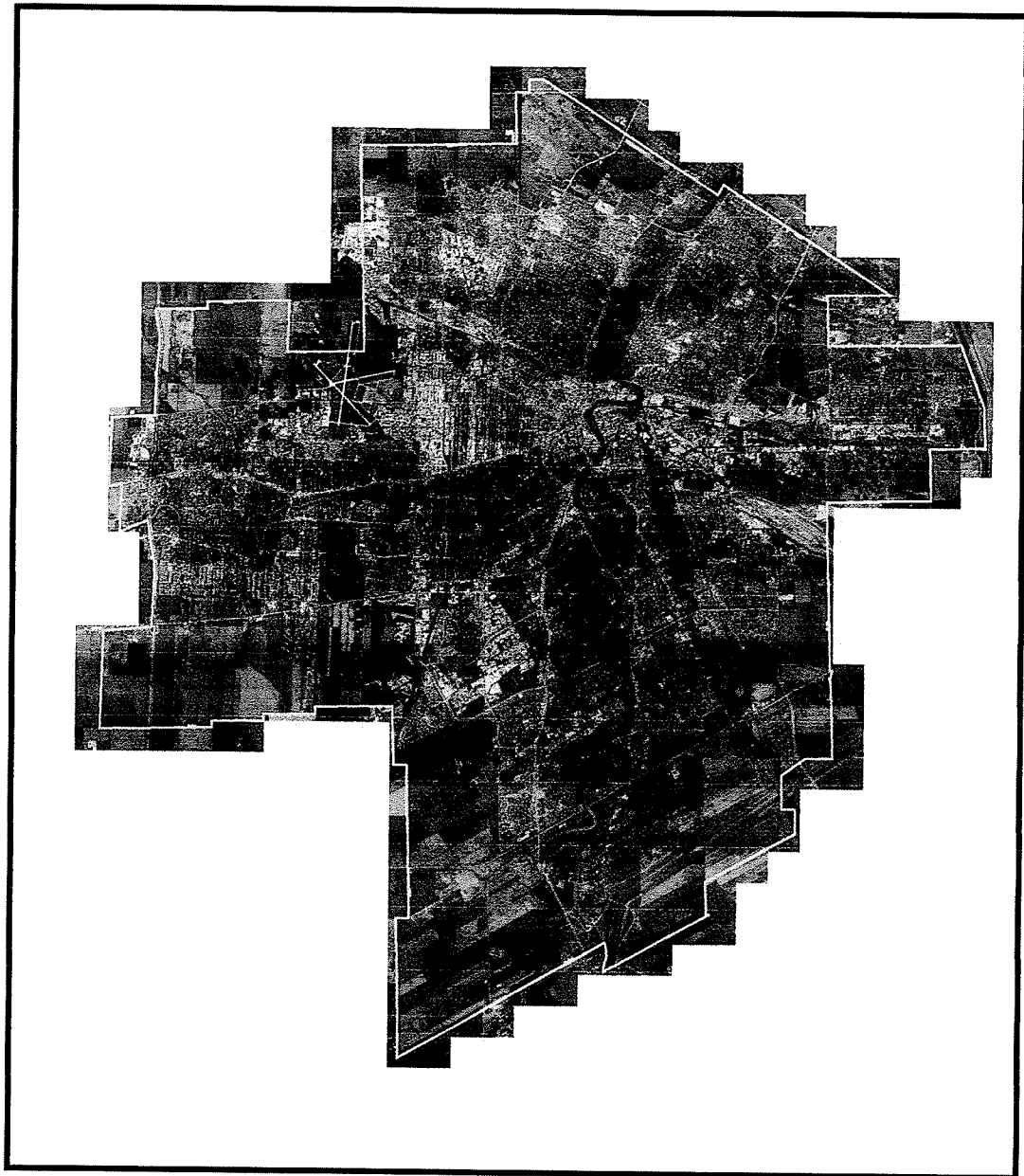


Photo No. 2.0 Air Photo of City of Winnipeg, Flown at 20,000 ft. Atlas Geomatics (2000).

2.0 BACKGROUND

2.1. Statement of Problem

2.1.a. Background

The ecosystem represents a general framework within which the talents and experiences of many disciplines can be brought to the task of penetrating the total urban complex. Historical, physiographical, geological, ecological, climatic and cultural features have made American cities vastly different from one another. An urban ecosystem is represented by populations both human and non-human, its physical structure and its resource flows

-Forest Stearns, Tom Montag, *The Urban Ecosystem, an Holistic Approach*, (1994).

A city is a composite of biotic and abiotic elements controlled by a process of historical, ecological, socio-cultural evolution, and influenced by the ancestry of trade and economics. These elements become variables in a much larger integrated system often referred to as the urban fabric. Included in this system are the buildings and building materials, and an infrastructure of streets and bridges, green space and park areas. Human presence provides the dynamics of social, cultural and economic diversity. Cities result from process that is governed by many variables. One can never totally recreate an urban area but simply begin to help it to regenerate. Urban fabric is formed by layers of technology from the past, present and future to dynamic sense of place.

Unless human needs and human interactions and human responses are the first consideration, the city, in any valid human sense, cannot be said to exist for as Sophocles long ago said, "The City is People"

-Lewis Mumford quoted in Tom Montag, *The Urban Ecosystem, an Holistic Approach*, (1994).

This project examines culture and retail economics, but more importantly discovers the process of historical evolution of a particular tract of land in the central core of a major city, and terminates with a vision for the future that might be applicable as an integrated systems approach for other cities. The fact that the Eaton building might be demolished by the time this practicum is presented is not considered significant. The importance of the issue precedes this project and is perhaps becoming irrelevant, in that

in the design decision, the issue is the process by which we move through time and space, temporally.

2.1.b. Recent Urban Historic Process

Urban blight is the result of the process of deterioration of a downtown business core. With the closure of major retail outlets, smaller retail outlets, support offices, sometimes referred to as 'back-office' functions, follows empty building after empty building. This is common to most North American Cities. With the increasing use of the automobile and the preference for single-family houses on large lots, middle-income families have moved out of the city centres and into the suburbs. The downtown area is often left to commuters, poor residents, and recent immigrants. As a result racial and economic disparities between cities and suburbs have widened. The downtown use has changed from come and enjoys dynamic to a dynamic of come and work – a place where the office is located.

Currently the percentage of green space is a sparse representation in the downtown core. Empty space is almost always utilized for parking structures. Ironically, we have parking space in the downtown core and no shoppers to park in the spaces. The push-pull-factors that once drew people downtown are currently disappearing.

This project evolves out of the following:

1. an intense interest in urban housing,
2. the function of the human presence in the downtown core,
3. the magnetic draw of the retail industry, and
4. the sense of community and human interaction that occurs in the downtown core.

Community is one of those many good things that we recognize chiefly in their absence. When people feel that no one cares about them they mourn the loss of community. When they see society falling apart, they recognize the need for community and strong community plays a positive role in economic relationships

-John B. Cobb Jr., Defining Normative Community, in For the Common good redirecting the economy toward community, the environment and a sustainable future. (1994).

The Eaton building offered the opportunity of connectivity to other shopping areas. Redevelopment could help promote the economics of the downtown area. Offering marketable housing at a sizeable square footage, enjoyable office space and commercial space linked by a common green space for all to enjoy could also benefit the downtown area. The Eaton building and property can provide links to larger urban neighborhoods with the proximity to public transportation. Interior green space could be used as a focal point in an interior corridor system linking to other buildings. It could provide many amenities and become a recreation centre and gathering place for community life.

Winnipeg emerged from short grass prairie and aspen parkland with a river bottom forest along the three rivers. The rivers were part of the historic transportation system across the region together with the rail system. Winnipeg became known as "The Chicago of the North". Aspects of this time period are preserved in the rich historical fabric of the Exchange District. The City of Winnipeg developed around the trade and transport supported by the Red and Assiniboine River that strategically converge at the Forks.

Geographers define the heart of the city or the main economic exchange area as the Central Business District (abbreviated to CBD for the purpose of this practicum). Four corners anchored with financial institutions and eating establishments typically characterizes this area. Thereafter, the land around that particular zone becomes expensive development property. There was an inherent need to position one's business close to the CBD. At one point in time the CBD was the Exchange District of Winnipeg, the most influential downtown area. When considering the importance of the downtown area, one must look at a retrospect of the Winnipeg core.

The Central Business District of Winnipeg was once the meeting and junction corner of Portage and Main Streets and included the Exchange District sector. With the opening of the Panama Canal, Aug. 1914, Winnipeg, the Chicago of the North, felt the loss of the revenue from trade. Prior to this time, the Central Business District moved slightly west on Portage Avenue from the crossroads at the junction of Portage and Main Streets. Eaton's and The Hudson's Bay Company became leaders in the retail industries. Shifting demographics and economics, and the influence of the automobile, suburb after

suburb grew up around the City of Winnipeg pushing the fringes outward. Twelve municipalities grew up around Winnipeg. Shopping malls became the focus for trade.

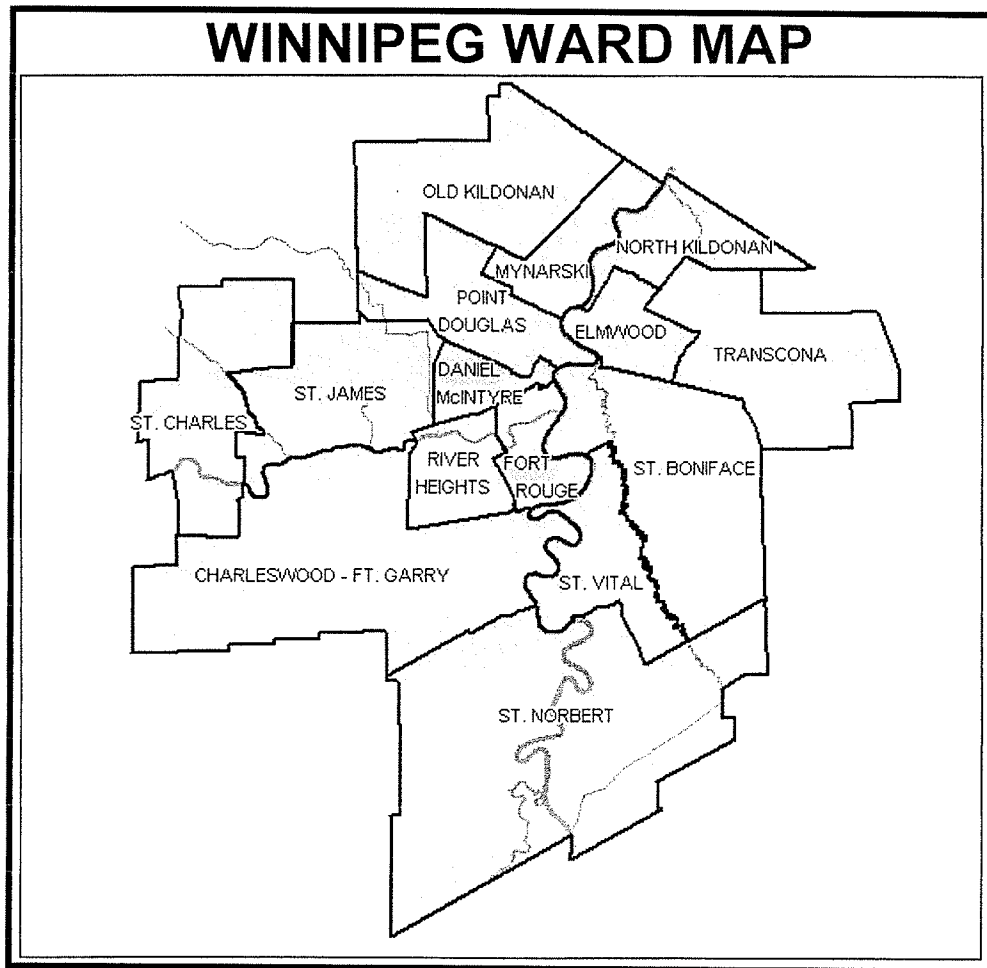


Figure 2.1 Ward Map of Winnipeg, Source: City of Winnipeg, Statistics Canada, 1996.

Winnipeg is on the verge of coming out of urban decline and is starting to overcome urban blight. The Forks area is under redevelopment on a continuing basis. The Exchange District is currently undergoing redevelopment. The Eaton Building offers a case study for examining the possibilities for the revitalization of the urban core.

The Eaton building is centrally located, and connects on the second floor with Portage Place to the west, the Somerset building to the east and City Place to the south. At any time during the business week, the 'walk through' that connects to the bridges hosts a continuous stream of pedestrian traffic. Although the bridges draw pedestrian traffic away from the street level, the pedestrian traffic is clearly present. Figure 2.2 shows the location and connections of the Eaton building.

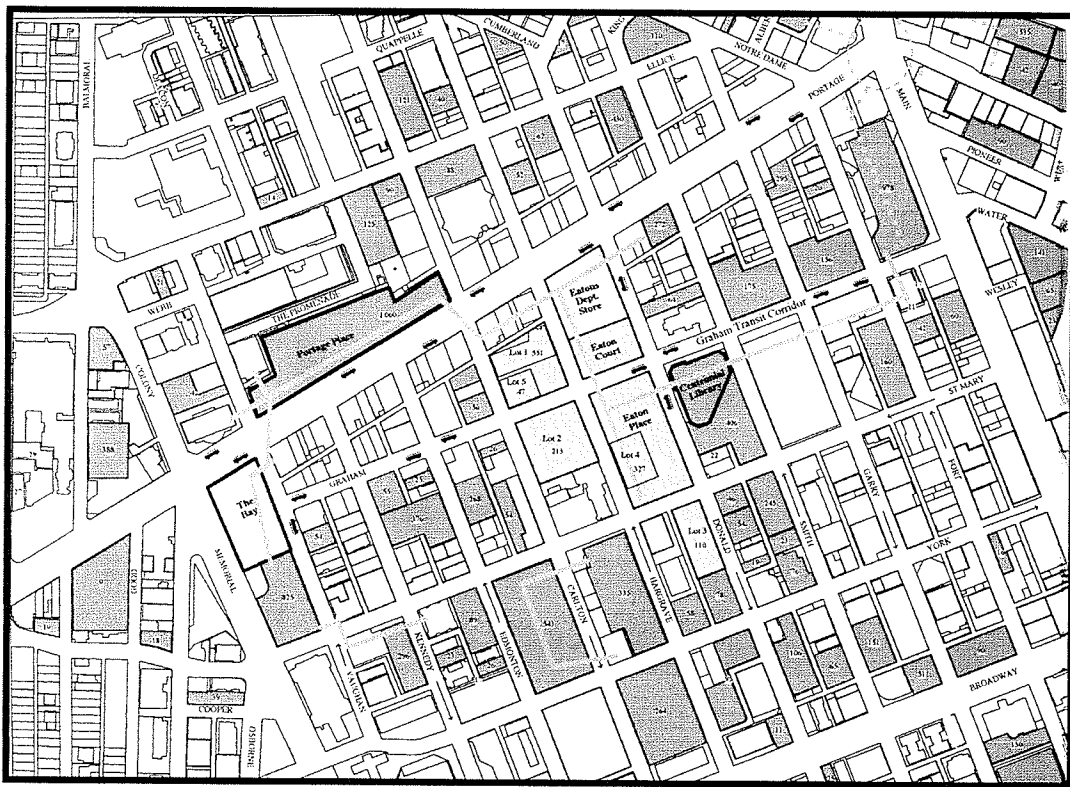


Figure 2.2 Immediate Study area, Connections, compliments of Emerald Property, (2000).

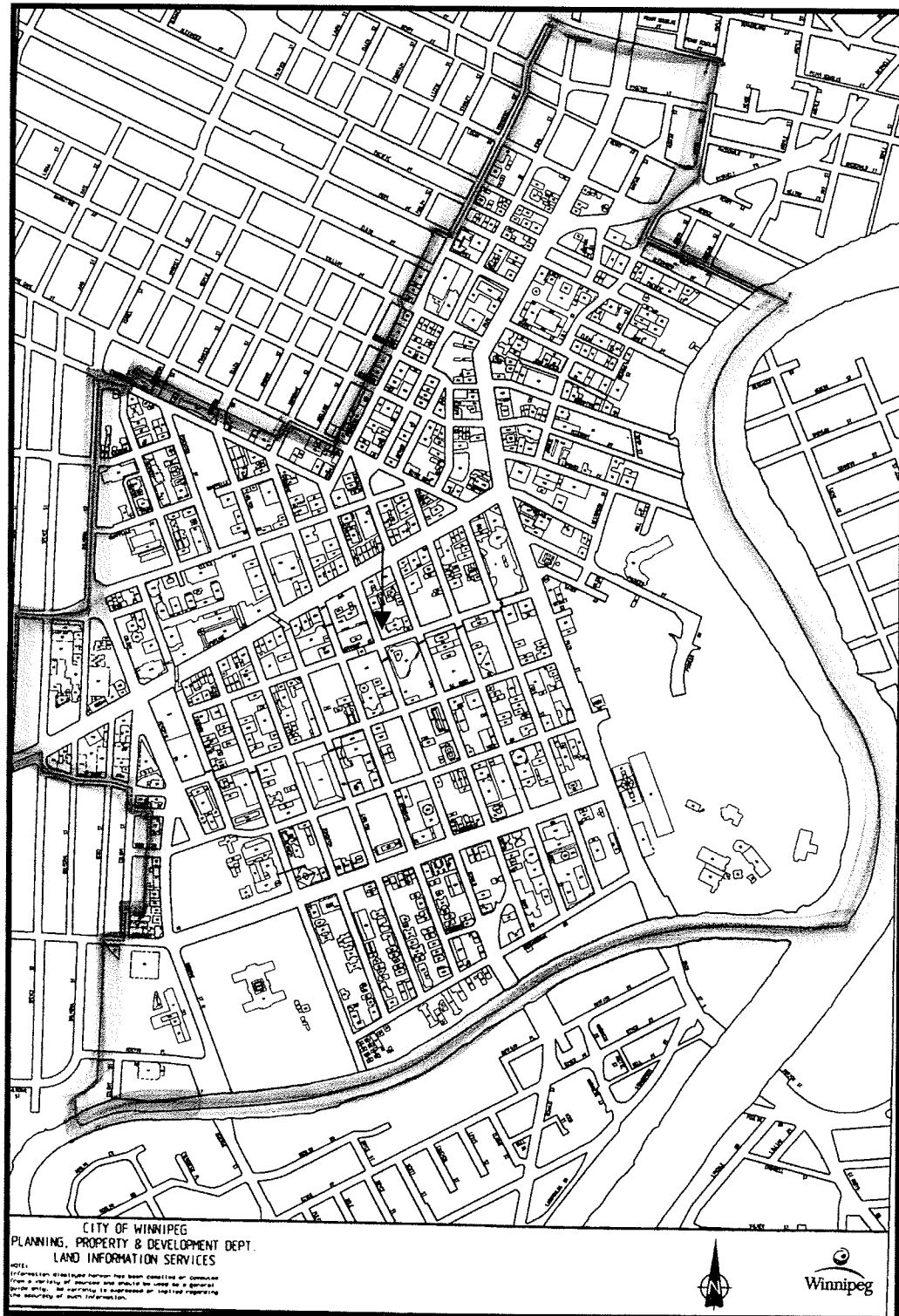


Figure 2.3 Downtown Core, Source: Planning Property and Development City of Winnipeg, (2000).

2.1.c. Early History of Downtown Core of Winnipeg

There is evidence of human presence at The Forks dating back to 4000 BC. By 1730 the rivers were used as a trade route forming an intricate area in the history of the economic and cultural history of Winnipeg. The rivers provided a trade route between Canada and the United States.

In 1793 the North West Company established a camp and in 1810-1816 Fort Gibraltar I was established. In 1835 Upper Fort Garry was established as a larger fort for the Hudson's Bay Company. Downtown Winnipeg was developing as well. With Henry McKinney building a hardware store in 1862 on the north west corner of Portage and Main, trade expanded. This expansion increased to include the Hudson's Bay Company Post, Upper Fort Garry on the North Bank of the Assiniboine River, and the area at the south end of Garry Road that is on the main street or the Portage Trail.

In 1870 the population of Winnipeg was 215 with a steady arrival of immigrants from various countries including France, England, Iceland and Germany, followed by Scotland, Ireland, Russia and the Ukraine. As one of the fastest growing cities in North America, the Central Business District built up concurrently with the Exchange District. (History of Winnipeg). By 1872 the Hudson's Bay company registered a plat of its Selkirk Townsite south of Notre Dame Avenue and west of the Red River, and in 1879 Plan No. 81 for the Selkirk Townsite established the present course of Portage Avenue creating plats facing the north and south sides. (Appendix I) In 1882 McKenzie's Hotel, later known as the Clarendon, was built.

Figure 2.4 1875 map of Winnipeg shows the early development of the urban core of Winnipeg and the Forks area.

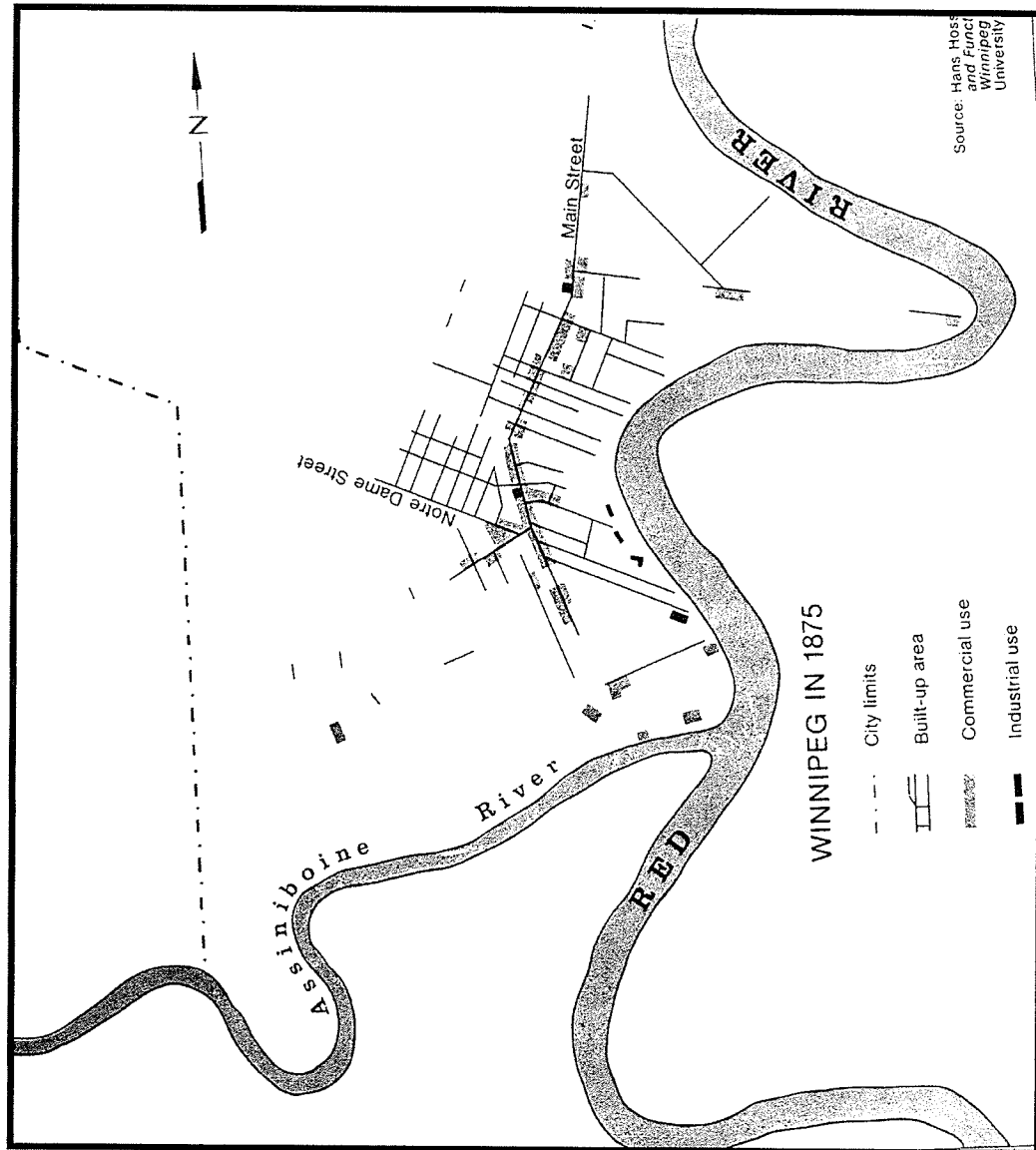


Figure 2.4 Winnipeg 1875, Source: Hans Hosseman, Thesis, University of Manitoba in Maps of the Prairie Provinces, Thomas Weir, (1971).

1904 photos of the streets of Winnipeg

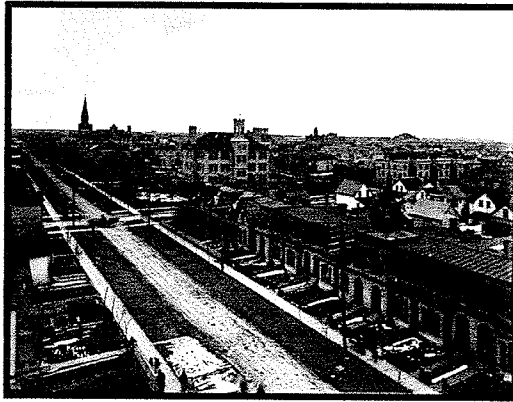


Photo No. 2.1 View looking SW from Eaton Block Photo No. 2.2 View looking NE from Eaton Block
(Photos from Ryder Family Photo Album, Eaton Archives, Province of Ontario, with permission from
Sears Canada Corporation.)

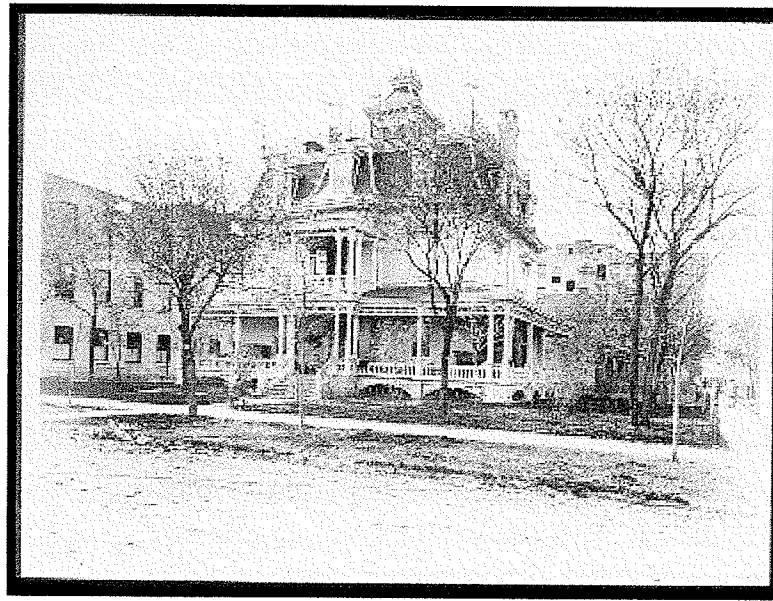


Photo No. 2.3
Strevel Mansion, Eatonian Club, 1905, Photo from Ryder Family Photo Album, Eaton Archives
Province of Ontario with permission from Sears Canada Corporation.

Between 1878 and 1901 the block that the Eaton family purchased was built up with of a range of houses and commercial structures. The most influential structure at that time became the W.H. Lyon residence later known as the Strevel Mansion. It was built on the northwest corner of Graham Avenue and Donald Street. (Photo) This

became the management office during construction of the Eaton building. (Photo) This area was one half mile southwest of the current CBD and what is now called the Exchange District. The CBD grew along Main Street and was anchored by the Dominion Bank (1899), the Commerce Bank (1899-1900), the Merchants Bank (1900-1901), the Bank of British North America (1903-1904), and the Union Bank (1902-1905). (City of Winnipeg records).

Canada became a nation in 1867 and Timothy Eaton, an Irish retail merchant, immigrated to Canada to begin an empire. The first Eaton store, 24 feet by 60 feet opened in Toronto at 178 Young Street in 1869 with 4 employees serving a population of approximately 1700. Expansion became imperative as Canada grew quickly. Winnipeg, being the geographical centre of Canada was the first choice for the second store and the development of the head of Western Canada. When Timothy Eaton sent his son to scout the project he looked at the CBD of Winnipeg and decided that property values in that area was too high (Photo). Selecting his own site on Portage Avenue, he was moving away from the existing CBD. Economists questioned his reasoning since they believed the store would not survive so far from the business district (Santink, 1990). The population of the City in 1900 was 200,000 (Hughes,1998).

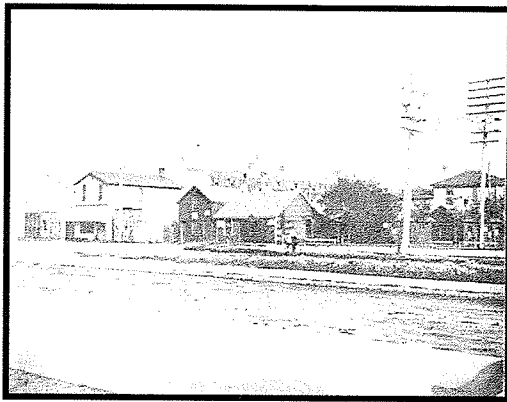


Photo No. 2.4 Eaton Block 1904

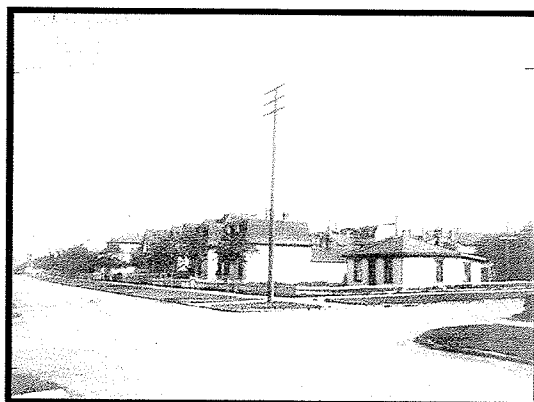


Photo No. 2.5 Hargrave and Graham Street, 1903

Photos from Ryder

Family Album, Eaton Archives, Province of Ontario, with permission from Sears Canada Corporation.

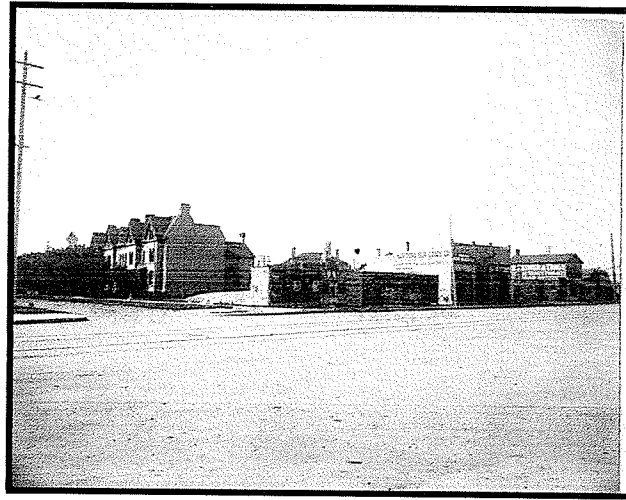


Photo No. 2.6

Donald Street and Portage Avenue, Eaton Site, 1904, Photo from Ryder Family Album, Eaton Archives, Province of Ontario, with permission from Sears Canada Corporation.

Another cause for concern was the fact that he purchased a full city block with the intention of building an eight-story building. With expansion in mind the purchase of the property was expanded to include the property as shown on the site map of the Eaton Property (Figure 2.9). The Hudson's Bay building moved further west on Portage Avenue to join the Eaton Building. This resulted in a shift in the retail centres; however, R. J. Eaton did heed some of the warnings from the economists. The original building was built with five stories (Eaton, 1949).

The Eaton family made the first proposal to the City of Winnipeg in 1901 (City Records Plan No. 236 – visual not available). At that time one half of the lots were still vacant. Hugh McBain's store was the most important structure in 1901. (City Records). No purchase was made by Eaton's until 1904 with a second bid at an approximate cost of one half million dollars. (City of Winnipeg Plan 1354 - visual not available). The original intent was to build six stories. There were many in-house concerns over the economy of Winnipeg and in the end the first Eaton building built in 1904 was five stories high. (City of Winnipeg Plan 1542 – visual not available). Two years later the sixth story was added (City of Winnipeg Plan No. 1909 -visual not available). In 1907 two more stories were added to make the full eight (City of Winnipeg Plan No. 310

Appendix I, City of Winnipeg archives). The partial ninth story was added in steps beginning in 1948 (City of Winnipeg Plan No. 5855, Appendix I, City of Winnipeg archives). Mr. J.C. Eaton died in 1907. The Polo Park store and mall opened in May of 1968, and the main store ended its era in the fall of 1999 (Rostecki, 2000).

The Eaton building represented not only a place to shop but also a social centre, and a cultural centre. In order to appreciate the scope of what The Eaton building once represented, one must review the philosophy. It was built on the idea that young Canada was shaping the country throughout the cultural interests of the community. A cultural shift was beginning, and The Eaton Empire was built by reaching young Canadians. Importantly, women, the new shoppers from all walks of life, and all age groups (Eaton, 1990).

The cultural shift to the woman in the shopping place was one of the driving forces of the economy. The choice of the location of the Eaton building in 1904 was carefully chosen to accommodate all walks of life. It was easily accessible with room for expansion. Located on Portage Avenue away from the corner of Portage and Main, it was still close to the Exchange District and provided a waiting room for farmers while their grain was sold on the grain exchange. During the Eaton era the building was expanded nine times. It was Cultural. It was event-driven, from hosting Christmas parades to an assembly hall on the seventh floor with their own choir. Socially, Eatons was a meeting place for luncheons, shopping, and meeting all needs. When Eaton's went into receivership and the contents of the store were auctioned off a tremendous void was created in the downtown core.

Based on the policy of customer service with customer satisfaction guaranteed or money refunded, the T. Eaton Company built an empire with the Winnipeg Eaton building being the central office for the Western Division. The building and property formed a "small city".

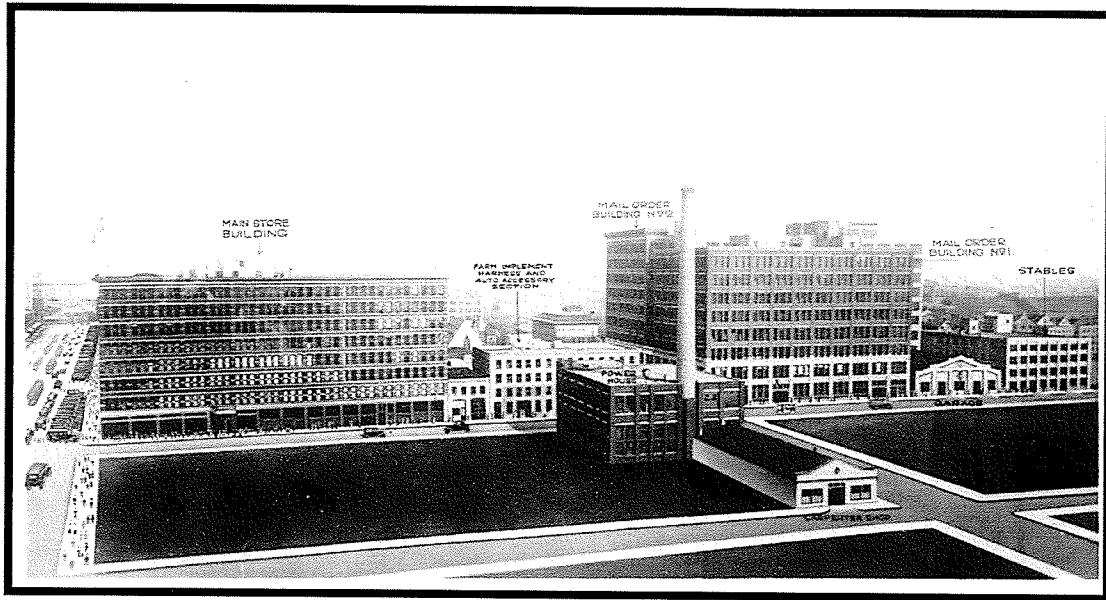


Photo No. 2.7 Birdseye View of Winnipeg Property 1926 – photo of original drawing Eaton Archives, Province of Ontario, with permission from Sears Canada Corporation.

2.1.d. Type of Study

This practicum begins with a literature review of housing projects across North America, some of which are infill, some of which are market housing and some of which are redevelopment. Most important are the theories and issues driving the housing within the downtown core of a city. Mixed-use development evolves out of the project.

Three example case studies are investigated. The first is Butler Square, Minneapolis, the second is Queen's Quay Terminal, Toronto, and the third is the Woodward's Building, Vancouver.

2.2 INTENT OF STUDY:

When a city's heart stagnates, the city as a whole falters at producing something greater, socially, culturally, and economically than the sum of its separated parts

-Jane Jacobs. *The Death and Life of Great American Cities*, (1961).

The intent of this study is to offer a redesign of the Eaton building and a conceptual development program for the surrounding Eaton property. The study does not include City Place or the Eaton Towers. The study proposes a mixed-use complex incorporating tenant spaces in the form of leasable light commercial/retail, office, housing, and a variety of community amenities such as day-care, gymnasium and gallery facilities. Green space is incorporated into the project in the form of interior gardens, courtyard/atria gardens, and rooftop gardens. Green spaces are outlined for the parking garage, the powerhouse and parking lot and the annex to the Eaton building on the Concept Site Plan.

The Eaton building provides a prototype for possible revitalization in other North American Cities. This particular study offers the opportunity to a landscape architect to study the integration of building mass into urban fabric, how it reacts with the environment; and the development of garden spaces.

It is proposed that the building envelopes could remain and that cultural aspects could be enhanced. Part of the uniqueness of the original characteristics should always be present. The diversity of the modern city could be retained by integrating the design into the building and street network and providing a degree of continuity including linking the site to the existing structure. The Eaton property provided an opportunity for open-ended design suited to subsequent adaptation. The aim would have been to re-integrate housing into the downtown urban fabric.

2.3 SCOPE OF STUDY

2.3.a. Limitations

A green architecture involves more than the individual building on its plot; it must encompass a sustainable form of urban environment. The city is far more than a collection of buildings; rather it can be seen as a series of interacting systems – systems for living, working and playing - crystallized built forms. It is by looking at systems that we can find the fact of the city of tomorrow

-Brenda and Robert Vale, *Green Architecture – Design for an Energy-Conscious Future*, (1991).

The practicum uses the Eaton building as an academic study to demonstrate the opportunity for adopting an integrated systems approach to adaptive re-use of a major heritage building. It involves a literature review of relevant theoretical issues, including, ecological design, market housing in a downtown core, infill housing and mixed use.



Photo No. 2.8

from CentreVenture Development Corporation, March 2002.

The Photo above shows Portage Avenue from the west and the immediate study area within the 'downtown study area' as defined by the Zoning By-Law 4800. The Eaton property and walkway system is visible.

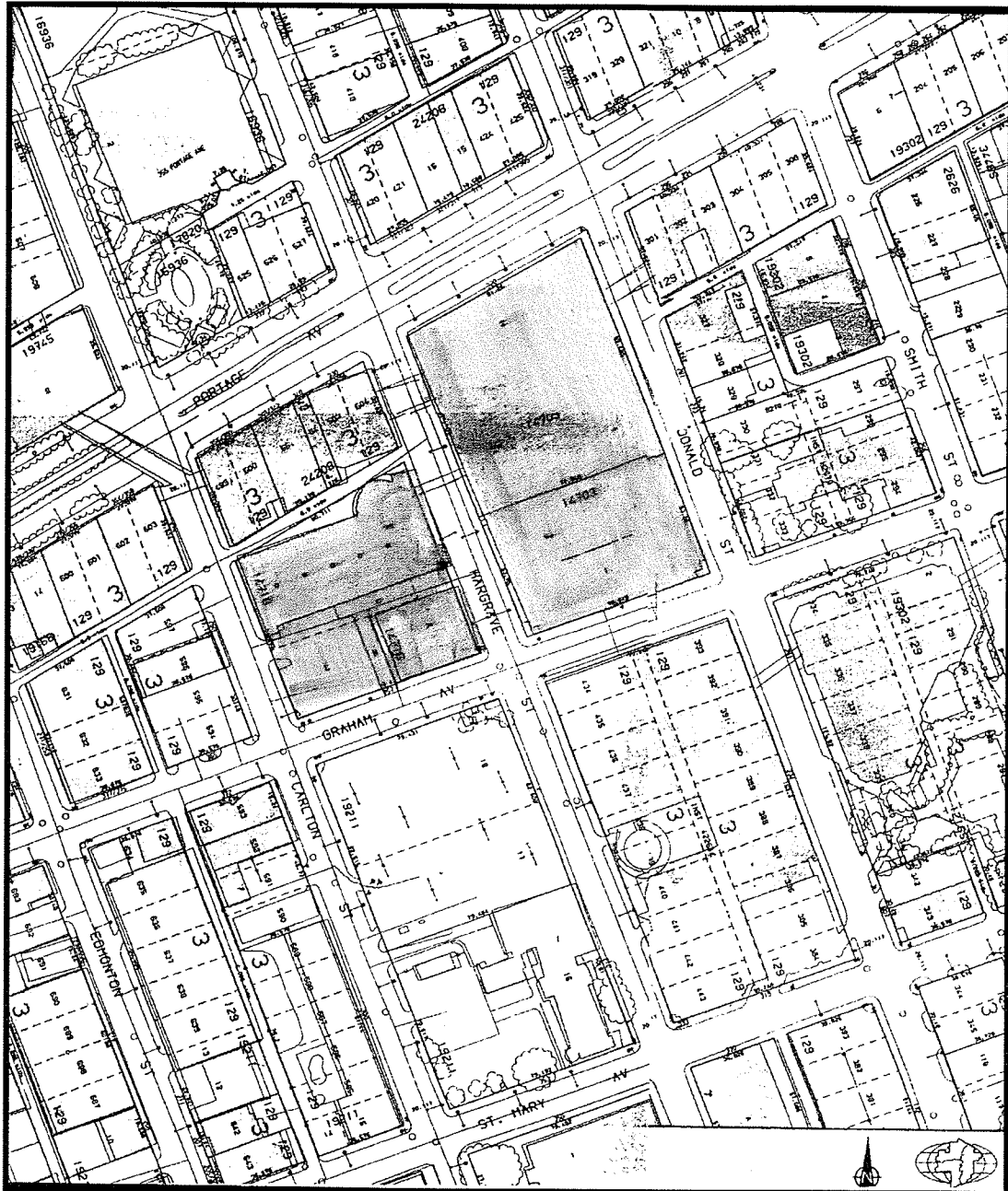


Figure 2.5 Source: City of Winnipeg, Property, and Development Services Dept., (2001).

The Eaton property occupied the highlighted areas. The main building occupied lots 397-partially, 398, 399, 399A, 401, 402, 403, 404, 405, 406, 429 and partial 430; the annex, 394, 395, 396, and part of 397, 433, 432, 431, and part of 430; the power house 434, where the parking garage currently is 496, 497, 498 the new garage 533, 532 as well as 394, 385, 387, 388, 389, 390, 391, 392, 393, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, as shown on the Key Plan c.1935 showing the location of T. Eaton property including the tunnels.

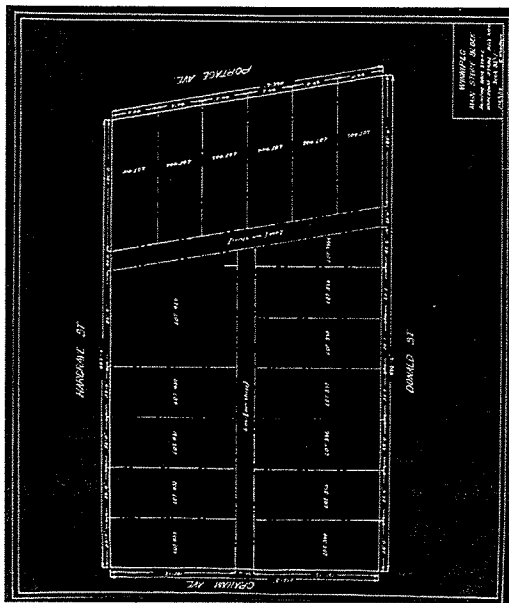


Figure 2.6 Plan of Main Store (1929) from blueprint

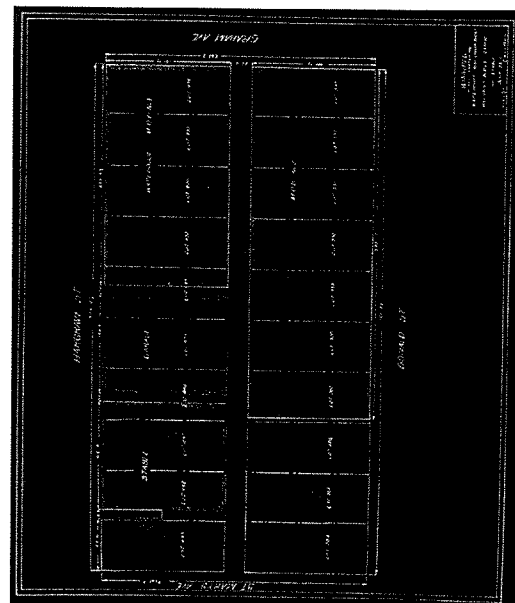


Figure 2.7 Plan of Warehouse, Stable and Mail Order Building (1929) from blueprint.

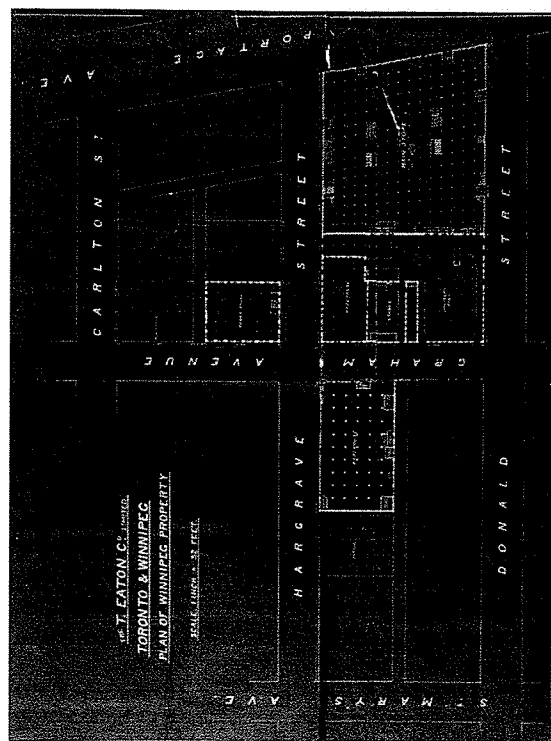


Figure 2.8 Plan of Winnipeg Property (1929) from blueprint 36x48

Figure 2.6, 2.7, and 2.8 are photos of original drawings by C. Woodburn, c. 1929 of a portion of the Eaton Property. These are part of a series held by the Eaton Archives, Province of Ontario, produced with explicit permission from the Sears Canada Corporation.

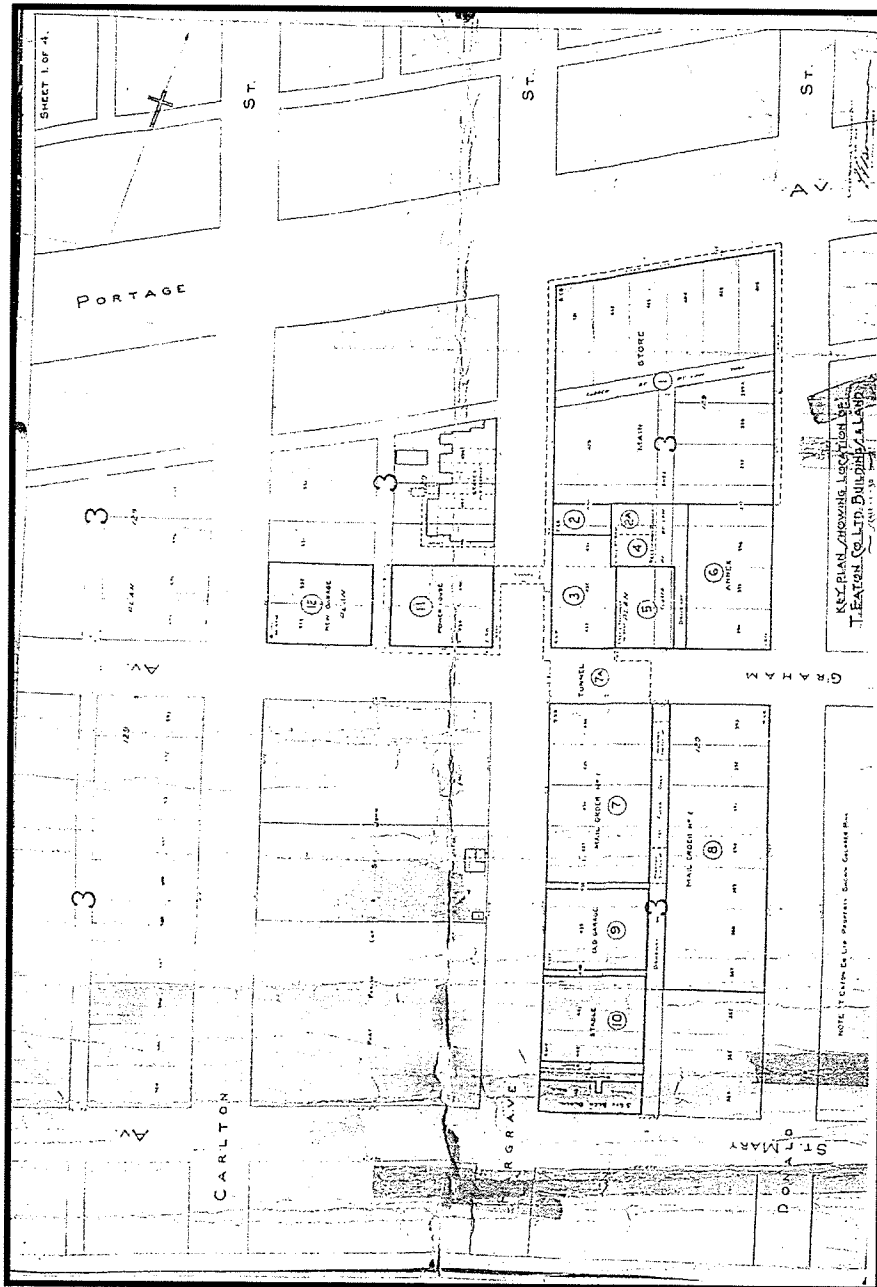


Figure 2.9 Key Plan of Eaton Property C. Woodburn, c.1935, whiteprint, reduced from 1"=50 Eaton Archives, Province of Ontario.

Photocopy of original held by Eaton Archives, Province of Ontario, with permission from Sears Canada Corporation. Note the entire property and tunnels are shown.

2.3.b. Content

Case studies of similar projects – Butler Square, Minneapolis, the Woodward's Building in Vancouver, and Queen's Quay Terminal, Toronto are included. The study also includes a review on the issues that drive market housing in a downtown core.

The design process will incorporate a roof system involving solar panels (photovoltaic cells), an atrium, the reuse of the Eaton building in the form of mixed-use – offices and commercial, housing units to draw a unique user-group to the downtown area, and some of the amenities required by the user group - day care, gym facilities, entertainment, and gallery space. Program development is determined by an examination of the uniqueness of the City of Winnipeg and derived partially from the case studies. It will develop further in the course of the study.

Conceptually, the design process will include the entire Eaton property. The proposals will apply only to the Eaton building.

2.4 Conclusion

At the beginning of this study the Eaton building was empty and the surrounding property was underutilized. Urban cores of North American cities are cyclical in nature. Economics change, demographics change, and “shopping” and the downtown needs change. Investigation of the current trends in downtown needs could help develop a structure for the redevelopment goals.

Research indicates that human presence is required for any revitalization program to be successful. Integrating green space and developing a green building can create a sense of place. Green building structure with an integrated system approach can promote human activity and downtown vitality. Chapter three outlines design goals and objectives that could be used to develop an integrated system approach for this practicum.

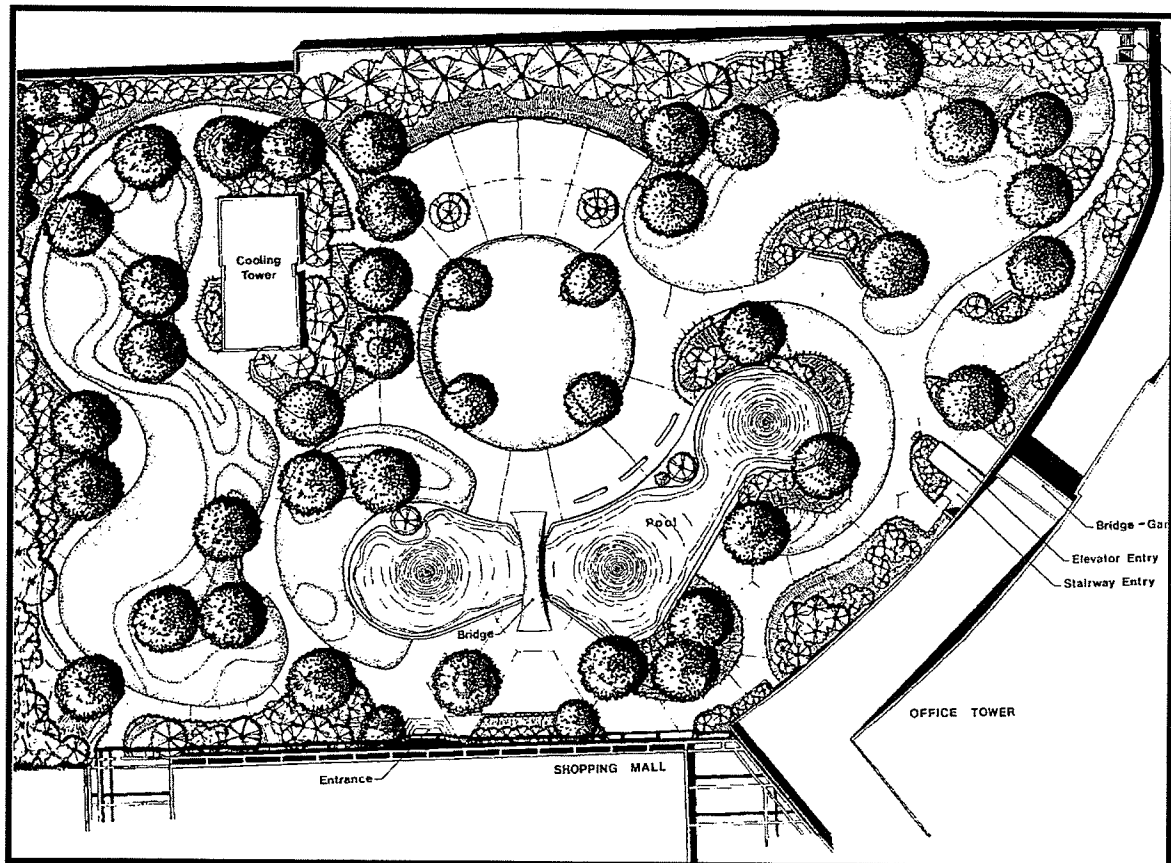


Figure No. 3.0 Kaiser Centre Roof Gardens Source: Theodore Osmundson, *Roof Gardens*, (1999).

3.0 DESIGN PRINCIPLES

3.1 Introduction - an Ecosystem

An ecosystem is an integrated complex of living (biotic) and nonliving (abiotic) components, in which each component influences the other components. It is interactive. A pond is an ecosystem, as is a lake, a river valley, a woodlot, a cornfield, a city park, or a city housing development. This is an integrated systems study of an urban housing development as an ecosystem. It takes into account biotic and abiotic factors.

Cities are dynamic entities and their composite environments and the qualities afforded by them are not only determined by the fulfillment of the material economic needs of their citizens but also by the social and environmental conditions that prevail. These social qualities include aspects such as healthiness, attractiveness, and safety of urban areas. Sustainable urban environments, therefore, are those which develop and grow in harmony with the changing productive potential of national and global ecosystems

- Bragado, Corbett and Sprowls, *Building Livable communities, a policymaker's guide to infill development*, (1995).

According to Bragado, Corbett and Sprowls, what are needed are more options for sustaining an increasingly varied population and a true accounting for the real costs of our development patterns. The reuse of a historical building for this purpose is relevant to the City of Winnipeg (Bragado, Corbett, Sprowls, 1995).

We need appropriate development, which incorporates an ecological approach to building and landscape design. This means replacing land lost beneath buildings and roads with a layer of plants on hard surfaces. By strategically adding green skins in this way it is possible to create a new network of vegetation linking roofs, walls, courtyards, street, and open spaces. This is particularly important in city centers where vegetation may cover only about one third of the land surface, compared with 75% - 90% in the outer suburbs. Growing vegetation on hard surfaces should never be viewed as an acceptable alternative to losing valuable areas of greenspace. Such areas are a precious commodity to be preserved at all costs

- Jacklyn Johnston and John Newton, *Building Green*, (1993).

3.2 Ecological Design Goals

3.2.a. Historic Preservation

Historic preservation has become an integral part of urban renewal. The clearance of old buildings is not a necessary means to urban renewal. Abandonment

becomes too disruptive on many counts often leading to sterile projects lacking continuity with historic urban patterns. This practice can be replaced by historic preservation. With the effective integration of old structures and new development in urban projects, they can be more economically viable, interesting and respectful of local traditions.

The atrium has been a significant development in the preservation movement. It presents the opportunity of retroactive use. It offers the advantage that the designer can accurately restore the exterior of the building maintaining the urban fabric while giving the building a new interior. Allowing for versatile, adaptive tools and a new spatial identity, atria can complement the visual identity of the building's original facades. It also allows new vertical circulation, revised energy strategies, the opportunity to install new building services, and allows light into a multi-story building. This involves two approaches in the process – covering courtyards and carving out atria. There are numerous examples of this type of architecture.

In the case of urban design features, although not historical, a good example is the Crystal Court IDS Center, Minneapolis, Minnesota designed by Philip Johnson and John Burgee in 1973. The atrium allows all the elements to become mutually supportive – a unique spatial concept, 20,000 square feet of atrium open plaza on the floor, and a steel crystalline space frame roof structure. It draws together circulation lines from desire lines through surrounding blocks that were already connected by a system of second-level bridges or walkways. It is a focal space for the pedestrian in the city, and an entry to the four buildings on the block.

3.2.b. Interior Landscape Design

Because of the nature of the use of atria and courtyards, interior landscape design becomes a consideration for the overall design. The Ford Foundation Atria, in New York City, is an interior landscape architecture example. Built in 1976, the team of professionals responsible for the design, installation, and maintenance had few contemporary precedents on which to draw in order to determine the appropriate environmental parameters.

The basis for design principles in the field of landscape architecture includes the evaluation of relationships between the site and its structures, people, and situations.

Gregory Pierceall, 1987, cites Thomas Church, a prominent California landscape architect of the 1950s and an advocate that the landscape gardens surrounding a residence as well as other design scales, should function as an extension of the interior space while being responsive to surrounding climatic influences. His design principles were based on human needs, awareness of technology and concern for spatial expression, which would go beyond the mere satisfaction of requirements into the realm of the art. In interior landscape design, these same considerations can be the basis of design principles where the inside echoes the room, the building, and site surroundings. The idea of extending indoor space out is being reversed to bringing the outdoors in with interior plantings, interior courtyards, atriums, and conservatories. As buildings become larger and are constructed of starker building materials with simple lines, plants add a necessary human dimension and continue to expand the image of outdoor life.

Nelson Hammer, defines interior landscape design as, "the art and science of arranging and placing living interior plants and related accessories within enclosed and environmentally controlled structures for the purpose of creating aesthetic appeal" Hamner, (1991).

The Roman atrium was an early example of the use of plants within an enclosed space. The Hanging Gardens of Babylon are relevant to the overall re-design of the Eaton building.

3.2.c. Courtyards and Atria

Ecological design includes many areas to produce an integrated system. One of these factors involves the use of atria to produce a harmonic building complex. The atrium historically was a particular form of courtyard and the social centre of the ancient Greek and Roman house. Throughout architectural history, the courtyard building form has been used for monasteries, missions, castles, palazzos, and grand palaces. The development of iron and glass technology created new possibilities for courtyards and provided the opportunity for enclosed courtyards creating a new interior space protected from the climate but still enjoying the light and view of the open sky. In the nineteenth century, atria included buildings such as conservatories, exhibition halls, and the reuse of historical buildings (Bednar, 1986).

The courtyard concept is apparent in the emergence of urban settlements from nomadic settlements. The atria design offered cultural and climatic solutions in the form of privacy, limited land area, exposure to communal space, climatic control, a natural source of light and air, protection against the wind, a private outdoor space, a heat sink in the winter, and a place for shade and coolness in the summer. The earliest example comes from Mesopotamia, third millennium BC (Bednar, 1986). It involves an open courtyard.

Roman design is not the true beginning of the atria. Atria were used in Roman design but the Tuscan atrium was joined with the Greek peristyle in the same plan. A typical plan of a patrician Roman House (from Pompeii) indicates a symmetrical layout. In Roman architecture, there was much more emphasis on the interior space and decoration than on the appearance of the exterior. The entrance led into the atrium, a large space with a rectangular opening through which one looked to the sky. Rainwater ran off the roof, which was pitched inwards, and fell through this opening into a little pool called an impluvium. Around this space were small rooms used for bedrooms or living rooms. Behind the atrium was the entrance to a public reception area. In some of the larger houses there would have been more than one atrium – perhaps an interior courtyard as well or an enclosed garden. The open house plan was admirably suited for a climate in which the weather was mostly warm and sunny. People could feel they were out of doors even when they were in the house. The core of the house around the atrium could be closed up as a barrier against cold winds when necessary (Ramage, 1991). From the first and second centuries BC, the Greeks developed the courtyard house.

Vitruvius defines five types of atrium in Chapter II Book VI:

1. Tuscan: roof, supported by girders and crossbeams running the full width of the atrium, slopes toward the opening in the center such that rainwater can be collected in a cistern.
2. Corinthian – the same construction as the Tuscan except the roof is supported on columns all around the roof opening forming a peristyle.
3. Tetrastyle. Four columns support the roof girders, one at each atrium corner.
4. Displuviate – the roof slopes away from the atrium roof opening, throwing the water off the sides. Being high, the roof opening brings in more light to the dining rooms.
5. Testudinate – used in a two-story house with short spans. The atrium has no roof opening and is used as a sitting room.

Vitruvius also used proportions in three classes:

1. length to width 5:3

2. length to width 3:2
3. length to width square root of 2 W squared to W.

The height up to the girders should be one-fourth less than the plan width. Surrounding rooms are proportioned beginning with 30 to 40 feet and continuing on up to 80 to 100 feet.

The nineteenth century atrium is a central, interior, and daylit space, around which a building was organized. The difference from the original Roman atria is the interiority – its lack of open sky. By not necessarily being in the centre of the building, it serves as a place of orientation for the rooms, which surround it, and in turn brings spatial coherence to the building. According to Bednar, atria can refer to a high interior usually having a glass roof and surrounded by several stories or the central space of a Roman house. The most recent accepted meaning relates to the varieties of enclosed, daily, centroidal spaces.

Atria offer the following design options: “The urban scene has been greatly enriched by atria because of the many ways in which they contribute to sensitive and innovative urban development” (Bednar, 1986).

1. URBAN DESIGN. As public spaces they add to the varieties of urban space types. The plaza atrium extends the use of that public plaza by protecting users from the climate and coherently relating complexes of buildings. In a retail development, atria provide safe, comfortable areas for shopping and create a recreational air. Historic buildings have been renovated and altered for reuse by using atria to link them to new additions or to give them a new interior image. In short, the atrium offers a unique pedestrian experience.
2. ECONOMICS. There are opposing arguments involving economics of the building of atria. On one side there is the increased cost of more roof area, the use of expensive skylights, and the increased need for fire and smoke control systems. In the case of a new building, there is often additional cost in extra land for the increased size of the building. On the positive side, the exterior surface-to floor-area ratio of that building is lower and vertical servicing is more efficient. What atria offer is the marketability of a particular building whether new or renewed.
3. ENERGY. Skylight atria bring in daylight, which is useful in offsetting lighting costs in office and commercial buildings. Atria often are used as heat sinks; places to dump rejected and unneeded heat. They are also often used as return air plenums (as in the case of Butler Brothers Warehouse).
4. TECHNOLOGY. Glazing materials and systems have developed over the past two decades allowing the design of more sophisticated fire and smoke control. Air handling equipment and techniques have been refined to minimize stratification and condensation. Observation elevator cars in exposed hoistways offer the amenity of a dynamic spatial experience.

5. CLIENT NEEDS. Atria can provide the necessary catalyst for common space, which causes organizations and institutions to become more cohesive. The atria floor can provide a requisite program space, which functionally bonds the plan together. It provides the creation of a controlled positive indoor environment. Buildings with atria have more efficient and coherent circulation with excellent orientation. The addition of art, water, and plants with the natural light offered by skylights or open air establishes ambience or “genius loci”.
6. ECOLOGICAL DESIGN and HOLISTIC DESIGN NATURE. It has the capacity to control and shape many aspects of the building’s design simultaneously. Spatially, atria offer power and clarity, and inherent spatial order. Generating a strong spatial identity and image, marketing potential creates secondary attributes. Atria offer social and functional cohesiveness to an institution. Energy conservation— daylight entering the centre of a large building is a benefit....

The greatest benefit is the capacity of atria to bring spatial orientation, drama, and excitement to architecture

—Michael Bednar, *The New Atrium*, (1986).

A modern atrium can then be described as a metaphor for the outdoors. The atrium offers views into the atrium from the surrounding spaces and can give a sense of satisfaction as a substitute for an exterior space that is difficult to find in the downtown core. The atrium can be used to create a formal streetscape or an informal garden. Planting becomes an integral part of the atrium or courtyard in which is born “the living atrium” (Saxon, 1983).

3.2.d. Roof Garden Design

Rooftops give a dimension to Modern City living, which is impossible on the ground. Up high on the roof there are views over the other buildings, sunsets to see, a relaxing freedom from cars and other traffic, a privacy and intimacy which no other city facility can bring and all of which are difficult to achieve at street level

- Lawrence Halprin, *New York, New York, a study of the quality, character, and meaning of open space in urban design*, (1968).

The incorporation of roof gardens in a design offers the opportunity of adding a distinctive dimension of being in experiential green space. Roof gardens provide not only the experience of being in a garden but also the experience of being up high, both an aesthetic experience.

cities can be viewed from an entirely new ecological perspective. Buildings offer surfaces akin to landforms and these can be planted following clues from nature. The skin of the city can be transformed into a living landscape

- Jacklyn Johnston and John Newton, (1993).

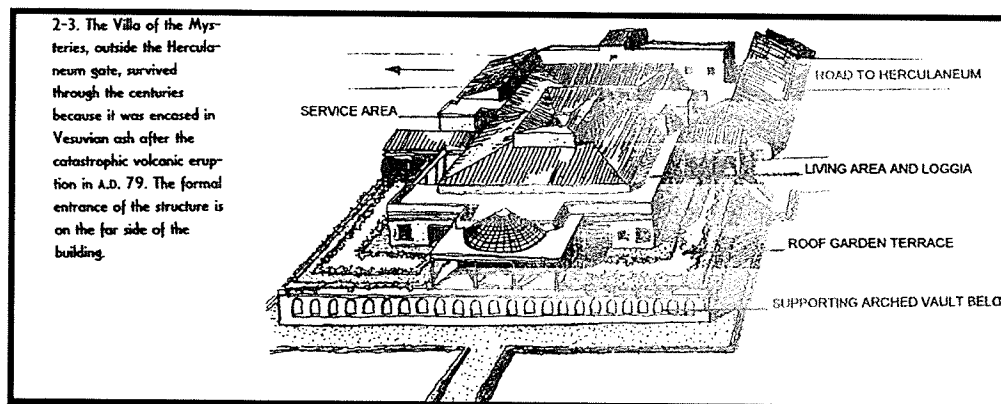


Figure 3.1

Villa of Mysteries, Pompeii, Italy Source Osmundson, (1999).

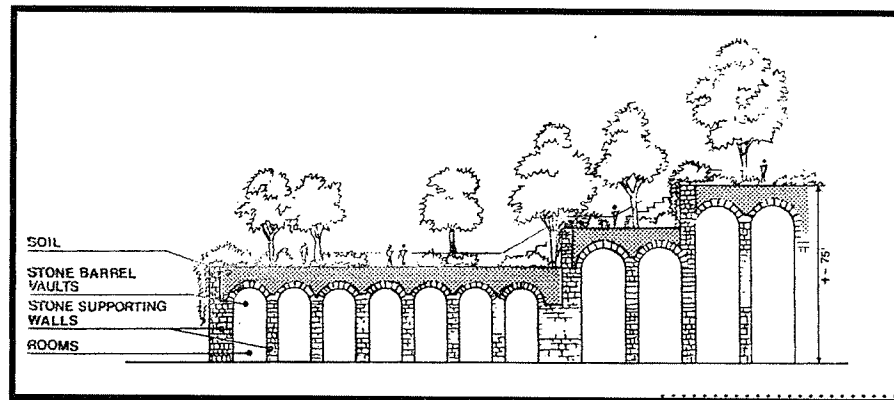


Figure 3.2 Section drawing of the Hanging Gardens of Babylon Source: Osmundson, (1999).

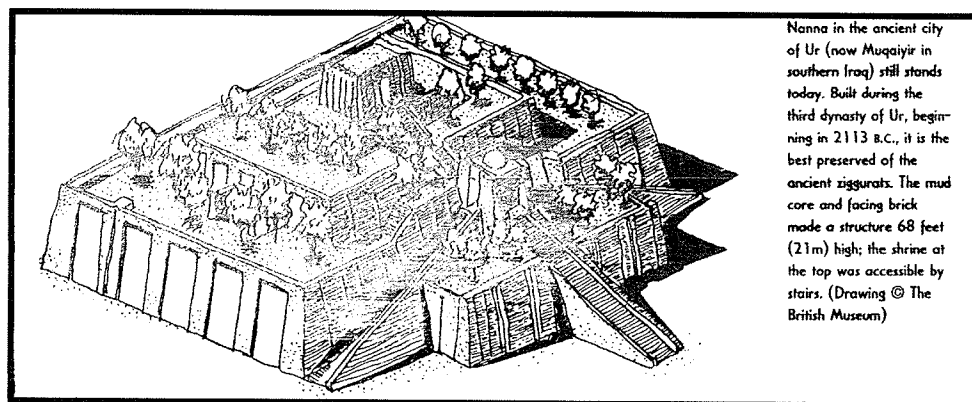


Figure 3.3 Babylon, circa 500 BC. is based on the archeologist Robert Koldeway's descriptions. (Osmundson, 1999)

Historically, roof gardens can be traced to the Ziggurats of Ancient Mesopotamia. Figure 3.3 is a representative drawing of the gardens of the Ziggurat of Nanna in the ancient city of Ur (now Mugaiyir in southern Iraq) which is still standing. Figure 3.2 is a representative drawing of the Hanging Gardens of Babylon, (Osmundson, 1999). Figure 3.1 is a representative drawing of The Villa of Mysteries, Pompeii, Italy, outside the Herculaneum gate survived through the centuries after the eruption of Mt. Vesuvius. Throughout the centuries and all across Europe the concept of roof gardens has been incorporated into creating green space. North America adopted the concept at a later date. One of the first roof gardens to appear was the Rockefeller Center in New York New York between 1933 and 1936. Designed for viewing from

functioning as integrated green space, four roof gardens link the buildings (see photo in chapter seven). “roof garden building opportunity ranges from under ground buildings, office buildings with various restrictive spaces, hotels, bridges, connected podiums such as an elevated forefront of a building, and building edges” Osmundson, (1999).

The Eaton property offers all of these suggested spaces as possibilities for integrated green spaces and gardens.

Roof Gardens offer three main advantages:

1. Economic - in the form of financial returns. There are less quantifiable social and environmental benefits. Roof gardens increase the net worth of the structure. With the increased garden there is an attraction, which in turn, provides more revenue from the units. Businesses that own or rent space in a building with a roof garden can showcase the garden as an amenity to attract and keep valuable employers and impress clients. Roof gardens can also contribute to the renewal of an urban area particularly if it is designed in conjunction with another project. The Eaton property could have been integrated with the neighbouring Mountain Equipment Co-op store and could have offered a green tour enhancing the opportunity. Office complexes, convention centres, theatres, shopping complexes and other urban projects all require parking. Incorporating gardens into the garden on top of the garage could have been an integral part of expanding the Eaton gardens. This in turn results in increased tax dollar and revenues in the neighbourhood. Above ground gardens can reduced energy by adding insulation for the roof. In addition, the gardens can help prevent waterproofing materials from degradation.
2. Social -including respite from the noise and bustle of the busy streets below offering a “peaceful island within the urban jungle” (Osmundson, 1999). A roof garden can provide isolation from the traffic, noise, dust, and general confusion of the downtown. City streets can be sensed in most gardens from above. A downtown street park cannot quite achieve the same sensibility. The street sounds bounce off buildings, walls of other buildings and bypass the roof levels. A second social advantage is the availability of distant views.

Roof gardens enable developers to meet the 'green requirements' of city bylaws in some areas such as Portland, Oregon and Stuttgart, Germany. Cities need to alleviate congestion and provide open space to make units more livable. If the roof level option is chosen access for the public from the street must be traded off for greater height, square footage or density particularly in a city where open land is scarce. In this case this would certainly help to alleviate the urban sprawl that has occurred.

Roof garden development promotes community within a city. Office building gardens can provide places for employees to mingle in a more relaxed setting. Public gardens function as spaces to meet and socialize and attend special events. In suburbs ground-level parks, plazas and gardens could fill such needs but in built-up cities roof areas are often the only spaces available. They can maintain the connection with nature that might not otherwise be possible. Roof gardens could insert nature into the urban landscape. Plazas are being redesigned and rebuilt offering the city more livable space. Such reminders of our place within nature are vital to our sense of well being. As less crowded areas roof gardens could be used to retain historically or culturally significant spaces.

3. Environmental. These include improving the environment by adding green space and playing a role in a healthy ecosystem. Plants maintain air quality, absorbing carbon dioxide and releasing oxygen via photosynthesis. They recharge the atmosphere that enables all animal life including human life to exist. With the added plant material the roof garden can help combat pollution. The gardens could also moderate the climate of urban areas reducing the albedo effect from the concrete and asphalt. A network of roof gardens could reduce the temperature by several degrees. Increases in the evaporation of moisture helps cool the air making urban areas more comfortable. Temperature reduction produces a significant reduction in energy use specifically for air conditioning. Earth sheltering could reduce energy, and could protect the structure from air temperature fluctuation. (adapted from Osmundson, 1999).

CMHC has done extensive studies on contemporary roof gardens.

Their research divides green roof systems into two types – extensive and intensive. Extensive involves low maintenance, - thin soil, little or no irrigation, and stressful conditions for plants. Intensive involves deep soil, irrigation systems, and favourable conditions for plants.

Benefits include:

1. offer a wide-range of public-private, environmental, economic and social benefits,
2. generate added economic impetus and make cities more livable by providing significant amounts of accessible outdoor recreation or amenity space close to home and work,
3. block the movement of dust and moderate thermal air movement,
4. beneficial impact on moderating heat gain and loss of buildings,
5. greenhouse gas emission reduction,
6. storm water retention, and
7. energy cost savings related to insulation and life span of roof membranes.

Research is moving in a positive direction by supporting the benefits of historical and contemporary roof gardens. Recent examples of green roofs include Queen's Quay Terminal Toronto, Mountain Equipment Co-op Toronto, NRSC, Roundhouse Park, Toronto, Vancouver Public Library, and Toronto City Hall (adapted from "Greenbacks from Green Roofs: Forging a New Industry in Canada," CMHC, 1998.)

Currently in Winnipeg there are six green roof structures, Mountain Equipment Co-op, the Winnipeg Art Gallery, the Japanese Gardens, Memorial Park, Broadview Manor, and Manufacturers Life Insurance between the two buildings.

3.3.a. Ecological Design Object 1 – the adaptive reuse of the Eaton Building and property to provide a mixed-use complex.

Building ecology has been used to describe a comprehensive systems approach understanding interactions between building environments and their occupants. People react to indoor environments in markedly different ways. Complex modern building environments produce reactions of a psychological (perceptual) and physiological (biological) nature, sometimes affecting people in visual ways. Physical and psychological work environments are not separate entities but rather parts of a single integrated experience

- Nelson Hamner, *Interior Landscape Design*, (1991).

Looking back to the 1970s the principles of ecological design were being investigated in relation to architecture. Ecological design was defined as the science of the holistic interactions and relationships between life forms and the built environment. This theory aims to create a healthy living, working and cultural environment by methods which minimize the impact of a building on the health of people and on the health of the planet. (Fox, 2000).

Regard a building as an organism with its surface living as the third skin of the occupants. For the organism to be healthy, the skin should be allowed to function naturally; breathing, absorbing, protecting, insulating, regulating, communicating, and allowing evaporation

- Isis Brook in Fox, *Ethics and the Built Environment*, (2000).

Bob Fowles, (2000) design approach has three principles for program direction to follow:

1. A holistic approach, that recognizes interrelatedness and interdependence of all matter and all living things. We must adopt systems thinking,
2. Manual and mental activities, theory and practice, designer and maker should be reintegrated. We should regard design as a social process,
3. Man is not separate from nature, and man's activities including the making of the building environment must recognize and respect the process of ecosystems. We must practice ecological design...

With ecological design, architects are extending their belief into discussion areas, in which a major characteristic of the new thinking of the 'green' movement is holism. Holism is the belief that things are interconnected and that each problem is part of a larger one

- Bob Fowles, *Ethics and the Built Environment*, (2000).

Brenda and Robert Vale, 1991, summarize green architecture principles somewhat differently. Many buildings have some attributes, which may be described as green; few are entirely free of effects on the environment. They prefer the following six principles:

1. Conserving energy – minimize the need for fossil fuels,
2. Working with climate and natural resources,
3. Minimizing new resources in that a building should be designed so as to minimize the use of new resources and at the end of its useful life, to form the resources of other architecture,
4. Respect for users – the importance of all people involved,
5. Respect for site – a building will touch the earth lightly,
6. Holism – all principles need to be embodied in an holistic approach to the environment.

One point added by Isis Brook, (2000), in what she refers to as the outdated organism or holistic process view, may have been trying to identify the same attribute that 'spirit of place' has always attempted to express, that is, the unique holding together in a characteristic way that we experience in some places.

This practicum began as a housing project and expanded into a mixed-use complex as the Eaton building envelope and property dictated. From the literature review one can surmise that a housing project is not simply the production of housing units but all of the components that make a viable community. These include all of the services included in the programmatic section (5.0). To develop a strong community the following are guidelines:

1. Preserve the heritage of the current building and integrate the new community from within the building envelope. All brick, windows, entrances will be preserved. Structural integrity of the building will be adhered to and upgraded where necessary.
2. Integrate the building facade into the streetscape and address the streetscape if necessary. For the purposes of this study, the streetscape will be integrated into the conceptual master plan.

3. Maintain and promote pedestrian interest through the use of urban design.
For the purposes of this project, this will be reflected in the interior landscapes of the project.
4. Provide a mixed-use development that will promote a strong urban community life.
5. Maintain the building functions according to the Building and Safety Codes with specific reference to egress and fire safety.

3.3.b. Ecological Design Objective 2 – the incorporation of an Interior Landscape.

Plants are living sculptures. They bring color, texture, and a variety of forms into the office. They enliven interior spaces by softening the regular geometry of buildings and furniture. In addition to their visual charm, plants bring some of the intangible delights of the outdoors into the office. They foster interest and provide the satisfaction of nurturing something and watching it grow and flourish. They are a welcome natural element in an artificial environment

- Judy Graf Klein, *The Office Book* quoted in Stuart Snyder, *Environmental Interiorscapes*, (1995).

Plants are extremely important to this particular study. Interior plants help to replace the biomass lost to construction excavation while improving the air quality in the microenvironments they inhabit. Plants have a modifying influence on indoor ecology – sometimes referred to as shelter ecology, closed system ecology, or microenvironment ecology. Although photosynthesis is reduced indoors, it still takes place. Scientific research has shown that the photosynthetic system is light saturated at irradiation levels of about 20% full sunlight values. In other words, strong subdued light can produce almost the same photosynthetic result as full, daytime sunlight. Plants simply grow at a slower pace in the dimmer interior environment with reduced vigor. Work in the field of closed system ecology originated in the competing space programs of the United States NASA. (Snyder, 1995).

The incorporation of interior gardens in this design project will take on the form of a fountain system integrated with planting systems on the lower level and main floor, planter systems on floors two, three and four, and an open courtyard with skylights

(creating mini atria) on the fifth floor. In addition to adopting basic design principles the interior landscape will include:

1. The building envelope and, in particular, heritage preservation, as well, as thematic colours and plantings for corporate areas.
2. Structural design limitations. In this case the interior landscape includes carving out space for an open-air courtyard. Ceiling heights have a direct effect on the plant material used for the interior plantings, as well as providing space for mechanical systems involved in fountain systems and HVAC (heating, ventilating, and air-conditioning) systems.
3. HVAC systems – Bio-Resource plant filtration system - the emission of formaldehyde gas is particularly important in office areas due to the extensive use of laminates such as MDF and K3 as a building material. Plants for interior planting will be selected from Table 3.0, Commonly Available Ornamental Plants for Indoor Air Pollution Abatement.
4. Layout of Activities including the relationship to indoor/outdoor pollutant sources.
5. Irrigation Systems – deciding between five most common possibilities and a combination thereof – sprinklers, drip tube, subterranean, hydroponics or APM – micro precision.
6. Lighting – some areas will require the addition of lighting sources other than natural lighting to promote proper plant growth.
7. Drainage.

From the plant list below, Table 3.0, studies at both NASA and Wolverton Environmental Studies have shown that the orchid and bromeliad families are more effective in dark environments than in the light. These make excellent choices for office areas where there is low light. Although low light will reduce their growth rate, the benefits of air purification are intensified. (Snyder, 1995 and Hamner, 1992).

William Lam, 1986, summarizes his suggested guidelines into five categories:

1. Providing user comfort & delight in the interior environment,
2. Satisfying the programmatic needs of the users,
3. Minimizing the building energy costs,

4. Optimizing public architecture, and
5. Minimizing the initial building construction costs.

Table 3.0

Source: Nelson Hamner Interior Landscapes, 1999.

Commonly Available Ornamental Plants for Indoor Air Pollution Abatement	
Plant Variety	Tested Effective with these Pollutants
Azalea	Formaldehyde
Dieffenbachia (exotica compacta)	Formaldehyde, xylene, toluene
Philodendron (Philodendron selloum- 'lace tree')	Formaldehyde
(Philodendron oxycardium – 'heart leaf')	
(Philodendron domesticum- 'elephant ear')	
Green spider plant (Chlorophytum elatum 'vittatum')	Formaldehyde, carbon monoxide, nitrogen dioxide, xylene
Golden pothos (Scindapsus aureus)	Formaldehyde, carbon monoxide, benzene
Bamboo Palm (Chamaedorea elegans)	Formaldehyde
(Chamaedorea seifritzii)	
Corn plant (Dracaena fragrans 'massangeana')	Formaldehyde, xylene
Chrysanthemum (Chrysanthemum morifolium)	Formaldehyde, benzene, trichloroethylene, ammonia
Mother-in-law's tongue (Sansevieria trifasciata)	Formaldehyde
(Sansevieria laurentii)	
English ivy (Hedera helix)	Formaldehyde, benzene, trichloroethylene
Janet Craig (Dracaena deremensis 'Janet Craig')	Formaldehyde, benzene
Peace lily (Spathiphyllum 'Clevelandii')	Formaldehyde, benzene, trichloroethylene, xylene, ethyl alcohol, acetone, methyl alcohol, ammonia
Boston Fern (Nephrolepis exaltata 'Bostoniensis')	Formaldehyde
Dwarf date palm (Phoenix roebelenii)	Formaldehyde, xylene
Kimberly queen fern (Nephrolepis obliterata)	Formaldehyde, xylene, ethyl alcohol
Weeping fig (Ficus benjamina)	Formaldehyde, xylene, benzene
Goose foot plant (Syngonium podophyllum)	Formaldehyde
Aloe vera (Aloe vera)	Formaldehyde
Bromeliad (Cryptanthus 'Elaine') (Aechmea fasciata)	Formaldehyde
(Guzmania 'Cherry')	
Orchid (Phalaenopsis)(Dendrobium)	Formaldehyde, xylene, acetone, methyl alcohol, ethyl acetate, ammonia
Marginata (Dracaena marginata)	Benzene, trichloroethylene, xylene
Gerbera daisy (Gerbera Jamesonii)	Benzene trichloroethylene
Warneckii (Dracaena warneckii)	Benzene, trichloroethylene
Lady palm (Rhapis excelsa)	Ammonia, chloroform
Liriope spicata	Ammonia
Anthurium andraeanum	Ammonia, xylene
Homalomena	Ammonia, xylene

3.3.c. Ecological Design Objective 3 – the Incorporation of an atrium and courtyard providing a microclimate and green space.

A major part of the design involved in the redevelopment plan for the Eaton building and property involves the design of the atria/courtyard roof garden, light wells, and walkway to the proposed gym/day spa and green house or what was once the powerhouse. The landscaped atrium combines daylight with nature, providing a good antidote to the confinement of the cube or the office.

Richard Saxon, 1983, an authority on the investigation into atria suggests the following criteria be addressed when considering building an atrium:

1. **LIGHT.** The most important consideration is the amount of available light. It is key to bringing the atrium/courtyard to life. Healthy plants provide a feeling of hope and expectancy and a relationship to springtime.
2. **TEMPERATURE AND AIR MOVEMENT.** Plants have permissible air temperature regimes based on their natural air temperature. This is critical to leaf health. Soil temperature changes and radiant heat are also extremely important.
3. **WATER.** Proper irrigation systems are required for both totally enclosed atria as well as courtyards.
4. **OVERALL CLIMATE.** This involves cold areas relative to radiant heat transmission, revolving doors, service outlets, and in particular problems in colder climates.
5. **FIRE SAFETY.** Atrium/courtyard design must provide adequate ventilation and circulation as determined by regulatory building codes.
6. **GLAZING TECHNIQUES.** This involves only the closed atrium building and can be remembered for future designs.

In view of these design considerations, the following objectives will be addressed:

1. **MAKE THE DESIGN ADDRESS THE CONTEXT.** Evaluate the atrium building form in terms of its site massing and contextual role. Connect the atrium to streets, plazas, courtyards, arcades, pedestrian bridges, tunnels and subways; maximize public access and use; make it visible by giving it exterior expression, and provide public amenities in the form of seating, services, exhibitions, an interior landscape, and artwork.
2. **ORGANIZE THE SEQUENCE.** Structure the spatial experience from outside to inside, treat the entry as a transition, use vertical transportation to exploit the space, create a sense of orientation by relating the circulation to the atrium, provide viewpoints from several vertical locations, and make emergency routes safe and simple to use.

3. **DEVELOP A PROGRAM ROLE.** Give people reasons to be there, provide a formal program such as shopping, dining, entertainment, a library or reception area, or provide an informal public purpose, such as an exhibition, information, lounging or waiting area, and avoid completely non-programmed space.
4. **THE USE OF FURNISHINGS TO ENHANCE THE SPACE.** The atrium is the feature; furnishings should enhance it. Use planters and trees to define subspaces and use plants to soften gallery guardrails, make planting a part of the architecture. Make the water feature a visual focus, do not let the artwork and architecture compete for attention, limit artwork to a few large-scale pieces placed to define a subspace and avoid residential-scale and style furnishings, and make artificial lighting unobtrusive.
5. **ENERGY CONSERVATION:** Consider the value of the buffer effect; maximize passive energy flows; maximize daylight availability and distribution; consider leaving the atrium unconditioned; utilize the stack effect to advantage; make it a part of the mechanical system as an air plenum; evaluate solar orientation for gain and shading.
6. **USE ECONOMIC ADVANTAGES CREATIVELY.** Maximize profitability by creating identity, image and environmental quality, take advantage of zoning bonuses, take advantage of operating energy savings, design for building service and circulation efficiency, maximize atrium perimeter for office views and commercial frontage, and reduce costs of skylight systems, atrium finishes and fire prevention systems.
7. **MEMORABLE – GENUS LOCI.** Define and articulate the spatial subtype. Make the space 'read' clearly and give it a strong organizational role. Create a building section responsive to spatial perception, use daylight to bring the space to life, emphasize the power of the space by avoiding visual clutter; and give it human scale by articulating floors, terraces and balconies, or special windows.

The prime consideration in this part of the study is to choose the atrium/courtyard form as a building concept and develop it into a successful scheme. The above design guidelines are derived from a study done by Michael Bednar, (1986) and have a definite application to this study.

Design considerations applicable to this project are:

1. **FRESH AIR REQUIREMENT** – the provision of fresh air to all residential units resulted in the decision to design an open courtyard with light wells rather than an atrium space
2. **PROVISION OF PUBLIC OPEN SPACE** within the residential community
3. **PROVISION OF SEMI-PUBLIC COURTYARDS** for residential use
4. **PROVISION OF LIGHTING**, although minimal via skylights through to the basement level of the development

5. DRAINAGE SYSTEM INTEGRATED into the building structure for the collection and recycling rain/snow water.

3.3.d. Ecological Design Objective 4- the incorporation of a roof garden to provide additional green space to the downtown core.

Cities can be viewed from an entirely new ecological perspective. Buildings offer surfaces akin to natural landforms and these can be planted following clues of nature. The skin of the city can be transformed into a living landscape

- Jacklyn Johnston and John Newton, *Building Green*.(1993).

Canadian Mortgage and Housing Corporation, (CMHC), 1979 suggests the four basic types of roof gardens associated with block form apartment buildings. These are:

1. The building roofdeck
2. The garage roofdeck
3. The courtyard roofdeck
4. The Promenade roofdeck

In this document, that new ways of utilizing our rooftops must be envisioned and explored to provide new ways of improving the ecology, appearance, and enjoyment of our urban centres. This study provides a building roofdeck design and courtyard design and conceptually offers a garage roofdeck and an adjoining building with the intent of providing the guideline of linking the green spaces together and promoting additional roofdeck development in the surrounding area.

Detailed design guidelines in the following formats will be applicable to both courtyard and roof garden designs. There are four essential layers to a roof garden. Plantings and paving are particular to individual garden designs. Roof garden construction is intrinsically connected to the roof structure and therefore equally as important to prevent failure and damage to the tenant spaces below. For the purposes of this study the current roof structure is in need of major repair or replacement. The recommendation is for replacement to allow for the load bearing of the proposed roof garden design. The actual roof construction will be taken to an engineering firm.

The essential guidelines for the roof garden are:

1. WATERPROOFING

2. THE DRAINAGE LAYER, which lies directly above the concrete protective slab, should be very porous to permit water to pass through it easily. It must be permanent, continuous over the entire roof surface, and strong enough to support the weight of the garden materials above it. This layer must be kept free of any material that could block the free flow of water through it to the drains. Research indicates that the use of sheet drainage known as miradrain draining to a 6" drain and leading to an 8" pipe is the practice.

3. TO PREVENT THE PLANTING MEDIUM from going into solution and being lost in or clogging the drainage layer and roof drains, filter fabric, a water-permeable barrier, is needed. It must be resistant to rot, easy to transport and install, strong, and permanent. The material most commonly used today, which meets all of these requirements, is a thin fabric very similar to felt but made of polypropylene fiber.

4. THE PLANTING MEDIUM is placed on top of the filter fabric to depths as needed. This layer can range from carefully selected topsoil to mixes that contain no topsoil at all.

5. TO RETAIN MOISTURE in the planting medium, to cool the soil, to prevent weed growth, and to provide a continuous supply of decaying humus, the surface of the planting medium should be top-dressed with a 1-inch (2.5-cm) layer of mulch, preferably ¼ to ½ inch (6.4 to 12.7 mm) pine, redwood or fir nuggets. (Osmundson, 1999).

In addition to the above, other issues that must be addressed include

1. SPRINKLER SYSTEMS - most roof gardens, particularly those that are larger, will need automatic sprinkler systems.
2. BUILDING CODES must be adhered to for any construction and universally the building code requires two separate means of egress for any roof garden structure. For the purposes of this study this would apply to both the courtyard and roof garden. Railings, parapets, or blockades must bind the entire space with at least 42" high with vertical surfaces that are impenetrable to small children. No wood construction is permitted. (Osmundson, 1999).
3. SECURITY must also be addressed when considering any roof garden construction.

...presages a new order of upper-level landscape that will transform vast, desolate areas of urban rooftop into veritable hanging gardens—bringing dimensions of comfort and delight to city dwellers and visitors

- Theodore Osmundson, *Roof Gardens, History Design and Construction*, (1999).

3.4.Conclusion

Green infrastructure revolutionizes the scope of design issues for buildings and urban systems. This change is analogous to the computer revolution, where a large, centralized, expensive and single purpose 'main frame' infrastructure has been almost completely replaced by a diverse network of on-site systems

- CMHC, (2002).

1. There is a need for change – high rise residential buildings play an important role in Canadian Housing Choices. They offer amenities in the form of a proximity to services and public transportation, (efficient use of land and infrastructure)
2. Roof gardens help to alleviate:
 - a. HVAC systems,
 - b. water penetration through the roof system,
 - c. insensitive land use,
 - d. act as a thermal blanket reducing heat island effect,
 - e. storm water retention,
 - f. urban noise levels
 - g. present alternative ways of thinking.
3. By using an integrated design process the design of the heating and cooling systems should be an integral part of a building design – addressing how the interaction between building components affects the overall building performance When part of an integrated design approach, significant capital cost savings for HVAC savings can often easily offset any extra costs associated with other energy efficiency improvements,
4. There is a need for multi-disciplinary design,
5. Problems with green building include:
 - a. lack of knowledge,
 - b. lack of time,
 - c. fear, and
 - d. perceived cost.

These problems can be overcome by implementing a custom set of green building and development guidelines and expand them to address issues related to environmental performance, healthy housing and green infrastructure. How many times do we hear the common phrase?

1. “there is no scientific evidence that solar panels will reduce energy and save money” – fallacy
2. “Redevelopment of former retail buildings is “too expensive” -too expensive for people? People are the vitality of the urban core.

Urban centres and in particular urban cores can benefit from more mixed-use land use and building types. An integrated systems approach could complement the on-site infrastructure systems, in that it reduces demand for services and creates opportunities for re-use and synergy (adapted from CMHC, Healthy High-Rise, 2002).



Photo by David Walker

Herb Garden on the Green Roof of the Waterfront Hotel, Vancouver

Photo No. 4.0 Source: Green Roof Workshop Prepared by The Cardinal Group Inc.,(2000) cp

4.0 CASE STUDIES

4.1 Introduction

Case studies provide lessons in what could be done, has been done, and many times, what we should avoid doing in the future. At the onset of this practicum three major case studies were carefully examined.

1. Butler Square, Minneapolis, Minnesota, 1908, chosen for historical building, use of atria, and mixed-use development,
2. Queen's Quay, Toronto, Ontario, 1926, chosen for historical building, use of atria, mixed-use development, and roof gardens, and
3. Woodward's Building, Vancouver, 1908, British Columbia chosen for historical building, proposal currently being reviewed with atria, and mixed-use development.

These studies were all selected from a list of historical buildings that have been or are currently undergoing redevelopment. Each was selected for what could be learned from that particular site. Site visits were conducted which revealed many similarities. A key component was the use of atria to bring natural light into the building.

As the project evolved, and landscape emerged, the roof garden also became a key component to the project. There was a necessity to seek further studies. The CMHC guidelines for Green Roofs, 2002, and Green Roof Workshop, Vancouver, supporting document, offered many contemporary examples of developed roof gardens. (Queen's Quay was included in one of the studies.) The chapter cover is a photo of the Herb Garden on the Green Roof of the Waterfront Hotel, Vancouver. Other contemporary examples include the Toronto City Hall, Mountain Equipment Co-op, Toronto, Ontario, and Vancouver Public Library.

4.2.a. Case Study 1

Butler Square, Minneapolis, Minnesota

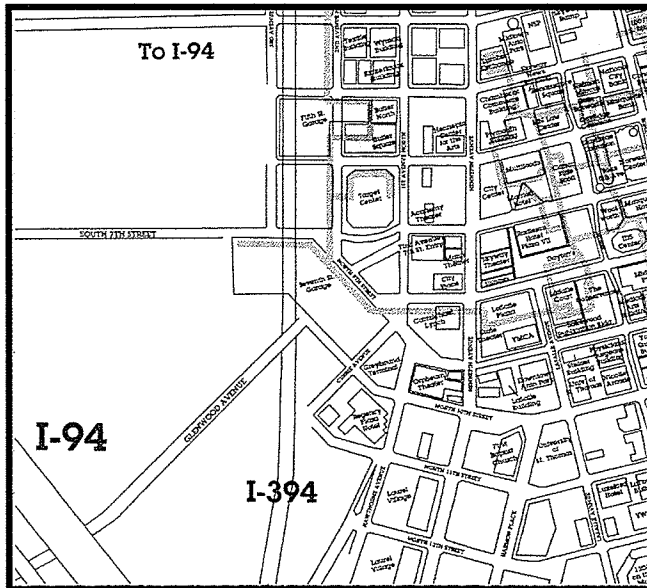


Figure 4.1 Source: United Properties, Skyway Publications, Inc., 1993.

The building is a fifteen-minute walk to downtown and a connection to I-394. The City Centre skyline is easily visible.

Photo number 4.1, 2001, shows the current south entrance to the square. Photo numbers 4.2 and 4.3, 2001, are interior atria shots. In 1906, construction began on the Butler Brothers Building. It was once referred to as “the most commanding building in Minneapolis” by the Minneapolis Journal. The land the building sits on previously housed the 1,800 seat Athletic Park, home of the Minneapolis Millers and St. Paul Saints. The stadium’s home plate was at

Butler Square, an architectural landmark in the city of Minneapolis, Minnesota, is located at the corner of First Avenue North and Sixth Street in the downtown Minneapolis Warehouse district. It is directly across the street from the Target Center (See Site Plan Figure 4.1) and is currently connected to the city parkade.

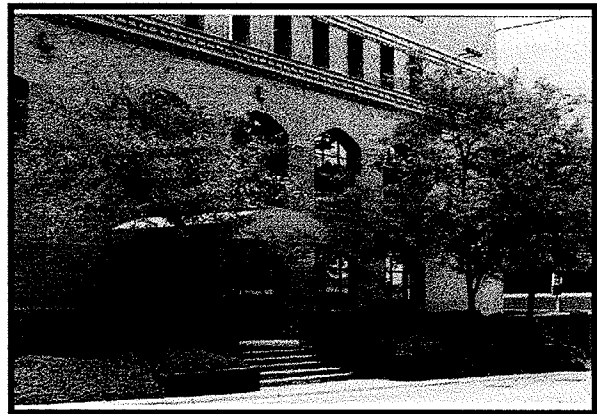


Photo No. 4.1



Photo No. 4.2



Photo No. 4.3

First Avenue North and 6th Street North – the main door of the building. In 1900, TB Walker, for whom the Walker Art Center was named, bought the 1.4 acre ‘baseball block’ and, with his partner, Levi Butler, began planning the nine-story warehouse building. Butler also owned a lumber firm and wanted a new building for it. Covering 500,000 sq. ft., the warehouse for the Butler Brothers Company housed a mail order retailing firm. It was built by TB Walker and designed by Architect Harry Wilde Jones. The building was completed in 1908 and was the largest wholesale facility west of Chicago at that time.

Construction occurred at a time when American architecture was shifting from the applied order of ornamentation to the directness of structural simplicity. Its thick exterior masonry bearing walls cut by vertical recessed windows and topped by corbel parapets, give it the air of an austere medieval fortress. The interior was a true reflection of its functional intent being built with heavy timber post and beam construction providing the 300-pound per square foot loading requirements of the warehouse. The Douglas Fir timbers were taken from Walkers own tree farm and lumber mill in Aitken, Minnesota, precut and assembled on a module of approximately 14 feet by 16 feet. The columns, which receive the beams with cast iron brackets, gradually diminish in size from 14 inches square on the ground floor to 9 inches on the ninth floor.

Horses were used in the warehouse operation at the turn of the century. They were stabled in the basement. There were three coal-fired boilers in the basement. Mechanical elevators facilitated the movement of a material throughout the building. The building is twice as long as it is wide and divided in half by a three-foot thick firewall.

The industrial warehouse building has some remarkable features. The designing architect, Harry W. Jones (1859-1935), an MIT graduate, was known for his “Church architecture”. Other projects included: the Scottish Rite Temple, 2011 Dumont Avenue South; the Calvary Baptist Church, 2608 Blaisdale Avenue; the Lakewood Cemetery Chapel; the Washburn water tower; the Imperial Hotel (demolished for the Hyatt Regency); and many luxury residential homes in the Minneapolis area. He was known for his use of sophisticated materials, being a talented artisan, and a premier architect in the area.

The first tenants were the Butler Brothers (no relation to Levi Butler), small goods retailers and mail order operators. The company started a chain of department stores in small towns in the Upper Midwest United States. The Butler Building served as a distribution centre and showroom for the company. The rail spur that was used for loading merchandise still remains.

The building was eventually sold to Ben Franklin Stores, which used it as a warehouse until 1962. For the next decade the building was used only for storage and was placed on the National Register of Historic Places.

Charles Coyer, a Washington, D.C. based developer, bought the building in 1972 and hired Miller Hanson Westerbeck Bell Inc. to remake Butler as an office building. The architectural firm created the atrium on the east side. Renovation work began in 1973 and was completed by the fall of 1974 (see Figure 4.3). This involved the treatment of the exterior wall (the only portion of the building governed by preservation restrictions of the National Register of Historic Places), the introduction of the central atrium, and the use of the raised floor to distribute mechanical and electrical systems and preserve the natural wood ceilings.

Of particular importance was the development of an atrium that is described as the “key ingredient to its economic value and success”. As a warehouse, too much interior space is trapped in the centre of each floor without windows or natural light to be marketed successfully as office or commercial space. This, plus the relatively small exterior window openings, necessitated introducing more natural light into the building.

Development of the west half of the wing began in 1979 when James Binger’s attention was given to a design that would be compatible with the first phase and improve on its performance. High efficiency mechanical and lighting systems were incorporated to minimize energy use. More of the existing structure was left in the atrium to expose the structural dignity of heavy timber construction. Three glass-backed elevators in the centre of the atrium provided a dramatic view of the space.

The shape of the atrium is a subjective study of space, light, and form. It was created by disassembling the existing structure from the top down and its 14 foot by 16 foot module allowed many variations on each floor. Its general shape allows the most natural sunlight to the floor of the atrium – wide at the top on the south side, and wide at the bottom on the north side. The skylight was completely assembled on the existing

roof to provide a convenient working platform. Once completed, and the surrounding roof made watertight, the structure was removed under the skylight to the 9th floor. When work on the 9th floor atrium wall and planters were completed, the structure was removed to the 8th floor and so on.

Dropped ceilings were not used to conceal mechanical distribution systems, as they would cover the rich details of the exposed wood ceilings; instead, an 18" raised pedestal floor was constructed over the original floor. The dark stained wood at the floor line and over the planters identifies this enclosed space. This plenum space recycles the heat from ceiling lights below for greater energy efficiency. It also allows telephone and electrical changes to be made within each space.

When the renovation was occurring, the prevailing Uniform Building Code, while not specifically addressing existing building redevelopment, did not give authority to local building officials to evaluate and authorize a life safety program for a nonconforming historic building.

Heavy timber construction has become an obsolete building system and very little can be extracted from the code regarding its use. Local officials played a key role in the development of Butler Square, helping to design a program, which included a complete sprinkler system code of all exposed and enclosed areas, smoke detectors throughout with a direct line connection to the Fire Department, an atrium smoke evacuation system

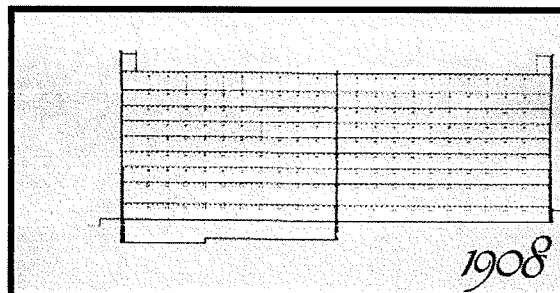


Figure 4.2

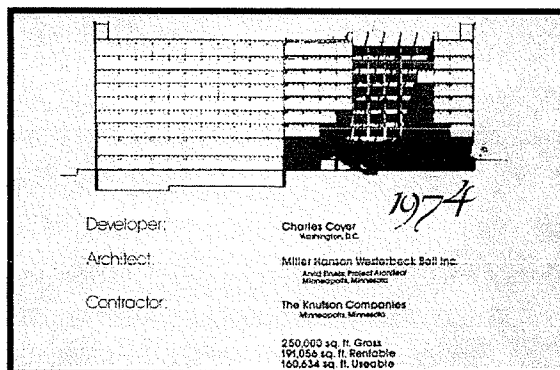


Figure 4.3

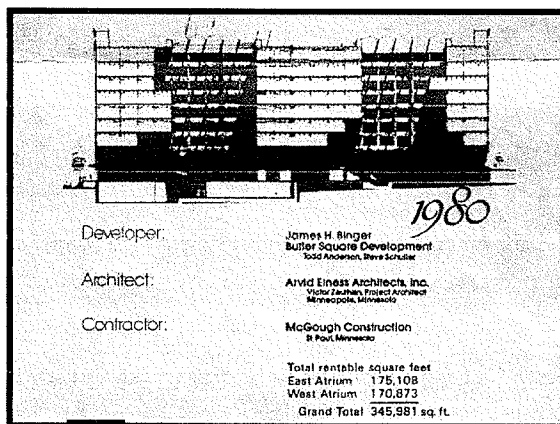


Figure 4.4

at the skylight and a complete indicator panel to assist the Fire Department in locating any activated alarm. These systems of early warning and protection plus four exit stairs located at the exterior walls of each atrium provide special protection for the building and its occupants.

As a warehouse, all the interior wood was painted enamel green for functional purposes. Removal of the paint by sandblasting left nearly 11 acres of natural wood exposed. Cast iron columns, a new material of the industrial revolution, were used on the second floor of the east atrium instead of wood columns to enhance the Butler Brothers Company Office. The space offered exposed brick walls and floor-high windows overlooking the interior courtyard, offered workers on the inside offices almost as much light as those with exterior light. Offices range from 400 to 14,000 square feet. The tenants are required to sign a five-year lease, paying from \$22 to \$23 (in U.S. Dollars) a square foot gross, \$14.50 a square foot net (slightly below downtown space and slightly above warehouse rates).

Older buildings are a visual reminder of the values that shaped our past. They incorporated construction techniques that employed skilled craftsmen, were designed with meticulous scale and proportion of building composition, and utilized materials that have since become expensively scarce and replaced by imitation.

The United States, with the passage of preservation laws, favourable tax incentives and willing lending institutions, encouraged key components of renovation. Building codes did not always address older buildings so architects were required to design within an existing space. Cost estimation was without experience. New materials had to be custom-fitted to older context and users had to be convinced that their temporary building requirements could function in a space designed years ago. There were benefits which included substantial cost savings, unique design, a sense of history, preservation of the community's heritage and extensive savings of energy that would have been required to manufacture new bricks, new beams, new space. "Butler Square was a pioneer in this new field", (the foregoing is a summation of a handout given to me by United Properties – no sources were indicated on the handout, 2001).

KEY PLAN

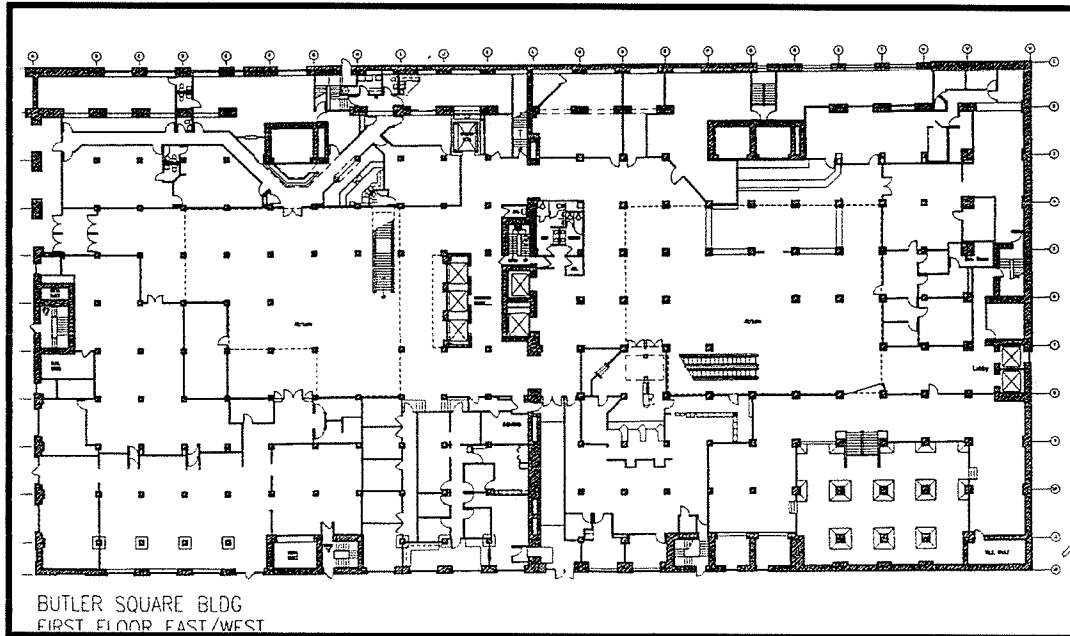


Figure 4.5 First Floor Key Plan, compliments of United properties, Minneapolis, drawn by Jafvert, Mueller Architects, Inc.

Figure 4.5, the First Floor Key plan shows the west street level entry, day care centre, food court, and leasable commercial space. Central elevator banks access the upper floors where leasable office and retail space is available. Tenant space can be divided and leased as required by the specific clients. Stairs lead into the atria space that is carved out by removing some columns and leaving others to form a webbing of exposed column structure. Sculpture elements float over the skylight space lined with trees in raised pots.

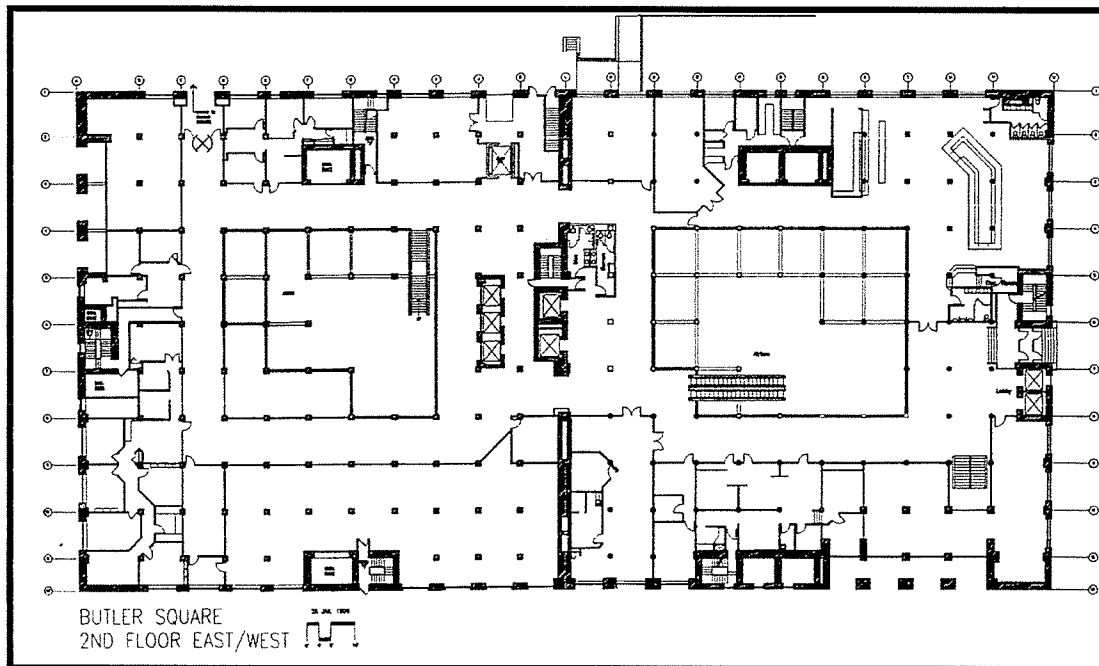


Figure 4.6 Key Plan Second Floor compliments of United Properties, Minneapolis, drawn by Jafvert, Mueller Architects, Inc.

Figure 4.6 is the second floor plan, A typical to the top of the building again showing the both east and west atria and a redivision of leasable space. Restaurant space is featured in the northwest corner of the building on the second floor only. Office space follows through floors three to nine.

Current tenants include a diverse group of businesses. These include: D'Amico & Sons, a premiere Italian restaurant, ground floor; two radio stations (Cities 97/KDWB), Leuthold Group./Shea Inc.); a nationally known institutional investment research and architecture firms, and Javelin Technology Corp. (an e-commerce Company). Currently there are 367,717 square feet of rental space and a wide variety of amenities. These include a post office, and a day-care centre on the main floor entrance of the east atrium; a travel agency, a convenience store, a skyway to the municipal parking garage and three restaurants: D'Amico Cucina, Champps and Linguinig & Bob (Butler Brothers Square and City Business, 1999).

4.2.b. Case Study 2

QUEEN'S QUAY TERMINAL WAREHOUSE RENOVATION

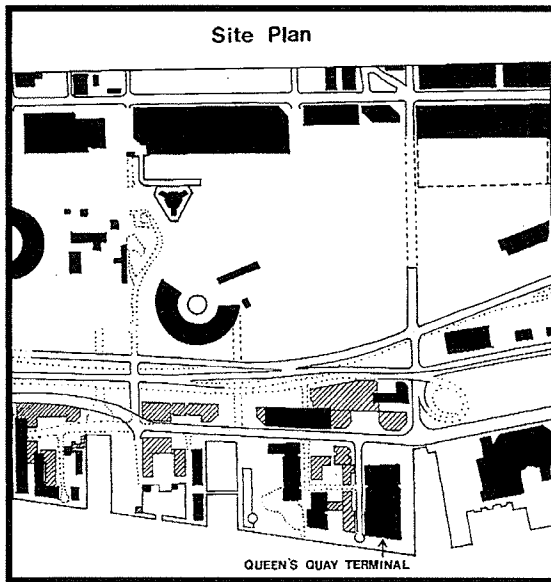


Figure 4.7 Compliments of Zeidler Roberts Partners

Originally the building was used specifically for storage and is currently being transformed into an active, year-round mixed-use project encompassing 888,000 square feet. Moores and Dunford, a New York firm whose main field was warehouse buildings throughout America designed the original building. The current redevelopment is the work of Zeidler, Roberts Partners. The use of atria in the redevelopment offers open spaces and natural sunlight. Photo No. 5, 2001, shows a portion of one of the atria in the development. Photo No. 4.6, 2001, shows the current street development leading to Lake Ontario.

Queen's Quay Terminal warehouse built in 1926 -1927 in Toronto; Ontario is nearing completion of a conversion into a multi-use retail, office, and condominium project. The building is located in the Inner Harbour of Lake Ontario, and part of Toronto's Harbourfront project (see Figure 4.7 Site Plan). Photo No. 4.4 shows the renovated street front of the building.



Photo No. 4.4



Photo No. 4.5



Photo No. 4.6

Commissioned by Toronto's Harbour Commission, Queens Quay is constructed of reinforced concrete and sits on a 12.5-acre plot of reclaimed land on the waterfront. It had modern concrete docks and a rail connection to both the CPR and the CNR and is extremely close to the CBD of Toronto – King and Yonge and Union Station. Sod was turned on April 1, 1926, (Margaret Zeidler, Zeidler Roberts Partners).

The building, with approximately one million square feet and costing \$3,000,000, was completed on February 1, 1927, after a ten-month construction period. The foundation is made up of 10,000 wooden piles driven 30 feet into the solid rock on the reclaimed site. It is an L-shaped building 80 feet from the water on the east and south sides with 1,000 feet of dockage. Originally, there was also a southwest wing, which has since been demolished, for cold storage and constructed of solid concrete. This area was used entirely for dry storage, (Margaret Zeidler, Zeidler Roberts Partners).

There were also two subsidiary buildings, a powerhouse with a boiler room, coal pocket, and refrigeration machinery, and an ice plant with a capacity of 75 tons of ice per day. This was used for refrigerated rail cars. Storage at the warehouse included all marketable goods, frozen meat and fish, vegetables and fruit, flour, sugar, butter, Campbell's soup, and liquor from Scotland, (Margaret Zeidler, Zeidler Roberts Partners).

The building functioned with the ground floor entirely used as a shipping platform at train car level. Ramps gave access to the docks on the east and south sides. Along the landside walls of the building, trucks would unload their goods. This shipping platform communicated with the upper storage floors by means of 15 "high speed" traction elevators. The clock tower, a significant architectural feature of the building, was used to hide the storage tanks for the sprinkler system, ready for use in case of fire, (Margaret Zeidler, Zeidler Roberts Partners).

Like many other historical buildings in North America, Queen's Quay had a transition period. In the mid-thirties its original owners, the Canadian Rail & Harbour Terminal Co. Ltd., went bankrupt and in a controversial take-over, the duPont deNemours family bought the company and renamed it the Terminal Warehouse Co. Ltd.

The company expanded to acquire two trucking companies, which fed the terminal. A New York stock company, Pittson, bought the Terminal Warehouse Co. Ltd. when Irene duPont's estate was liquidated in 1971. Pittson later sold the warehouse, and

it then became the eastern anchor of what is now known as Harbourfront and functioned until 1981 when Olympia and York began the first construction of the Harbourfront lands.

The building redevelopment houses two levels of retail and restaurants, a 450-seat theatre, The Premiere Dance Theatre; parking, and 390,370 square feet of office space which is visually connected to the retail space by atria and seventy-two condominium units located at the top of the building. The condominiums encircle a rooftop court with a dramatic waterfall constructed of copper. The patina of the copper echoes the roof of the building's visual neighbor, the Royal York Hotel. Also included are more than 50 specialty and one-of-a-kind stores restaurants, galleries, and office space.

The project, occurring in stages, with architects, Zeidler Roberts Partnership, required extensive gutting of the building's interior as well of the addition of four stories of up-market residential suites on the roofs. The condominiums are stepped back from the building edge to retain the heritage of the existing building envelope.

The existing 20 foot x 20 foot grid of mushroom cap columns was retained at the south atrium, resulting in an expressive ordering motif that simultaneously celebrated the new public nature of the structure while recalling its historic status and function.

Phase two renovations were carried out to create a more focussed office development. A new office entrance and lobby occupy the central entry of the historical building while a greenhouse addition provides a separate retail corner entrance. The new food court overlooks the fountain of the south atrium.

Construction costs for Phase One was \$50 million and Phase Two was \$10 million. Zeidler Roberts Partners are known for the use of atria in the redevelopment of heritage buildings and have received numerous awards for their accomplishments. Floor Plans follow showing the following distinguishing features the carved out sections for the atria and light wells, roof gardens.

Queen's Key Floor Plans

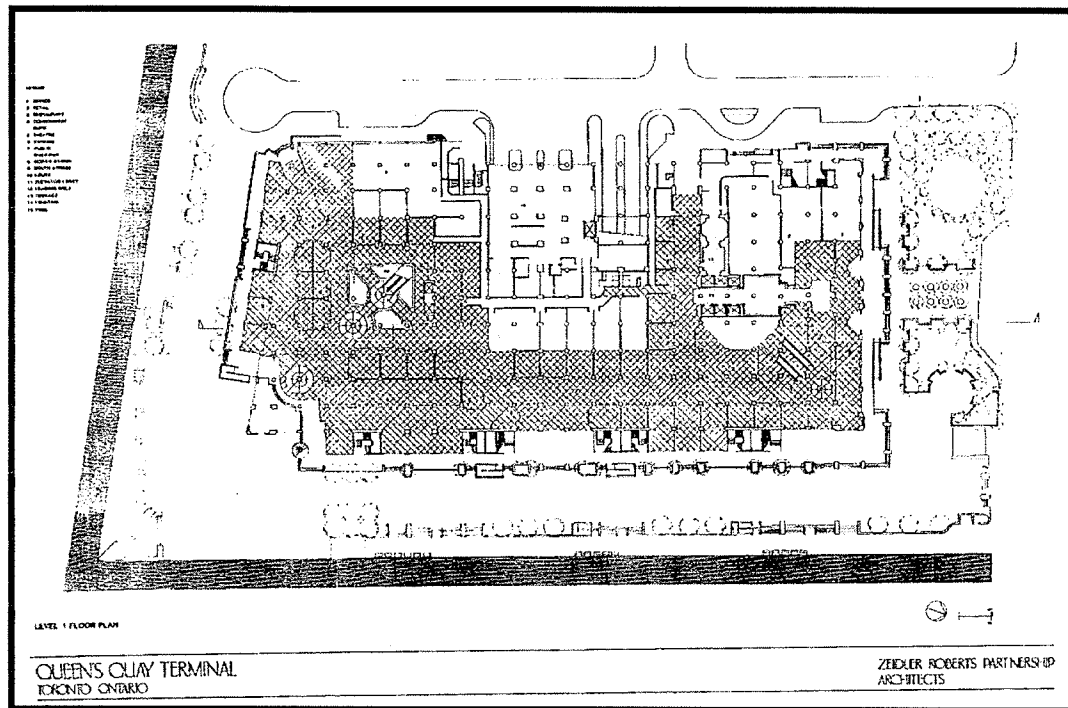


Figure 4.8

Level One Floor Plan compliments of Zeidler Roberts Partnership

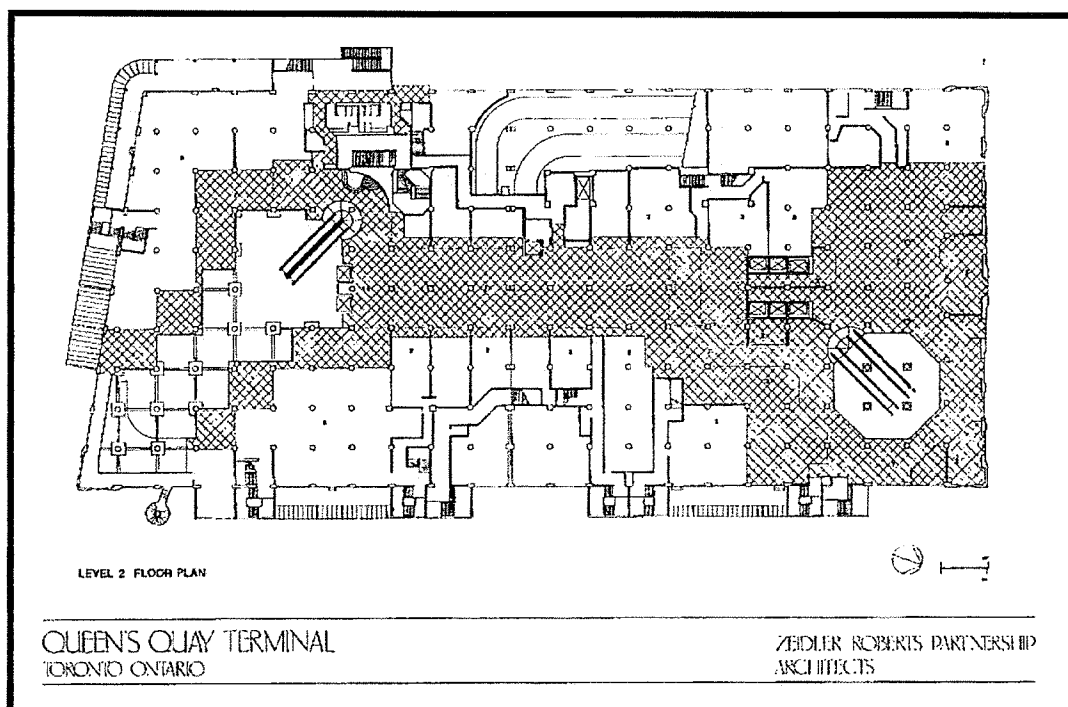


Figure 4.9

Level Two Floor Plan compliments of Zeidler Roberts Partnership

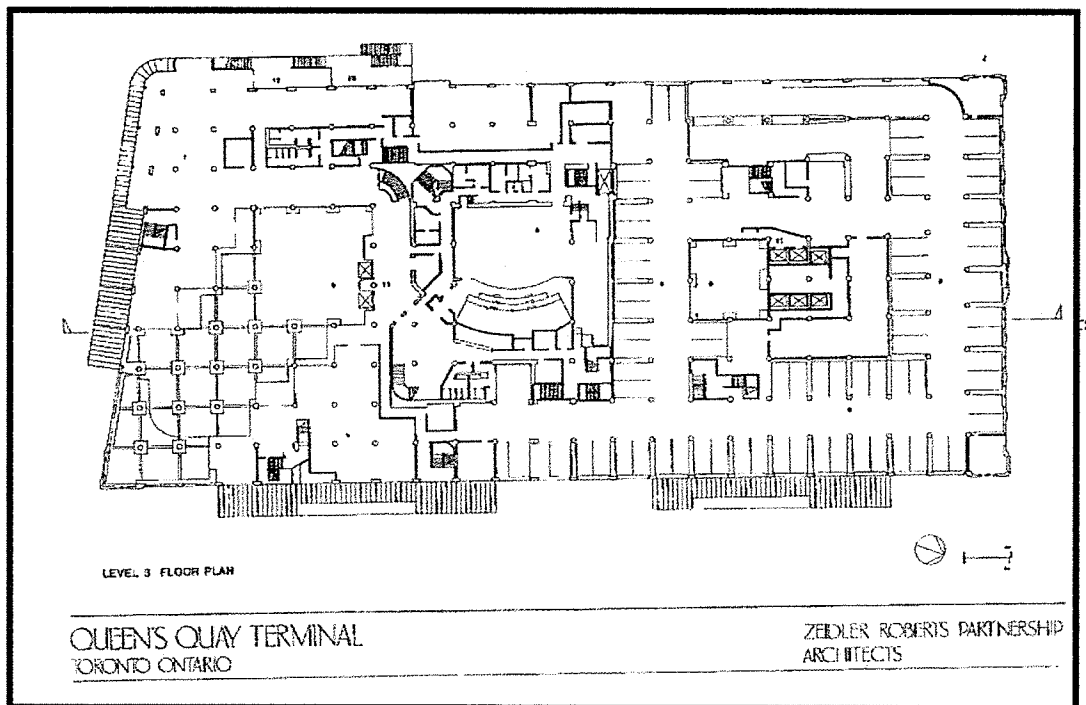


Figure 4.10 Level 3 Floor Plan compliments of Zeidler Roberts Partnership

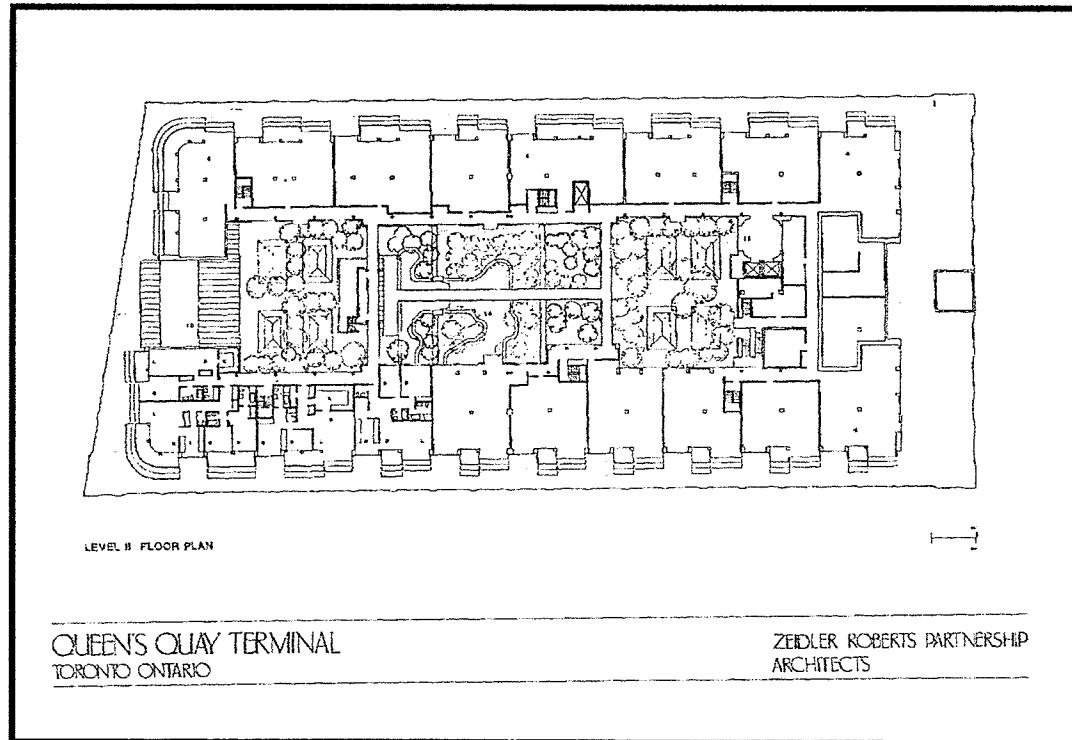


Figure 4.11 Level 9 Floor Plan compliments of Zeidler Roberts Partnership

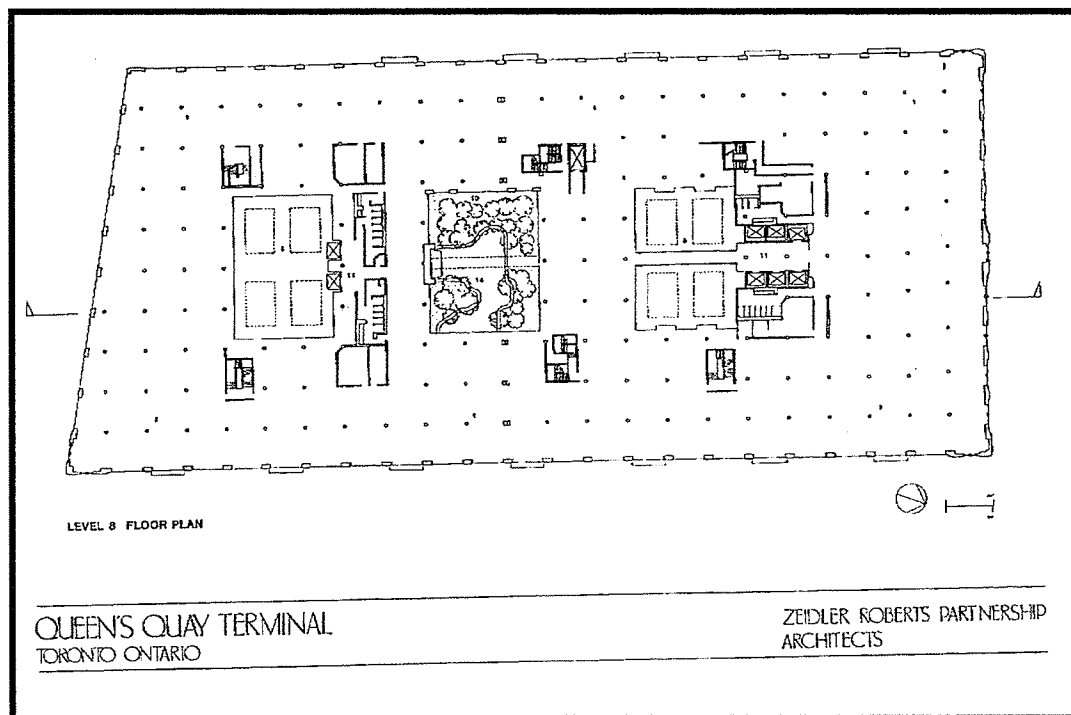


Figure 4.12

Level 8 Floor plan compliments of Zeidler Roberts Partnership

Level one floor plan is devoted to leasable commercial. This plan also shows the escalator landings, the atria space carved out, and the atria entrances. The new streetscaping along the front sides street and is also visible.

Level two shows the atria spaces where open column structure is exposed. The escalator landing areas are also shown but the fountain system is not apparent in these plans. The water system collars the escalators. Food court atria areas and leasable commercial and office space is programmed on this floor. Fire exits move to the outside of the building.

Figure 4.12 shows level eight of the terminal. The skylights that offer daylight to lower floors are clearly visible. Figure 4.11 shows the roofgardens incorporating four floors of condos, garden areas with water features including two pools and a water wall.

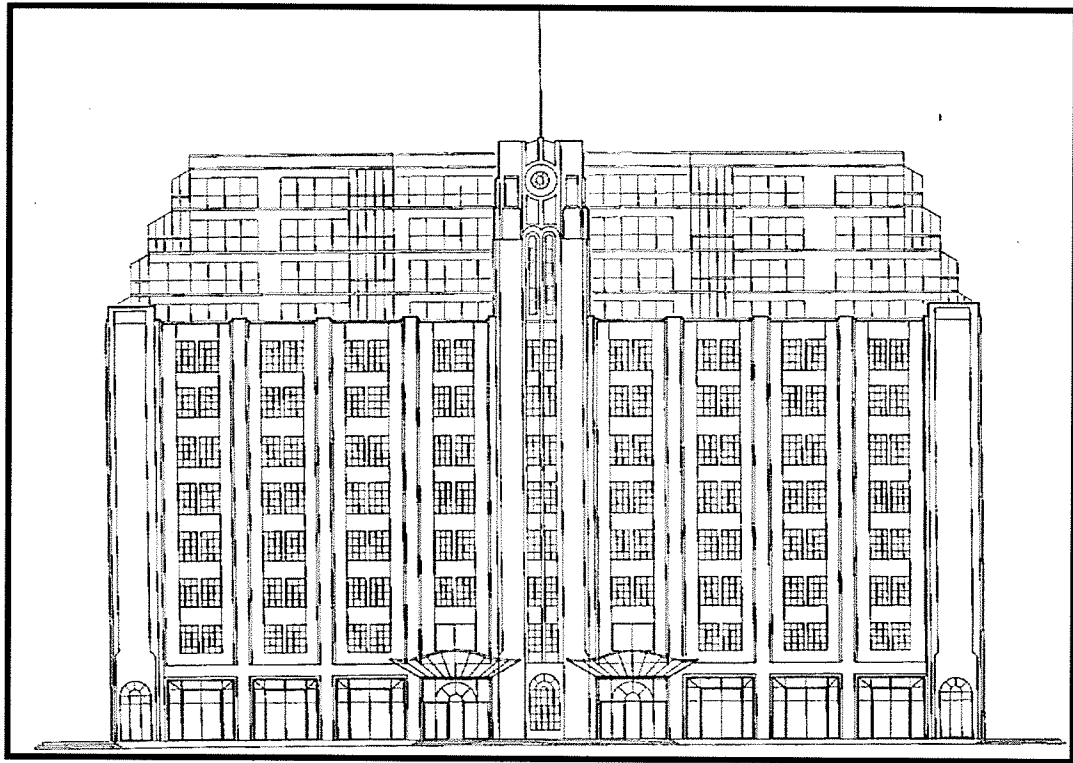


Figure 4.13 Elevation of Queen's Quay compliments of Zeidler Roberts Partnership

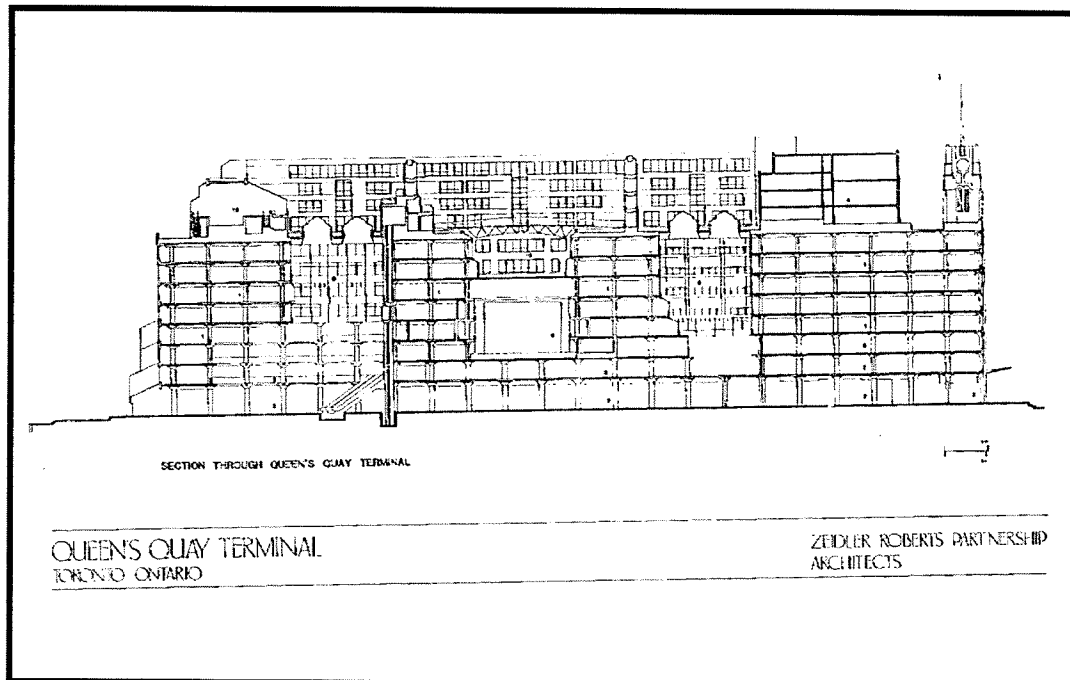


Figure 4.14 Section of Queen's Quay compliments of Zeidler Roberts Partnership.

Figure 4.13 Elevation of Queen's Quay exhibits the floating canopy system as entry points over main entrances. You can also see the addition of the atria on the side entrances. The condominiums step back floor by floor preserving the heritage of the main building envelope.

Figure 4.14 Section of Queen's Quay allows the viewer to see the cutouts for the atria, skylight system, and the section through the condominium units.

4.2.c. Case Study 3-

Woodward's Building, Vancouver, British Columbia

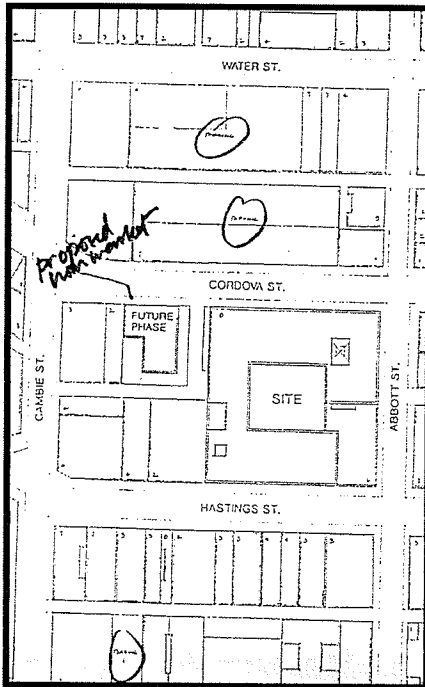


Figure 4.15 Site Plan compliments of Davidson Yuen and Simpson

had eight additions in 1913, 1923, 1925, 1927, 1929, 1931, 1939, and 1946. The original architect for the 1908 building was George H. Wenyon. Dominion Construction was the builder. The following additions are accredited to George H. Wenyon and others conglomerate. Today expansion rebar extensions and concrete beam joining shelves remain visible on the exterior of part of the building (Observation).

Located at 101 West Hastings Street in Vancouver, the Woodward's Building is within walking distance of Granville Village, China Town, and Gas Town. It is the predominant feature of the Warehouse District. The original Woodward's Building was completed in 1903 at the corner of West Hastings and Abbott streets. In 1908 this structure was replaced by the existing building with a square footage of 77,976 and since then has

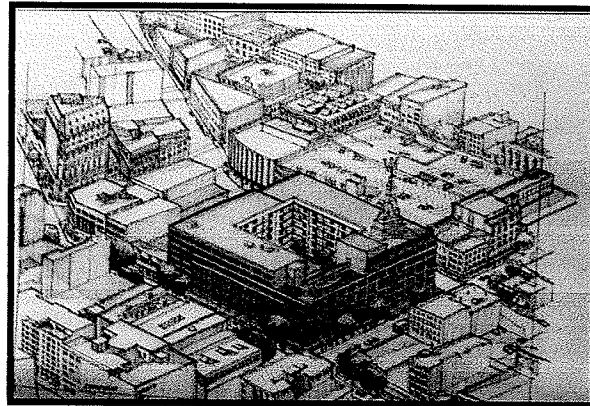


Figure 4.16



Photo No. 4.7

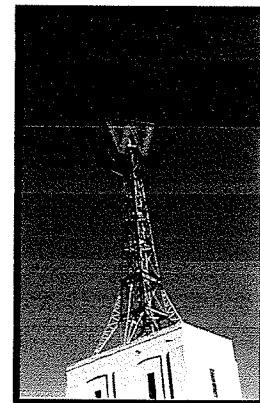


Photo No. 4.8

Building construction in 1908 consisted of brick and heavy timber. The additions were constructed of fireproofed steel frame construction with reinforced concrete over hollow clay tile floors. The entire building has a tunnel system under the Hastings, Abbott, and Cordova Street sidewalks. The exterior finishes of the building include distinctive red brick, plate glass windows and doors, granite vitrolite, marble ornamentation, ceramic tile and stucco. The capitals are painted galvanized steel and are currently being refinished.

The existing structure is a combination of five to eight stories. It is six stories high at the south-east corner (Hastings and Abbott streets) four and five stories tall on the north (Cordova Street) and west (interior) sides, and eight stories everywhere else (along Hastings and Abbott streets). The entire building has a basement with an additional sub-basement along the west side beneath the last building addition.

In 1946 part of the addition included an 850-car parking structure on Cordova Street opposite the north side of the store. It was connected to the store by a dual tunnel beneath the street, which provided all-weather access for customers, and included a conveyer system that delivered shoppers' purchases to an automobile pick-up area. In 1971 a 9,372 sq. ft. steel-framed bridge was constructed from the store's third floor to the parking structure. In 1974, a 440-car addition to the parkade was built facing Water Street; coupled with the bridge, this provided direct access from the store to the center of Gastown (Davidson, Yuen, and Simpson).

ARCHITECTURAL HISTORY:

Charles Woodward's first store was a three-story building located at Main and Georgia (formerly Westminster and Harris Street). The frame building was constructed in less than six months – like many other retail buildings across North America at the time. The store first opened in 1892 with three departments. The Woodward's block stood on this site until the 1970's when it was demolished.

The Woodward's Building came into existence in 1902 when the site at West Hastings and Abbott street was chosen because it was less expensive than Cordova Street, the prime retail street of the day. Before construction, the land was a swampy patch of ground 2.44 m below street level, and covered with skunk cabbage. This site

was filled and drained and the first building built on the site was a three-story, frame structure, which was replaced only five years later.

The first part of the existing building, which still stands at Hastings and Abbott streets, was built in 1908. It was four stories, masonry, and heavy timber construction, with the innovation of overlooking balustrades between floors. The building entirely covered its 66 feet x 132 feet site. Expansions in 1913, 1925, 1927, 1929, 1931, 1941, and 1946 also included fifth and sixth floors to the original building and neighbouring properties were purchased. The lane between Hastings and Cordova streets was realigned and the building was eventually expanded to its present size. A stainless steel canopy along the Hastings, Abbott and Cordova Street facades provided continuous weather protection.

In 1930 a car park was built on the north side of Cordova Street, the first department store car park built expressly to serve the store's customers. A tunnel under the street provided access to the Food Floor. By 1957, Woodward's built a modern concrete parkade, with an innovative 'skywalk' connecting to the third floor of the store. In 1971, as part of the Project 200 scheme, it was extended northward to Water Street, and a further connection to the store was constructed at the third story.

Part of the preserved historical portion of the Woodward's building is the beacon with the "W" (Photo No. 4.8) on the top of the building. In 1923, as a promotional event, a beacon was built on the top of the elevator tower, with a powerful light similar to the airport beacon on Sea Island. This light was reportedly visible from Vancouver Island. The giant 'W' was placed at the base of the beacon. During World War II, the beacon was removed to comply with blackout regulations with the concern that Woodward's would be mistaken for the airport, and the downtown bombed. After the War, a replica of the 'Eiffel Tower' was built upon the old beacon base and a two-story revolving neon 'W' was placed atop the steel superstructure 275 feet above the street. The 'W' has become a Vancouver landmark. It revolved three times a minute until the closure of Woodward's in 1993.

CULTURAL HISTORY:

Woodward's was not "just a department store" it also functioned as a social centre. The strongest memory many people have of Woodward's is not related to

shopping at all. Many remember Woodward's Coffee Shop, with its unique horseshoe bays and its famous 'bottomless cup of coffee.' The coffee shop was an important gathering place for shoppers and local residents.

When Woodward's downtown Food Floor closed, it was a profound blow to the Downtown Eastside residents who depended on the store for their groceries. Elaborate display windows drew large crowds, entertained shoppers, and won awards. The animated Christmas displays, which became a Woodward's Christmas tradition, drew shoppers from all over the Lower Mainland. The displays have been preserved, and are remounted at the Vancouver Trade and Convention centre every year during the Festival of Lights.

Woodward's employees were treated well, with many dedicating their entire careers to the company. Service of twenty-five to fifty years was not uncommon. Employees received stock options, had one of the industries' first pension plans, and were regularly honoured by Woodward's management. Staff morale was bolstered by dedicated community work, sporting events, and staff picnics. The Woodpens, a group of retired Woodward's employees, has over 500 members and regularly published a newsletter.

During World War II, Woodward's management and staff recognized that many basic food and personal items would be in short supply overseas. They instituted a Food Parcel program to help their customers send packages to needy families abroad. Over 400,000 parcels were sent overseas, all at cost.

When BC Housing purchased the building in March 2001, the entire inside of the building had been gutted and taken down to its concrete structure. The entire exterior of the building and the neon "W" on the roof is to be preserved. The building had been declared a Heritage Building.

The existing building is approximately 657,000 sq. ft. including the basement. In addition, there is a sub-basement of 19,000 sq. ft. The proposed building size will be between 569,000 and 656,000 sq. ft. This number is variable dependant on how much new construction will be done on the top floors and the exact size of the light well created by the removal of core of the building.

The current proposal includes a large opening – 122.5 ft. by 108.6 ft. cut into the centre of the building, from the third to the eighth floors. This aperture will function as a

light well for the interfacing dwelling units. A semipublic courtyard will be developed on the roof of the second (retail) floor. An amenity space will open into the courtyard on the West Side.

The conceptual design for the space puts as much emphasis on the use and enjoyment of the courtyard at its grade level as it does on the visual aspect for the residents in upper units. The strong forms, the central gathering place, and the use of plant material that varies with the seasons are all employed to provide a green oasis for all residents. The adjacent units will have private spaces while the residents as a whole will have the ability to use the space, which has overlooks to the street and to the courtyard. A landscaped, semi-private roof deck will be provided on the roof of the 1908 portion of the building

-Davidson, Yuen and Simpson, (2001).

Currently, 40% of the building is proposed to be dedicated to co-op housing and the remaining 60% is proposed for commercial and retail space. This commercial/retail space is listed for sale at a \$14.6 million.

At the time of this research, the Woodward's Building was part of the government's core service review process. The Core Services Review is an examination of all-provincial programs, activities, and business units. It is a province-wide review that includes every Ministry, Agency, Board, and Commission. No decision about the plans for Woodward's will be made until after the Core Review is completed in December, 2002. However, in the meantime, BC Housing is developing a business plan that looks at options for Woodward's along with private and public partners. They are currently proceeding with seismic and other building upgrades.

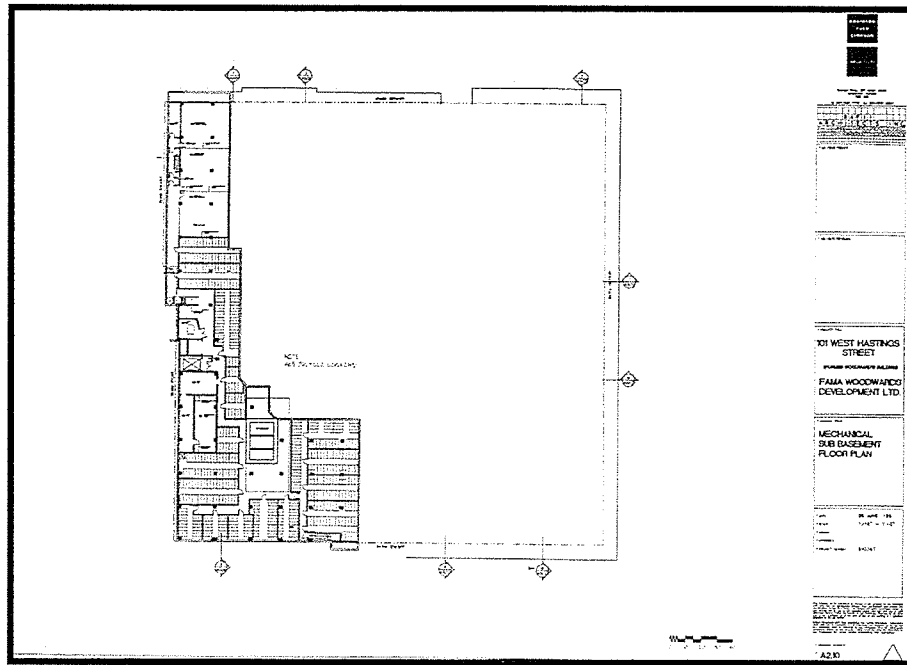


Figure 4.17 Proposed Mechanical Sub Basement Floor Plan compliments of Davidson, Yuen and Simpson

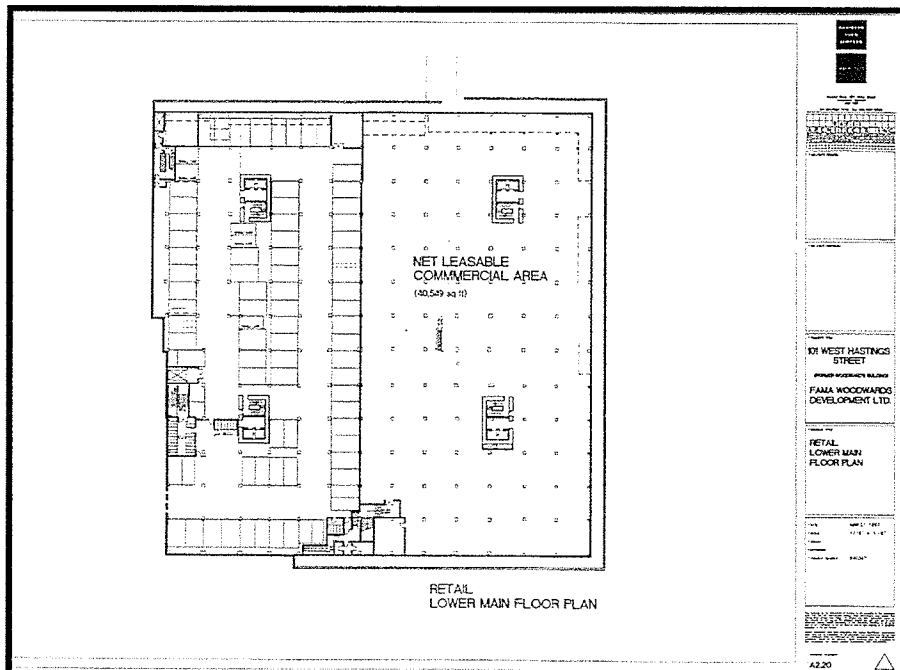


Figure 4.18 Proposed Retail Lower Main Floor Plan Compliments of Davidson, Yuen and Simpson

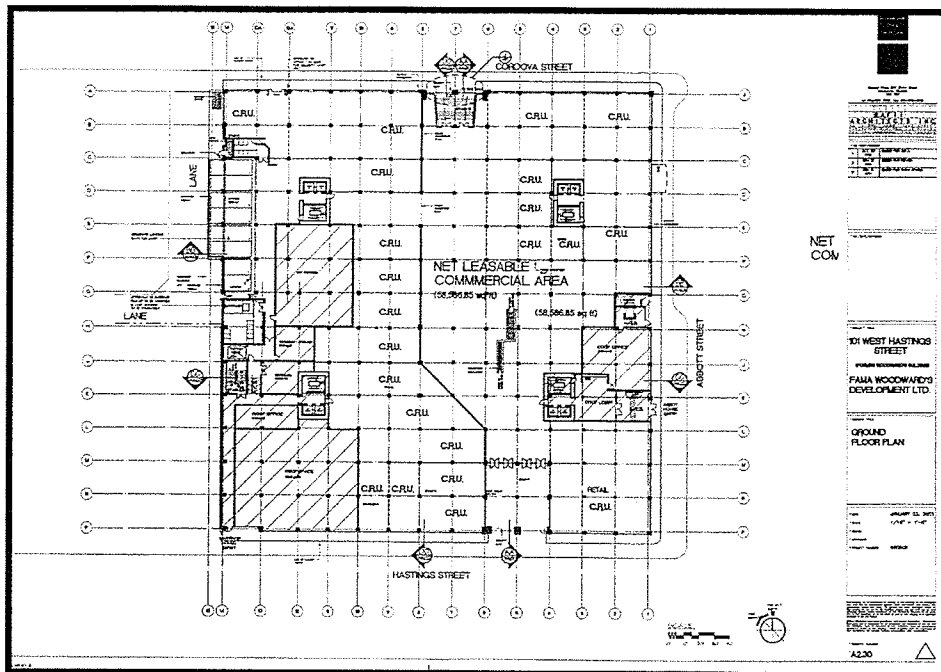


Figure 4.19 Proposed Ground Floor Plan compliments of Davidson, Yuen and Simpson.

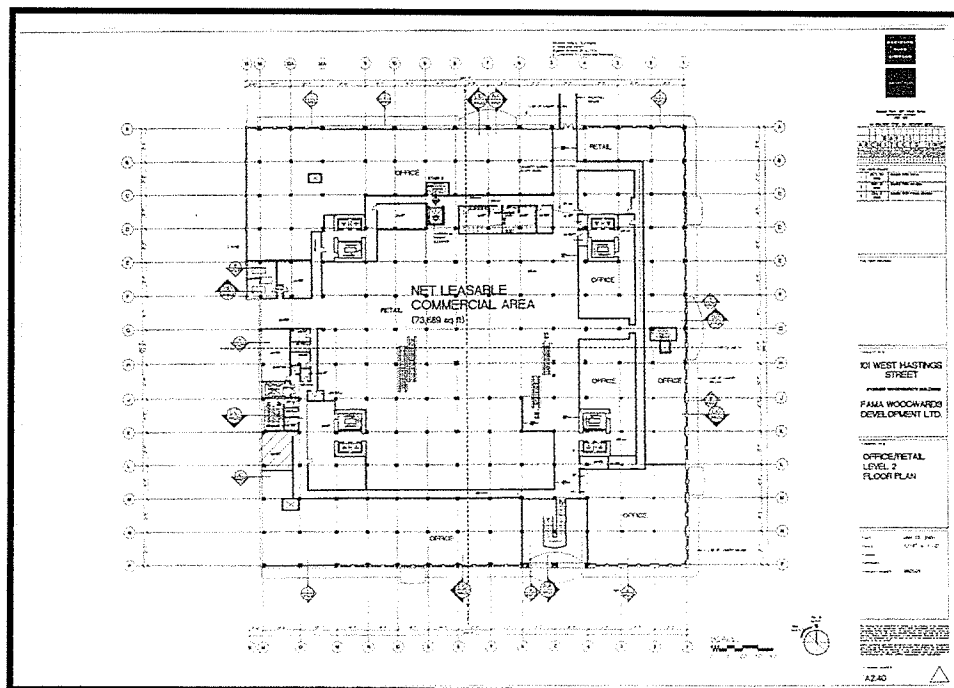


Figure 4.20 Proposed Plan Office/Retail, Level 2 compliments of Davidson, Yuen and Simpson.

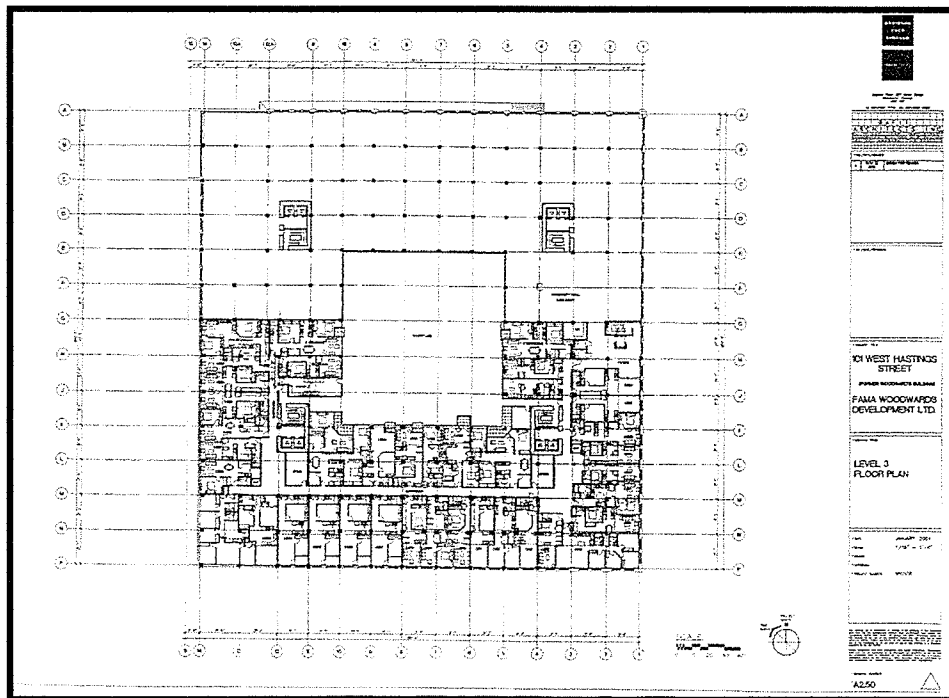


Figure 4.21 Level 3 Floor Plan compliments of Davidson, Yuen and Simpson

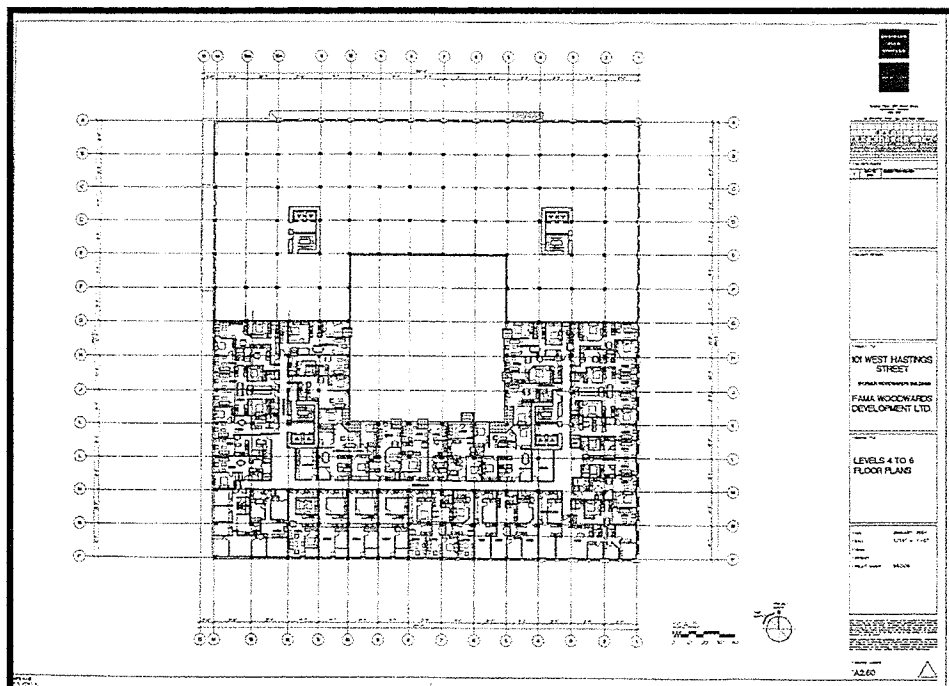


Figure 4.22 Proposed Level 4-6 Floor Plan compliments of Davidson, Yuen and Simpson

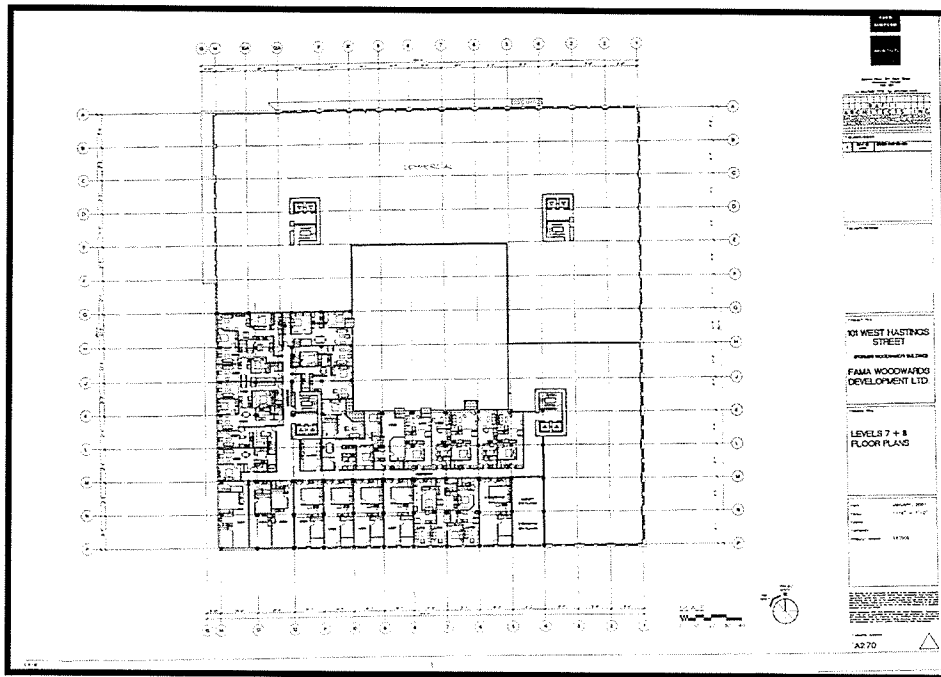


Figure 4.23 Proposed Levels 7 & 8 Floor Plans compliments of Davidson, Yuen and Simpson

Figures 4.17, 4.18, 4.19, 4.20, 4.21, 4.22, and 4.23, are a set of proposed drawings for the Fama Woodward's Development Ltd. The proposal was to divide the building in half, north and south, and lease it to only two tenants – one for the housing section and one for the retail section. An open courtyard was proposed for the third floor where the housing begins. A roof garden was proposed for over the 1908 structure.

Figure 4.17, the proposed mechanical sub basement floor plan is actually only a partial basement which was a proposed conversion to bike lockers. In view of the location and the fact the proposed development was a partial student population housing, bike lockers are important. The tunnel under Cordova Street to the parkade, which is accessed from this level, remains in tact for the time being.

Figure 4.18, the proposed Retail Lower Main Floor Plan shows storage lockers directly under the housing section and the open space for leasable commercial tenant space. The lower main floor could be accessed by either two banks of elevators or by marble scissors staircases. Figure 3 and 4, the Ground Level and Level 2 are office/retail leasable space.

Housing was proposed for Level 4.19 through 4.23 inclusive around the central open courtyard. Floor 8 is slightly smaller where the building envelope cuts out around the original 1908 building. A roof garden was proposed for this space.

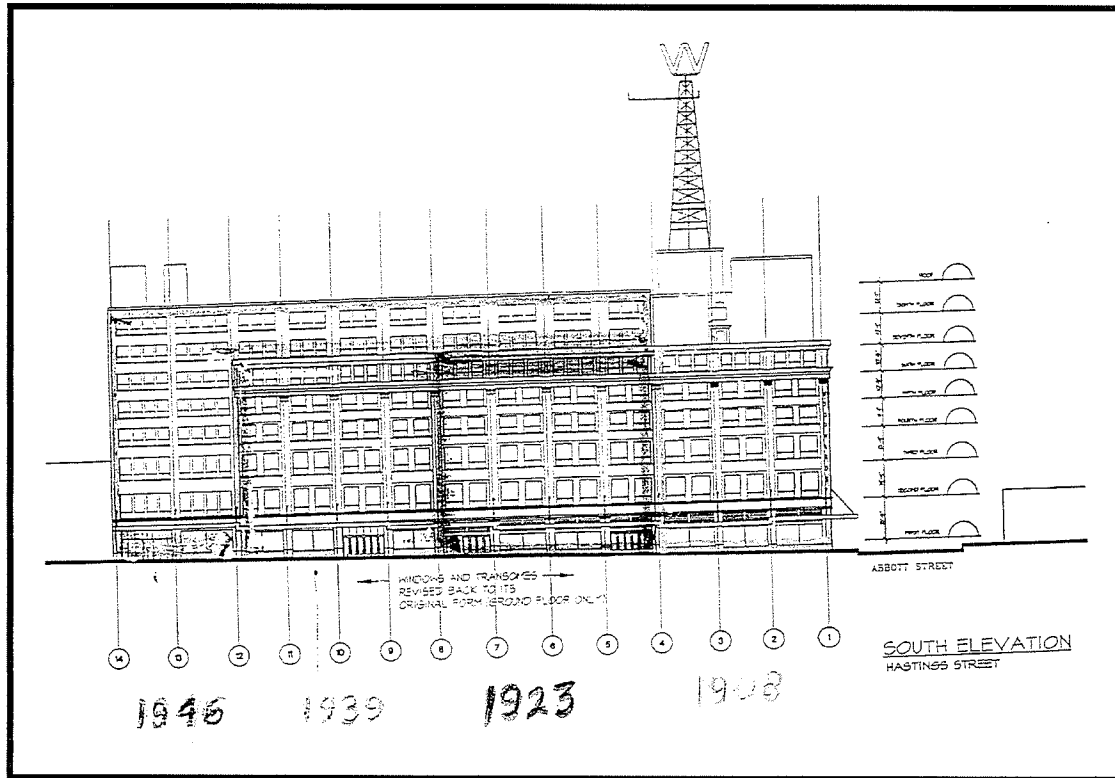


Figure 4.24 Elevation of Woodward Building compliments of Davidson, Yuen, and Simpson, 2001.

Figure 4.24 shows the south elevation of the Woodward building. It indicates some of the stages which the building was constructed.

4.3 Lessons Learned and Conclusions:

The redevelopment of former heritage department store buildings present challenges of their own. Upon considering the common characteristics of the case studies the following is true:

1. All three buildings were a few blocks away from the CBD of each of its respective city, but still centrally located and connected to other retail areas,
2. All three buildings were once an active hub of activity,
3. All three buildings not only have an architectural history but a social and cultural history as well,

4. All three buildings were declared historical buildings and then come under the historic preservation protection acts of their respective area,
5. All three buildings, at one point in time, functioned without any landscape features within the building but were recently created,
6. All three buildings required the removal of some of the existing column structure to make room for the new redevelopment,
7. All three buildings incorporate the column grid into the redevelopment
8. All three buildings required at least some work on the exterior of the building envelope. The interior's, of course, required total annihilation,
9. All three buildings represent physically feasible projects; however, politics and economics are equally strong influences.

When redeveloping a former retail building of this era, a few other factors come into consideration. Firstly, they are so enormous that they require some manner of 'bringing natural light into' the building. This requires the use of atria and open courtyard systems. In addition, in most cases, interior landscape projects could be beneficial to promote a healthy work, living and playing environment for the new residents.

All aspects of former use can be beneficial to a redevelopment project including social, culture, and youth, economics, surrounding neighborhoods, and promoting a strong community. Mixed-use development reintegrates all the former uses back into the system to promote vitality.

Of the three major case studies presented Queen's Quay appears to be the most successful redevelopment. In 2001, it was undergoing some minor renovations but for the most part was fully utilized. Queen's Quay actually has some different qualities and the other two case studies.

1. It is slightly newer than the other two buildings,
2. It is constructed of concrete, rather than brick so exterior deterioration is not as apparent,
3. It was originally built on reclaimed land, which represents a total recycling project. In addition, one has to wonder if being on reclaimed land doesn't lend itself to greater consideration,

4. Queen's Quay, upon the onset of redevelopment was part of a major undertaking of the entire harbour system. Politically and economically it had greater support than the other two studies,
5. Queen's Quay had more surrounding land to work with. This offered the opportunity of incorporating streetscaping in keeping with the rest of the project,
6. Queen's Quay built up from the existing structure. Housing started on the rooftop. It incorporated an intricate roof garden and landscape with a water wall. The rest of the building uses function independently of the penthouse condos with separate accesses.

In conclusion, there could be a viable development scheme for almost all heritage retail structures. Landscape architecture could be integral part of these developments. Similar redevelopment projects would require extensive capital cost expenditures and would need the cooperation of planning departments. These redevelopment projects become problematic when political and economic issues become more important than the vitality that human presence can offer.

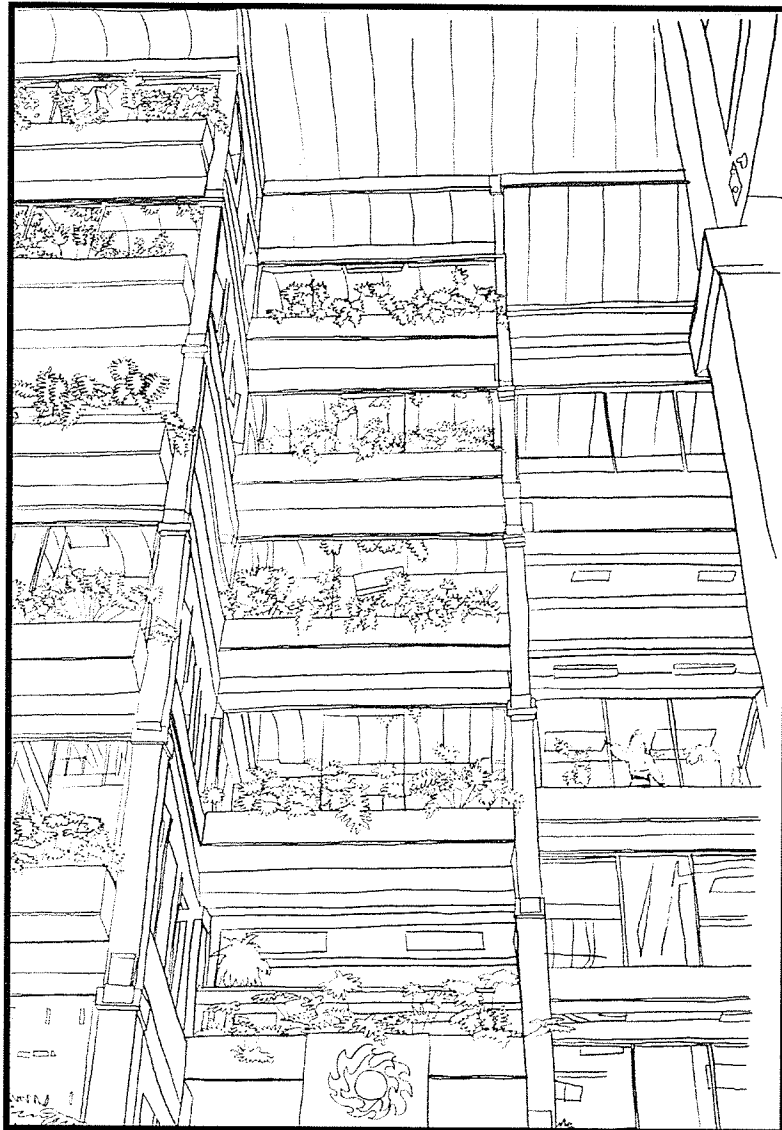


Figure 5.0

Line Drawing Butler Building, Minneapolis,
Source: Kevin Fry in Pierceall, *Interiorscapes*, 1987, pp. 215

5.0 DESIGN PROGRAM

5.0 Design Program

If form follows function, then analyzing function to make form follow it becomes the priority. Form then merely expresses or reveals function above any other, higher ideal as a measure of satisfaction of design goals. The more intuitive characteristic approach to designing in and with nature and, initially, the more generalized and universalized plan, reveal the wonderful properties and prospects of interaction between a human physical act and the ever-changing world of open space

- Peter Walker, *Minimalist Gardens*, (1997).

5.1.a. Design Objective -to provide a redevelopment for the downtown core of Winnipeg.

Urban centres historically functioned at a different level than we observe today. Before the advent of the automobile the centre of the city was driven by pedestrian traffic. There was a need to live within the immediate vicinity of the downtown core in order to survive. One can never truly recreate what has happened in history; however, by planning for a sustainable future and reusing vacant property to redevelop and promote community within the downtown core, the notion of 'revitalization' or bringing new life becomes possible. Some designers may refer to this as reviving the 'spirit of place'.

In order to accomplish this objective we must consider bringing vitality back into the urban core. Vitality involves human presence. A solid community that reacts and interacts within the site could be achieved by adopting an ecological systems approach for the development. The urban fabric will be integrated with the site by creating new community life and vitality within.

With the central location of the Eaton property a new residential development could offer the opportunity of integration into the existing downtown life. The programmatic events that take place within the development include the elimination of theatre driven events. The object is to promote what is currently available in the immediate vicinity. The objective is to promote an evolution of rediscovery. By integrating work, home, and leisure, the community will not become static but move forward.

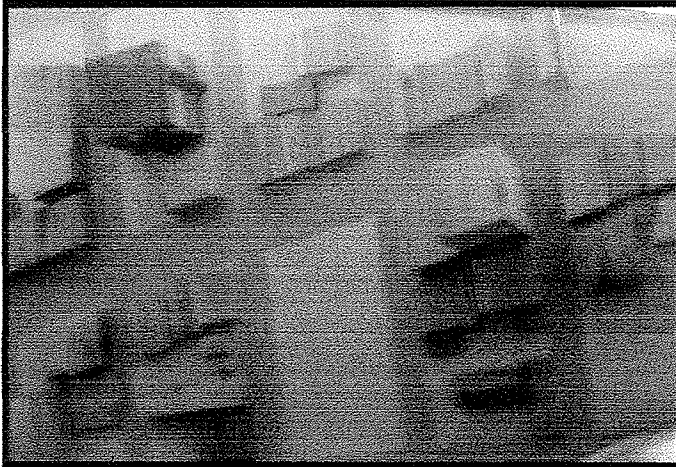
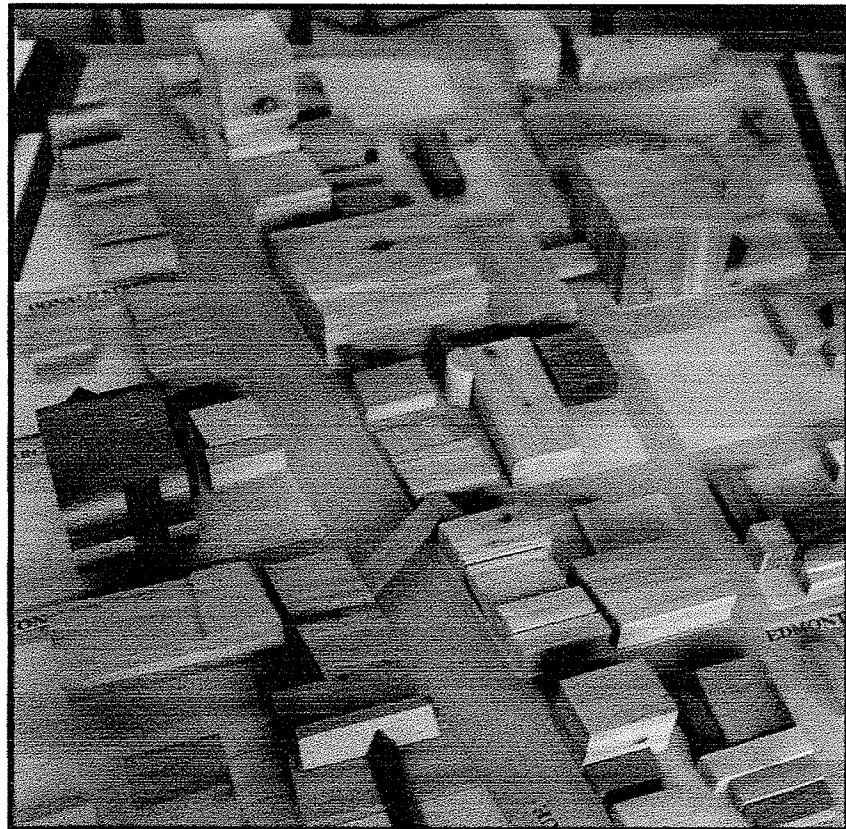


Photo No. 5.1 massing model 36x48, cedar block with Eaton building removed. Note the void created by an empty city block.

Photo No. 5.2
Shows the study site three blocks by six blocks in massing with the Eaton building and property in tact. The sheer size of the property becomes more evident.



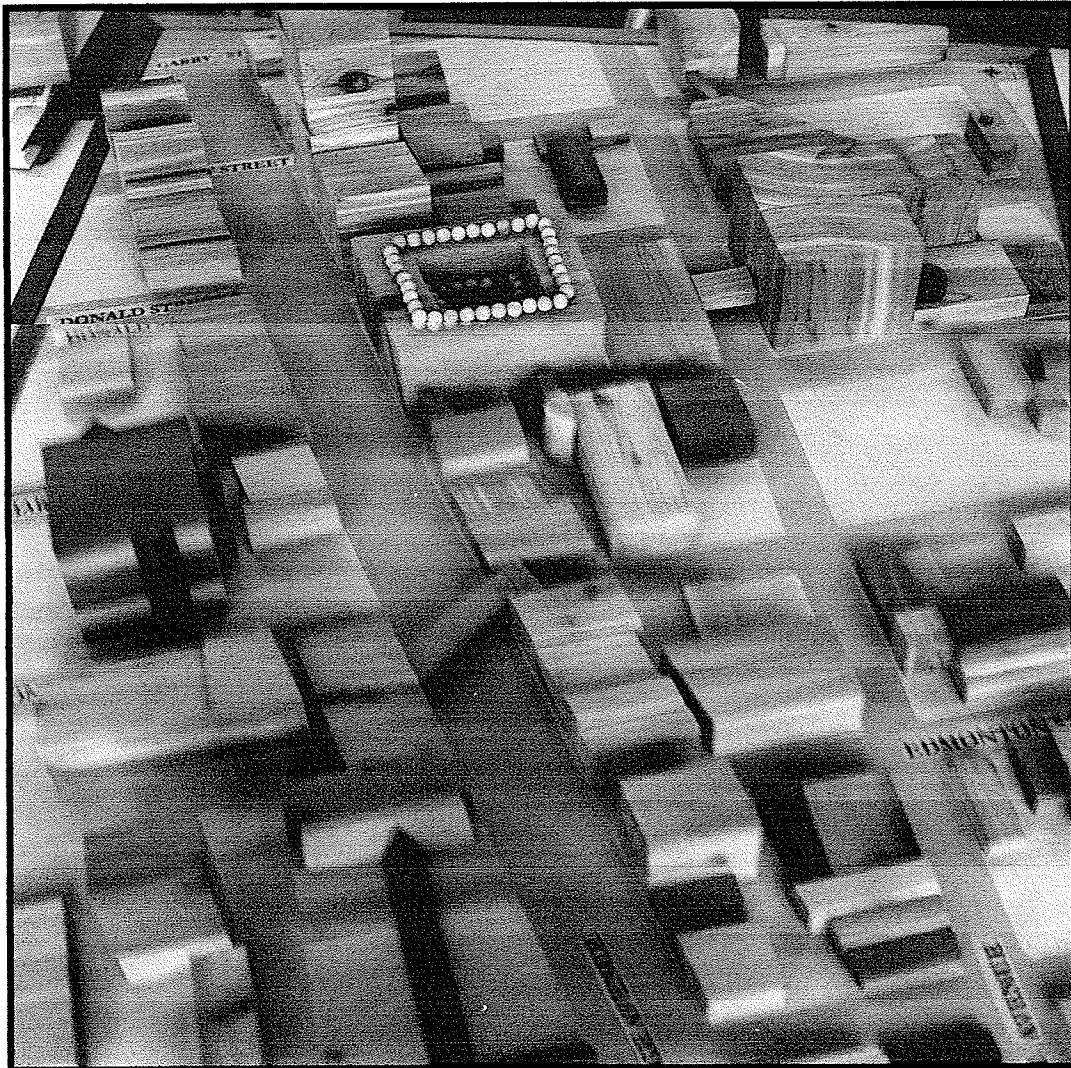


Photo No. 5.3 Massing model of immediate study area 36x48 cedar block scale=1:500

Photo No. 5.3 shows the three by six block radius of the site in massing with the conceptual massing model of the Eaton building inserted. The courtyard and roof gardens are very noticeable.

5.1.b. Design Objective – to provide a redesign for the Eaton building, as the building envelope will dictate.

The conceptual program involves a mixed-use development program for The Eaton Building, the annex and the Powerhouse and Parkade.

The Concept Site Plan shows the entire Eaton Property with the greening of the connecting walkways.

THE EATON PROPERTY

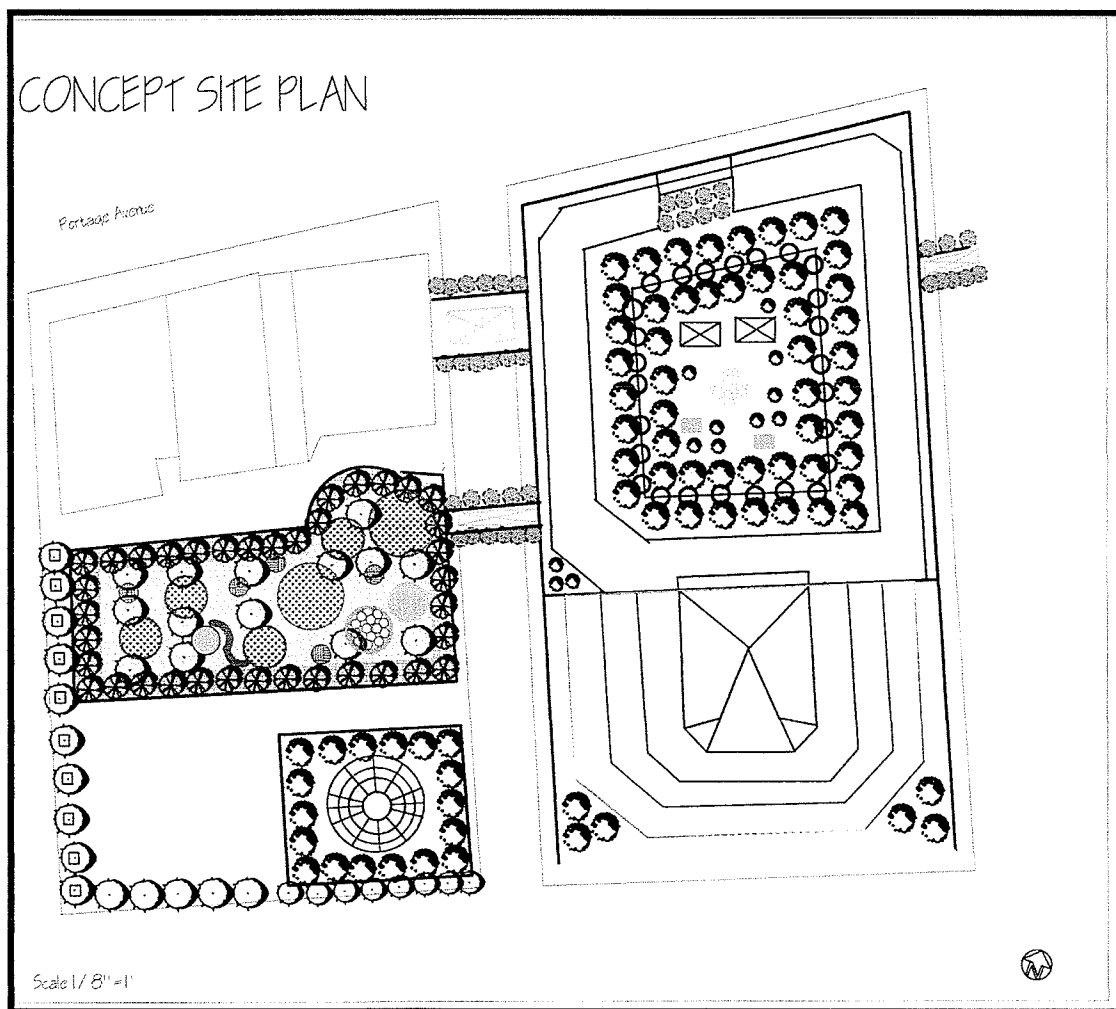


Figure 5.2

Concept Site Plan reduced from 36x48 scale 1/16"=1'

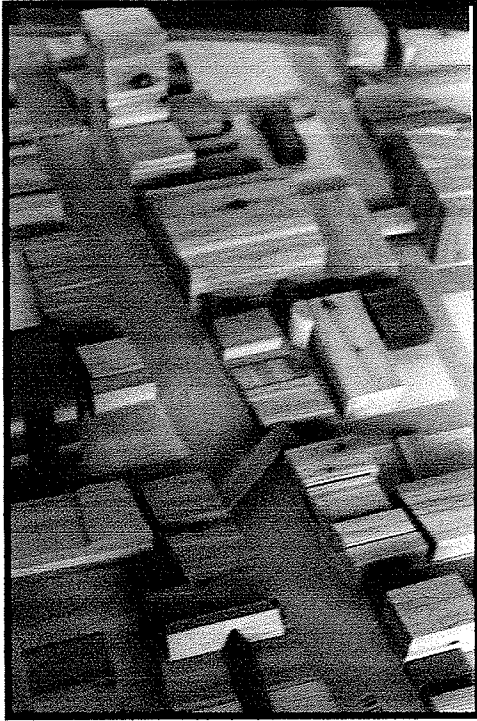


Photo No. 5.4 Looking east on Portage

Photos 5.4, 5.5 and 5.6 show the massing model, 36x48 cedar block on mdf base, 1:500

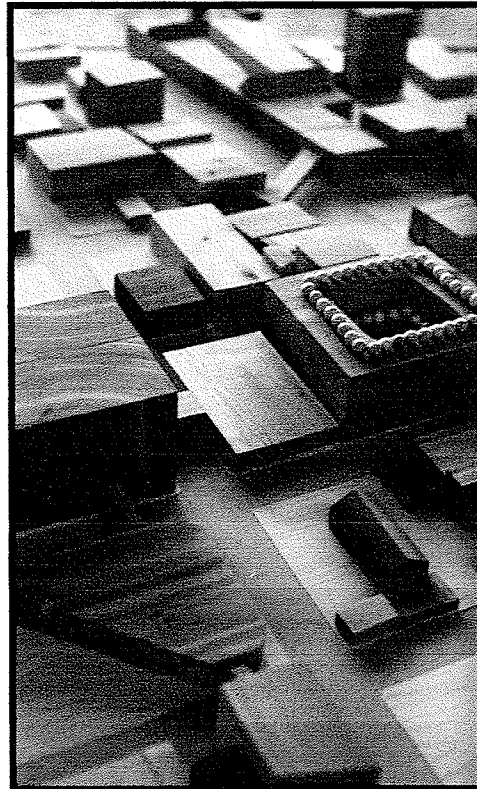


Photo No. 5.5 Looking south from building

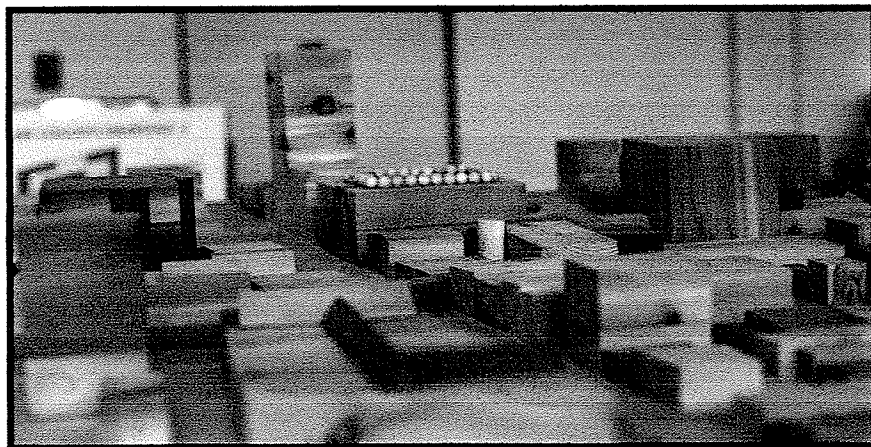


Photo No. 5.6 oblique shot of Portage Avenue with concept building

The North-South section (reduced from scale=1/32"=1') below shows the conceptual cutouts to provide space for green areas and fresh air for residential units.

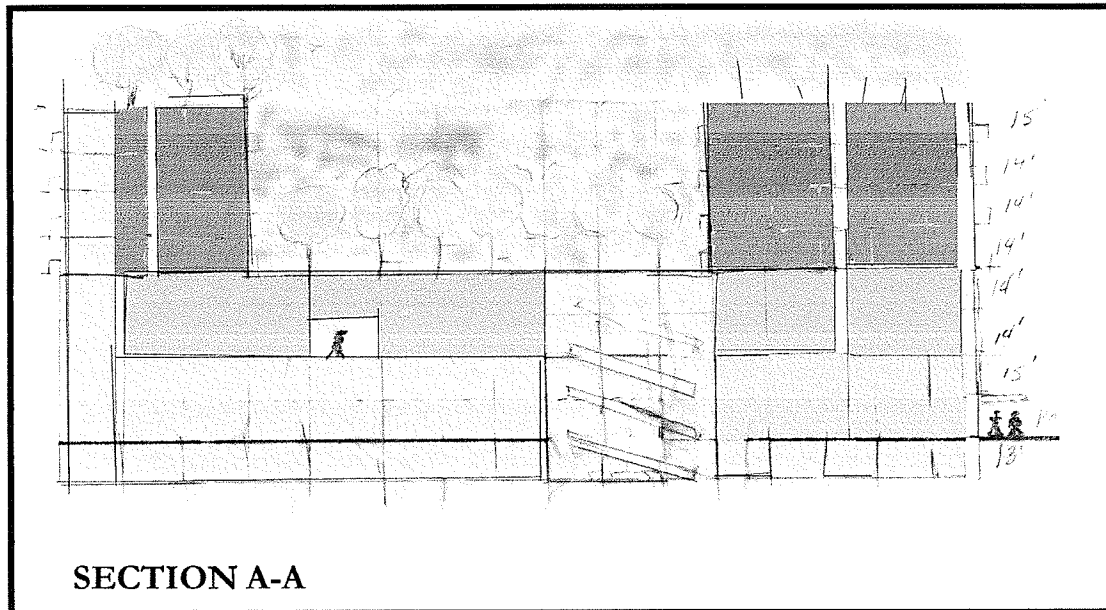


Figure 5.2

Concept Section

The Eaton Property–

The program for the proposal evolved as the building dictated. There were a number of factors that were considered as the process continued. The initial program that was given consideration for feasibility within the structure as it was in January 2000, was:

- Basement** - leasable light commercial retail
- First Floor** – leasable light commercial retail
- Second Floor** – leasable light commercial retail
- Third Floor** - leasable office
- Fourth Floor** – leasable office
- Fifth and Seventh Floor** - housing
- Sixth and Eighth Floor** - housing
- Ninth Floor** – amenities daycare centre, gym facilities, gallery space, green space, tenant gardens and possibly residential

Centroidal Courtyard – begins at floor 5 open to the sky 140 feet x 140 feet is programmatically designed as a meeting place for seasonal events.

Annex – Eaton Market – Closed atrium, roof garden, and restaurant -
The Forks Market Style

Power House -Atrium covered carved out of the centre – garden centre enclosed for winter enjoyment – palm house could also be utilized for meetings, gym area, spa – atrium covered walkway between the buildings

Parking Gardens - Roof garden – with a dog run.

Site conditions dictated the following:

1. A new roof was required,
2. Structures on the roof were portable units in need of repair and not very attractive so they needed removing,
3. Egress would have to be addressed, elevators were currently reusable and escalators were still functioning,
4. The structure had an historical building front of brick and tyndal stone which would have to be observed,
5. Tin ceilings and maple floors remained throughout and could be removed and recycled or remain,
6. Cast iron column structure was uneven but the grid would need to be observed,
7. Heating was currently supplied by the power house but when redeveloped would be provided by other means, including the use of solar panels (photovoltaic cells),
8. The building had a strong cultural past which would influence of the program,
9. Building and Fire Safety Codes would have to be observed.

The following figures 5.3, 5.4, 5.5, 5.6, 5.7, and 5.8, are all concept drawings reduced from 1/32"=1' of the Eaton building.

The Eaton building Concept :

Basement –

Commercial Leasing Space –

65, 012 sq. ft.

Building Services –

6,528-sq. ft plus the
tunnel

Fountain System Foyer –

6,528 sq. ft.

Green space can be integrated into the
fountain system and escalator planters.

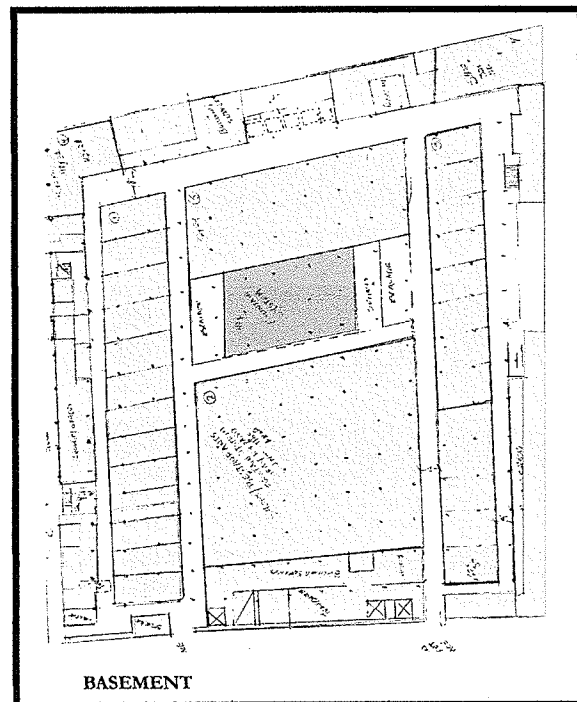


Figure 5.3

Main Floor –

Foyer and fountain system -

6,624 sq. ft.

Leasing Space - 30,112 sq. ft.

Building Services 6,528 sq. ft.

Leasable light retail/commercial space
can be subdivided as required by
individual tenants. Green space will be
integrated into interior landscape
fountain systems.

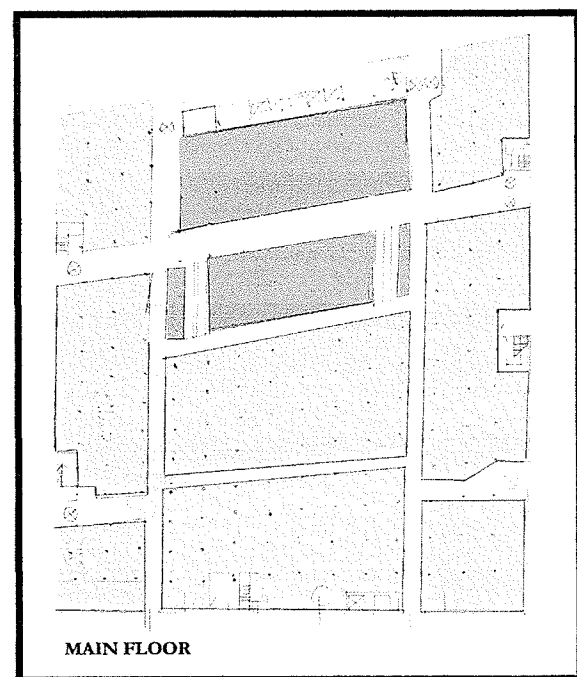


Figure 5.4

Second Floor –

Commercial Leasing Space

43,112 sq. ft.

Building Services-6.528 sq. ft.

Tenant space could be leased subdivided or leased by one tenant. Green space opportunities are available by integrating the floors with cutouts. The second floor is open to the lower level and to the main floor. Escalator planters and public open space at the landings will incorporate interior landscape.

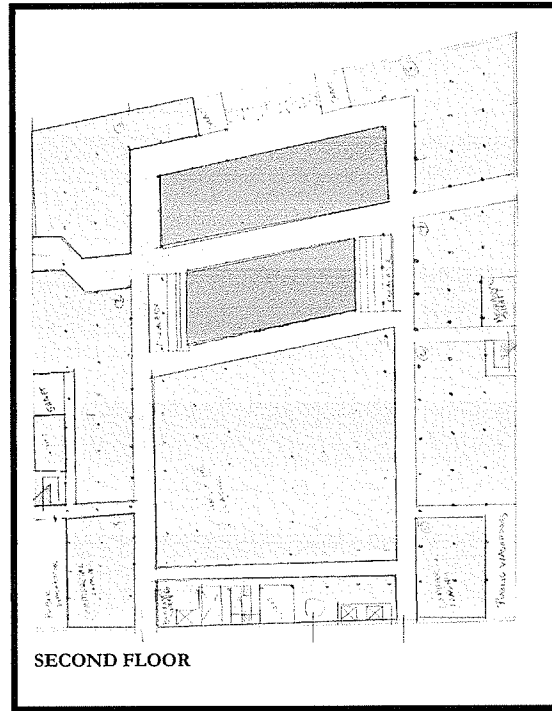


Figure 5.5

Third Floor -

Office Leasing Space

46,488 sq. ft.

Building Services 6,528 sq. ft.

Leasable space can be subdivided, as tenant uses are required. Green space could be integrated into escalator planters and provisions for public open space for escalator landings.

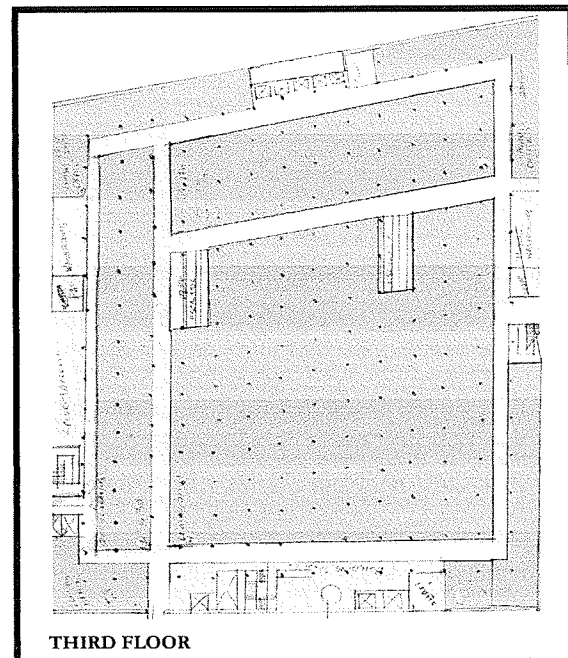


Figure 5.6

Fourth Floor-

Office leasing space –

56,368 sq. ft.

Building services – 6,528 sq. ft.

Egress changed to allow for exit from the fifth floor residential. Floor four buffers retail space from the residential space and can be subdivided as client needs require. Green space opportunities will need to be integrated into escalator planters and landings.

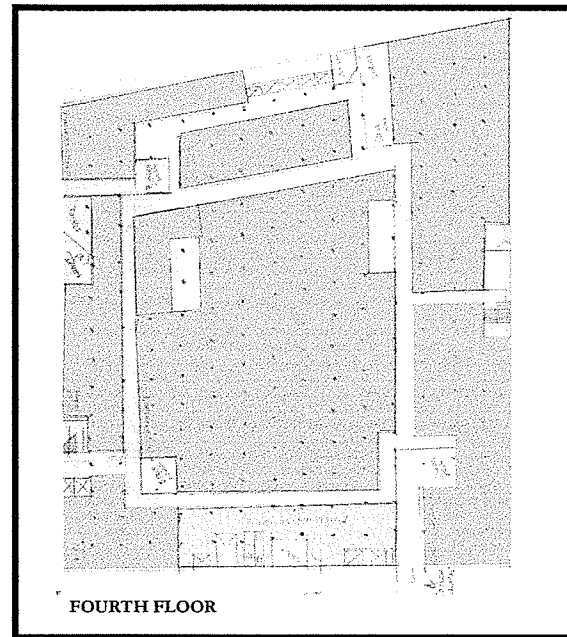


Figure 5.7

Fifth/Seventh floors - Two story Apartments (28)

42,376-sq. ft

Building Services 6,528 sq. ft.

There is a range of residential units including loft-style, one and two story units with den and in-house laundry. These units access the courtyard on the fifth floor from semi-private courtyards. Egress occurs off the four corners of the courtyard garden space.

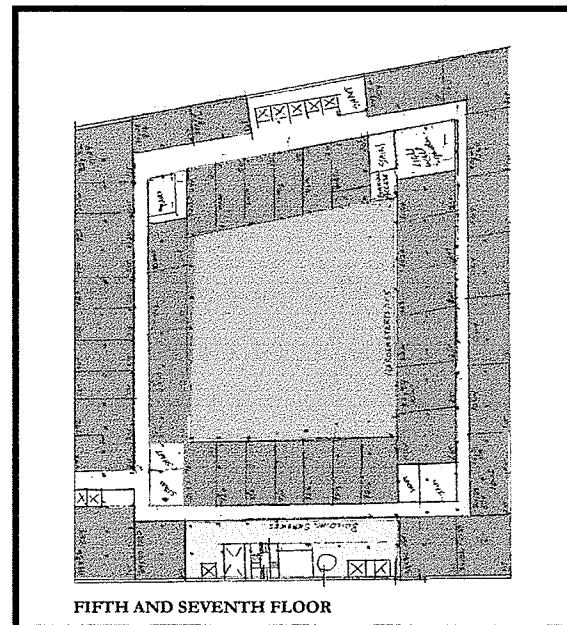
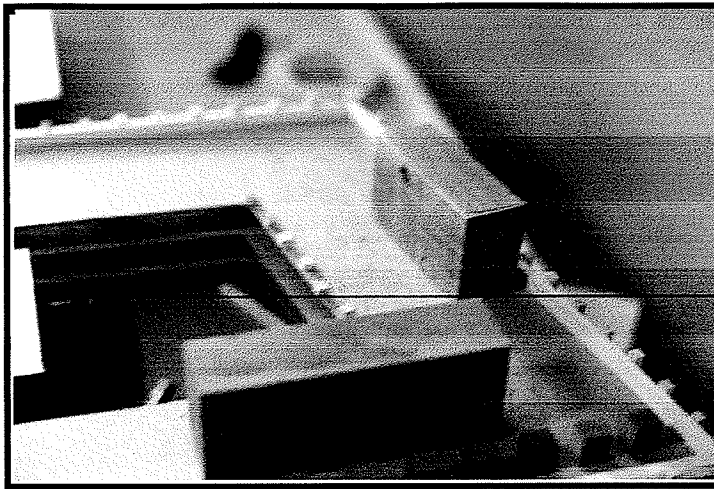


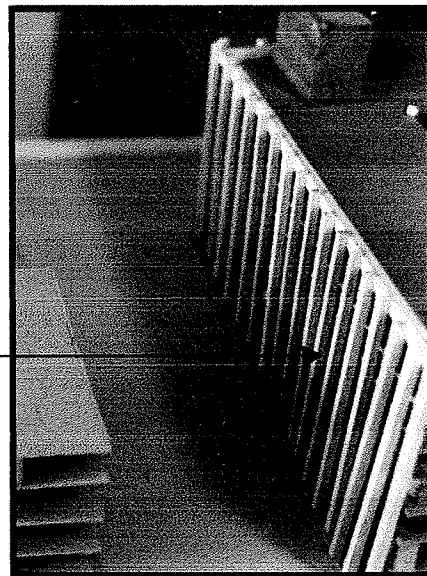
Figure 5.8



— Morning shade

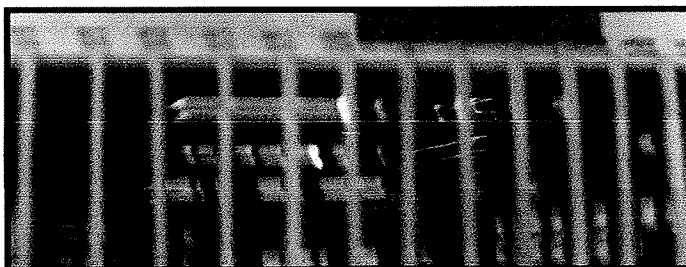
Photo No. 5.7

Photo Nos. 5.7, 5.8 and 5.9 show the study model, 36x48, millboard and cedar block as the courtyard is carved out to allow for natural light and fresh air to enter the residential areas.



Morning sun. —

Photo No. 5.8



— Can light penetrate
through to the centre
— courtyard barely

Photo No. 5.9

Six and Eight Floors

Single Story Apartments (18)

20,599 sq. ft

Building Services 6,528

Interior Apartments have balconies over the courtyard. Green space opportunities include the courtyard space and balcony planters.

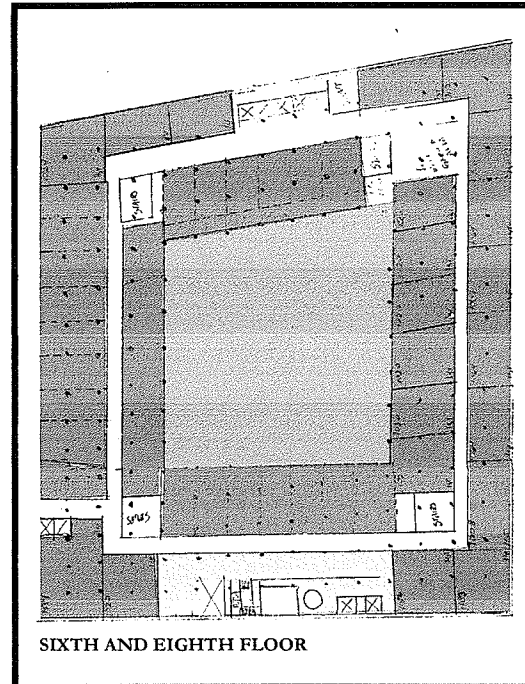


Figure 5.9

Ninth Floor - Roof

Roof Gardens, Restaurant, Day Care Centre, Gallery Space, possibly build up two floors housing.

Green space opportunities include the entire roof garden system overlooking the green space of the courtyard on the fifth floor and balcony planters on the eighth, seventh and sixth floors.

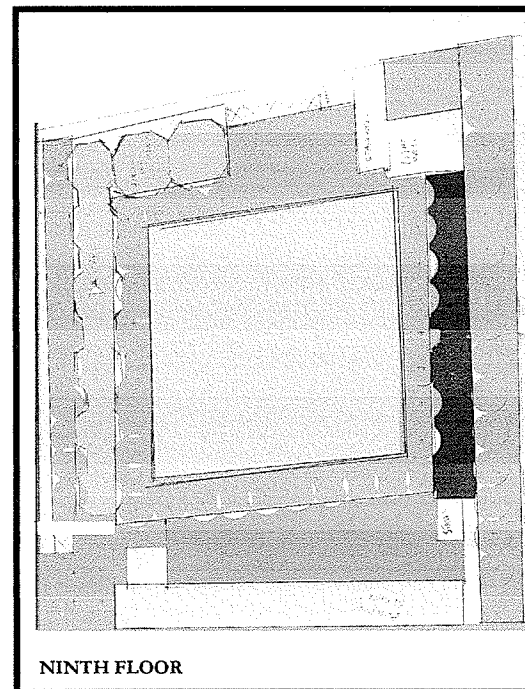
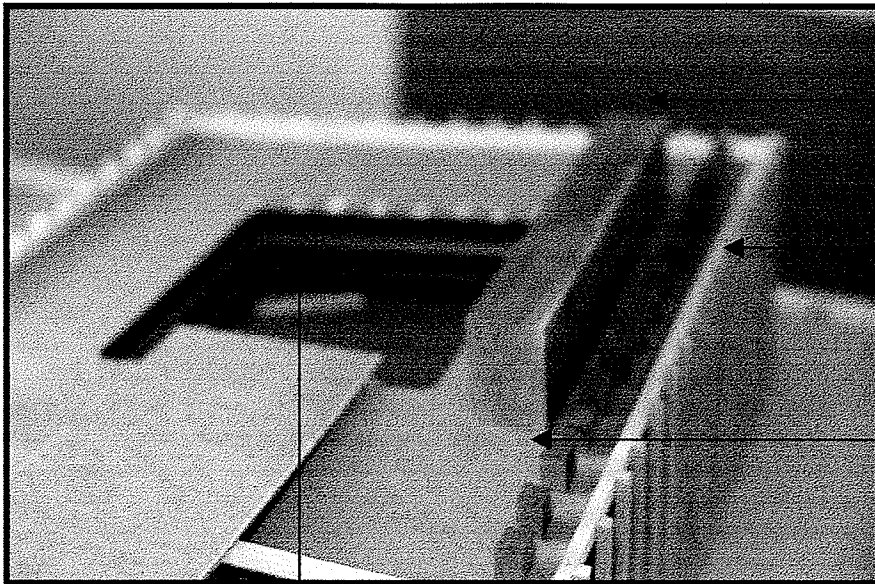


Figure 5.10

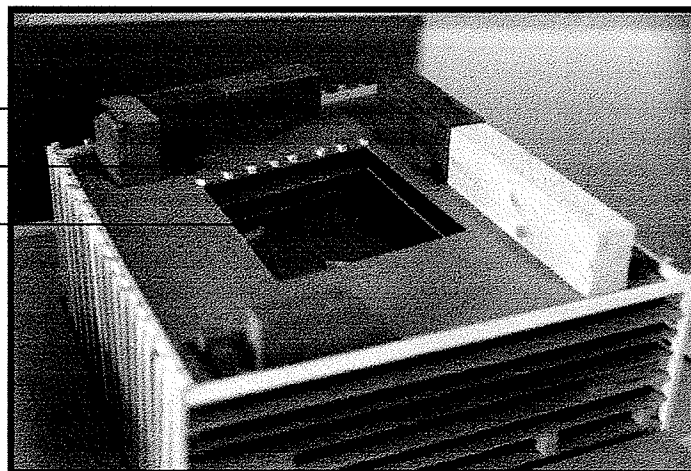


considering
gallery space
here
open column
structure for
light
a row of
shrubs in pots

Photo No. 5.10

carving out courtyard space to
create natural light and fresh
air for tenants

adding residential units
planters
shaded area



Photos No. 5.10 and 5.11
show study model, 36 x 48,
millboard and cedar block
scale 1/16"=1

Photo No. 5.11

As the program developed environmental factors were considered. A major consideration is the way in which the building reacts with the environment. By formulating a new approach to the design many integrated systems were involved. These included a fully developed roof garden, a courtyard to supply fresh air for residents, water recycling plant, solar panels on housing units and other roof garden structures, and interior landscape features within each separate unit to integrate the entire structure.

5.1.c. Design Objective – to offer a series of design strategies that may be used as a prototype for future redevelopment areas.

1. Incorporate mixed-use development into more of the redevelopment projects. This provides for a range of people to be encouraged to use the downtown area.
2. Encourage the acceptance of Heritage Buildings integrated with new building forms in all areas of the downtown core.
3. Provide for green space in every development in the form of interior landscapes, which could be in the form of interior gardens, courtyard gardens, or atria gardens. Tenants could provide input for thematic gardens. This would allow for the design to evolve on a continual basis for increased interest in a particular center.
4. Designate an integral green roof system for the entire downtown core area.
5. Include green planting in all parking structures and ground lots to help alleviate heat island effect and create ambience.
6. Promote a systems approach for natural systems.

5.2. Conclusion

Further program developments in the project included:

- a. Building Recycling – became feasible at an early stage in the project when the Mechanical structure was investigated and found to be fully reusable. This included the exterior heritage of the building.
- b. Efficient Use of Resources – developed as the project progressed and involved the investigation of bioreactant plants, storm water collection, retention and recycling, the original well is still intact and could be reused for extra cooling of the building and heating of the building and entire site
- c. Design of a Green Building – the creation of green spaces throughout the entire mixed-use development. The integration of street trees and parking gardens could link the green building with adjacent streets. Further linkage to other buildings will be discussed in chapter seven.

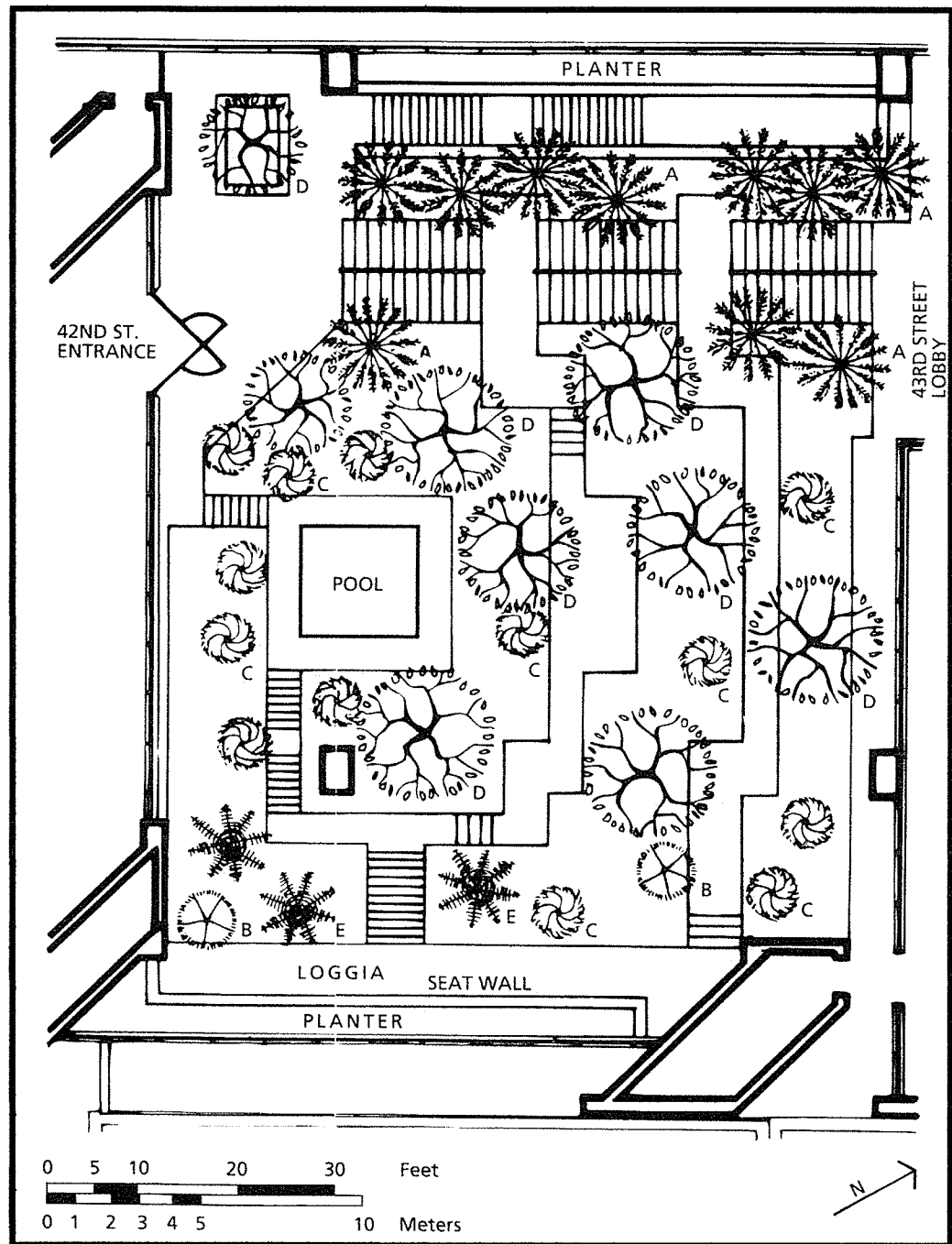


Figure 6.0 Tree Planting Plan Ford Foundation Source: Nelson Hamner, *Interior Landscape Design*, 1992.

6.0 DESIGN PROPOSALS

6.0 Proposals

6.1 Introduction

Design is an evolving process of investigation, testing and communicating. Design is the architect's tool in resolving many disparate issues such as site planning, appropriate urban form, unity and beauty ... focus on context, function and design provides a unique response derived from specific project conditions

- Quadrangle, (2002).

Mixed-use development offers the potential contribution of improving the vitality and attractiveness of town and city centres and of meeting housing needs in a sustainable manner. It also explores the particular factors that make it an attractive development phenomenon. If vitality refers to life and in particular to the context of town centres, then life is represented by the presence of people. The term also embraces the natural environment in the form of plant life and provides an important element of the quality for the physical environment. To promote urban life it is essential that population density is increased in the urban core

- ODPM, (2002).

This proposal presents the following objectives:

1. Redevelop an existing building of historical, social and architectural significance, rather than the restoration of the building,
2. Add to both a renewed vitality of the building and the street-level activities,
3. Building reflects the character and scale of the area,
4. Encourage the rehabilitation and soul of the area,
5. Create a public realm that compliments architectural character and enhances the preferred uses.

In 1926, when the Eaton property was fully developed it was described as a small city. The redevelopment of the Eaton property could have become a city within a city. The integration of the tenant spaces of the Eaton building into the conceptual model enhanced with the interior gardens, the courtyard gardens and the roof gardens could

become an intricate series of integrated systems. With the addition and enhancement of Eaton market, formerly the annex, the use of a central atrium could create a natural light tenant space that could be further developed into interesting market spaces integrating landscape areas that could be appreciated. The powerhouse could also be developed around the integrated systems and contextually expand the theme of the garden-style walkways. It could become a day spa with space for a green house to accommodate the plants in the entire development. The Parking gardens could establish the green links that are discussed further in this practicum.

6.2 Proposed Tenant Spaces

Entering Eaton Gardens on the main floor revolving doors open to an interior public plaza and interior landscape with gardens and fountain system. Plant material spills out of basin-shaped planters. The theme is repeated on the lower level along with tiered planter dividers in several areas of the public open space. Theme gardens reminiscent of a rain forest offer an attractive space and help make it a healthy building.

Open to the second floor and overlooking the lower level provides an integrated system with the other areas of the building. The original bank of elevators services all floors. Three of the existing five are locked out for the residential floors and point service direct to the roof gardens for easy access of the cappuccino bar, restaurant and day care facility.

6.2.a. Proposed Leasable Light Retail/Commercial Space

The lower level and first floors offer leasable light retail/commercial tenant spaces. Boutiques are suggested along the walkways directly linking to Eaton Market..

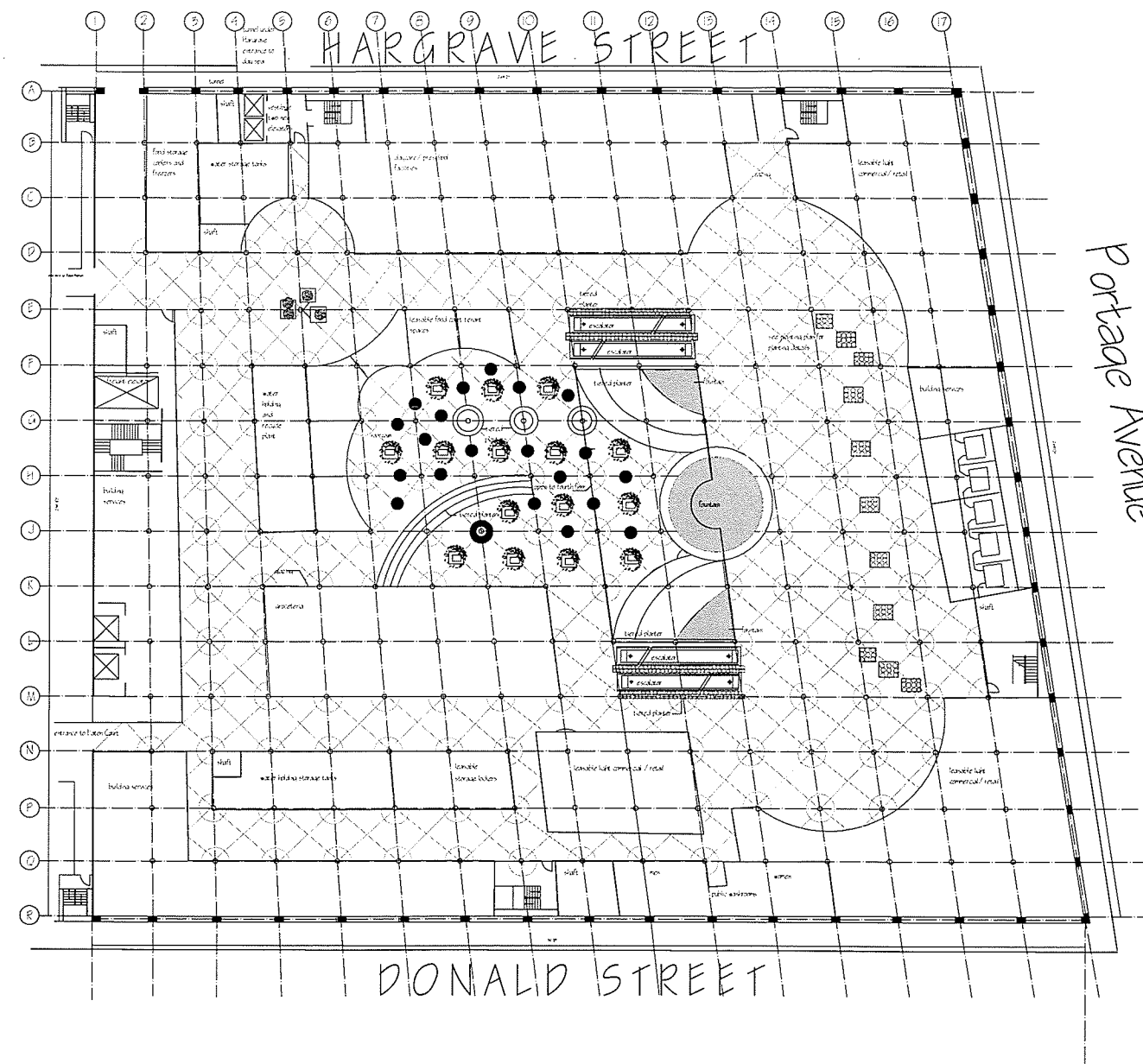
The target group is:

1. Downtown employees,
2. Downtown area residents,
3. Regional residents,
4. Visitors and tourists.

The lower level maintains the original tunnel connection to the former powerhouse and conceptually the day spa/gymnasium and atrium covered swimming pool. Connections are also *boutiqued* (development of boutique shops along the halls). The lower level offers a food court with seating for 250 to 300 people. Actual seating space is 625 square metres (720 square feet) depending on where people choose to sit. Further seating can be made available by integrating the area around the fountain systems.

Interior landscape plant material includes bioreactant plants. The space also includes a grocery store, and a preschool/daycare space with a mandate specific for the building employees. Once the employees are accommodated, the remaining spaces could be utilized by outside employees.

Note: Tenant Spaces Include
Light Retail Commercial
Day Care/ Preschool
Food Court
Grocceteria



Scale: reduced from $1/16'' = 1'$

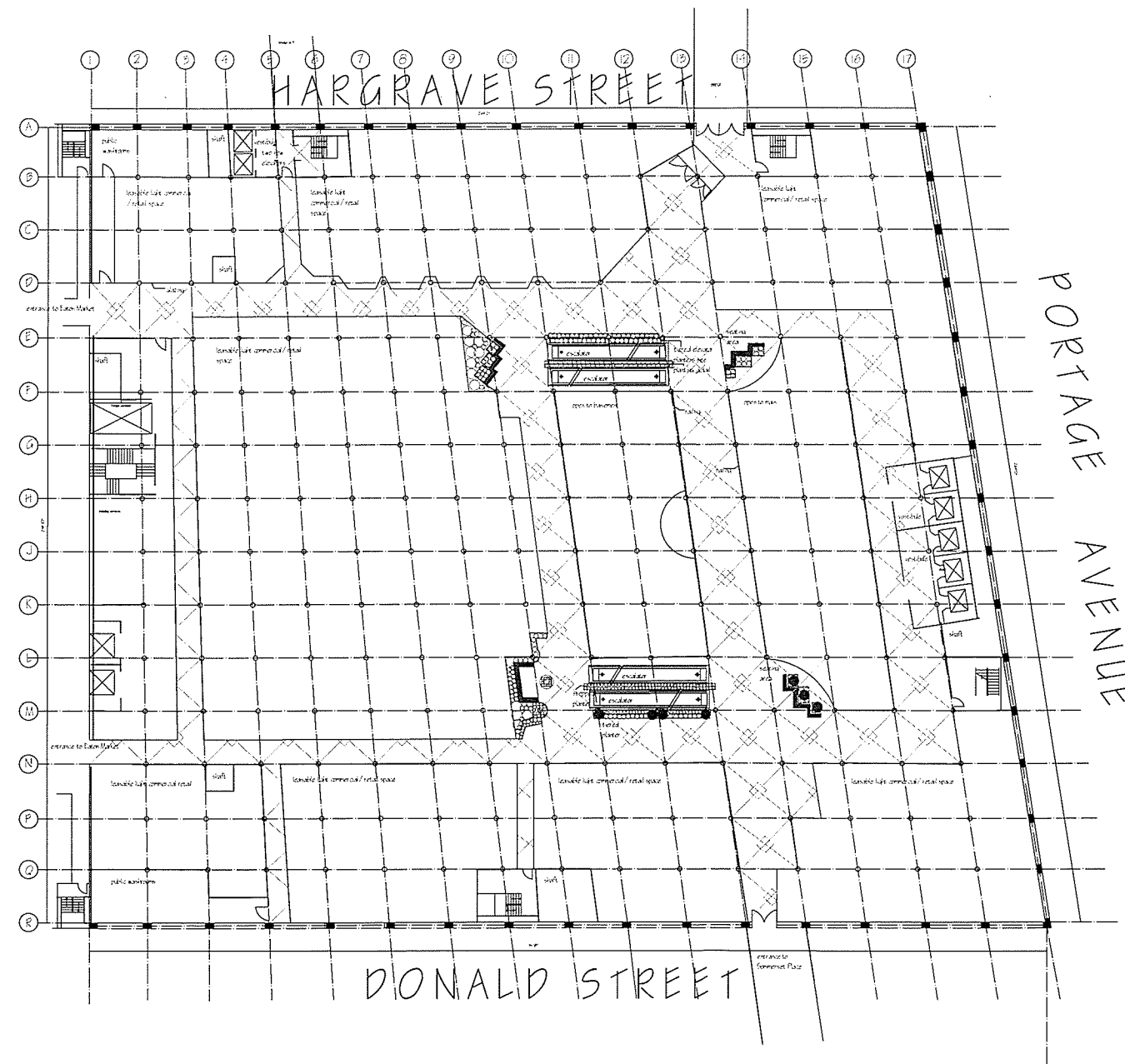
Lower Level Plan

Figure 6.3



First Floor Plan

Figure 6.4



Scale: Reduced from 1/16" = 1'

Second Floor Plan

Figure 6.5

6.2.b. Proposed Leasable Office Space

Floors three and four offer leasable office space. This leasable tenant space could be subdivided as required for a particular agency. Escalators access floors three, two, one, and the lower level. Elevator service is available on the parking level directly across from the parkade. In addition, three elevators service the entire building on the Portage side of the complex providing service to floors one, two, three, four and nine, (the roof gardens). There is direct access to the parking gardens on the third floor bridge.

Target Group - Downtown Office Space

- Insurance agencies
- Business offices

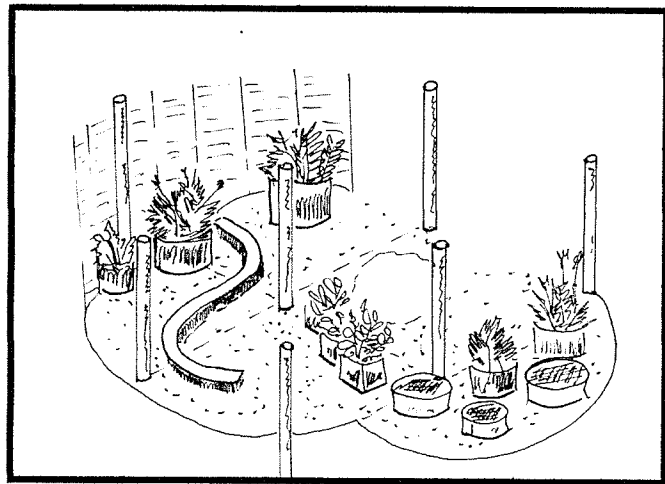


Figure 6.6 Sketch of Public Open Space

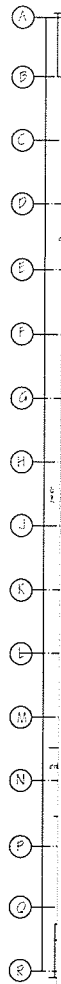
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Scale: Reduced from 1/16"=1'

Third Floor Plan

Figure 6.7



Scale: Reduced from 1/16" =

Fourth Floor Plan

Figure 6.8

6.2.c. Proposed Residential Spaces

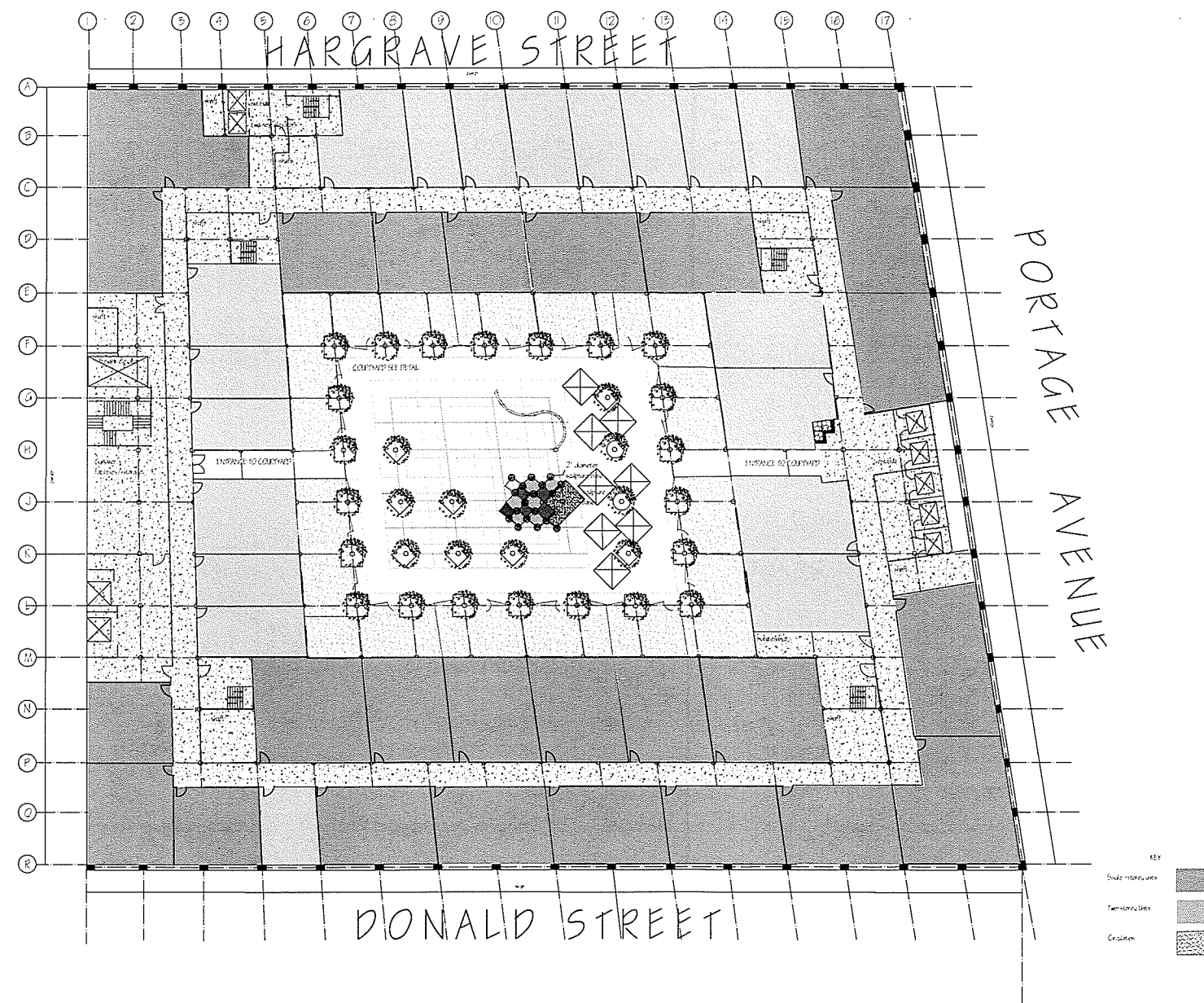
Target Group – Young urban professionals

The fifth, sixth, seventh, and eighth floors offer residential tenant spaces. Two elevators on the Portage side of the building open to a small public plaza. Only the fifth floor opens to the courtyard gardens. Twenty-one loft-style unit apartments are located around the periphery of the building and twenty-four one and two-story units surround the courtyard with an entry-level access to semi-private courtyards. Each floor overlooks the fifth floor courtyard and has outdoor private space in the form of balconies. Balcony planters provide the extra amenity of an assortment of ivy plants.

The ambience of the central courtyard provides green space; for programmatic public open space. This space could be used for meetings and seasonal event driven activities. The column structure offered the opportunity to create a maze-like structure. Raised light bubbles offer partial natural light to the floors below. Tiered planters serve as dividers for private courtyards into the residential units.

Floor Nine features thirteen two-story units with a loft and private roof garden on the third. Entry to/from the units lead off the public street through semi-private courtyards. There are a total of fifty-four two-story apartments, seventy-two one-story apartments and thirteen with the third story loft for a total of one hundred and thirty-nine residential units. Thirty-six units have level entry courtyards.

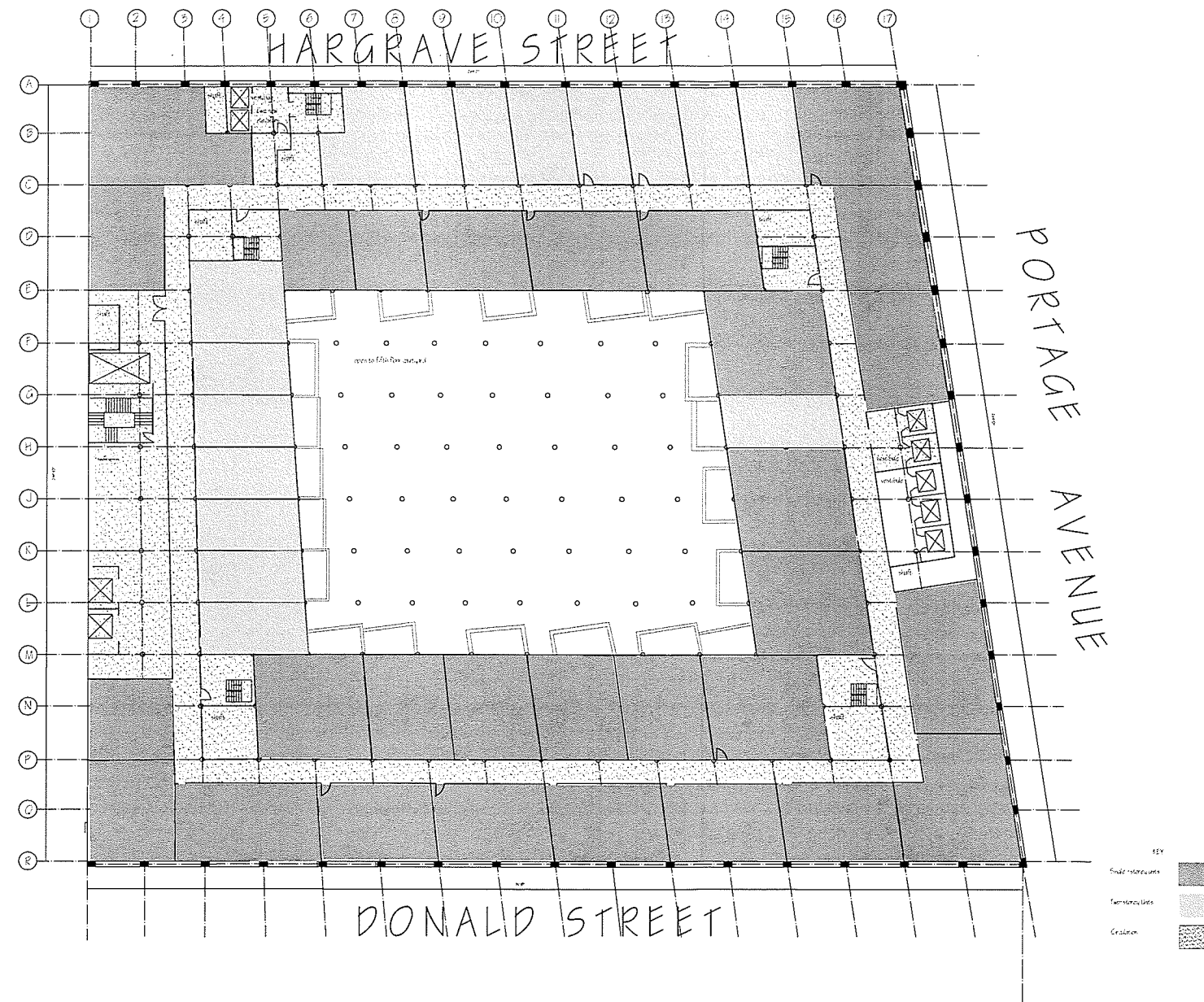
Basic floor plans for the residential units include kitchen, dining, one, two and some three bedroom, bath and a half, den and in-house laundry facilities. (Plan follows here, elevations and sections)



Scale: Reduced from 1/16" = 1'

Fifth/ Seventh Floor Plan

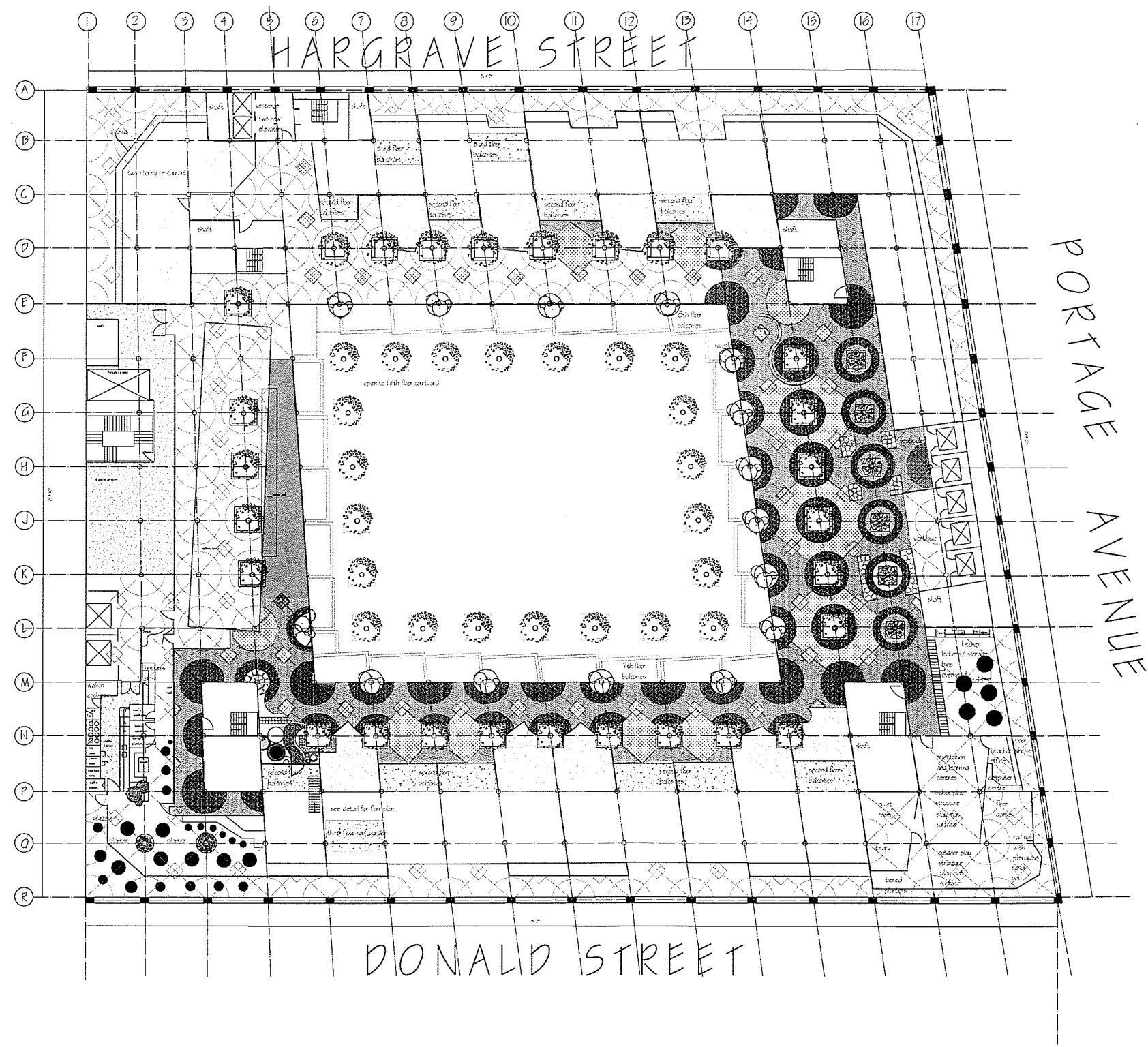
Figure 6.9



Scale: Reduced from 1/16"=1'

Sixth/Eighth Floor Plan

Figure 6.10



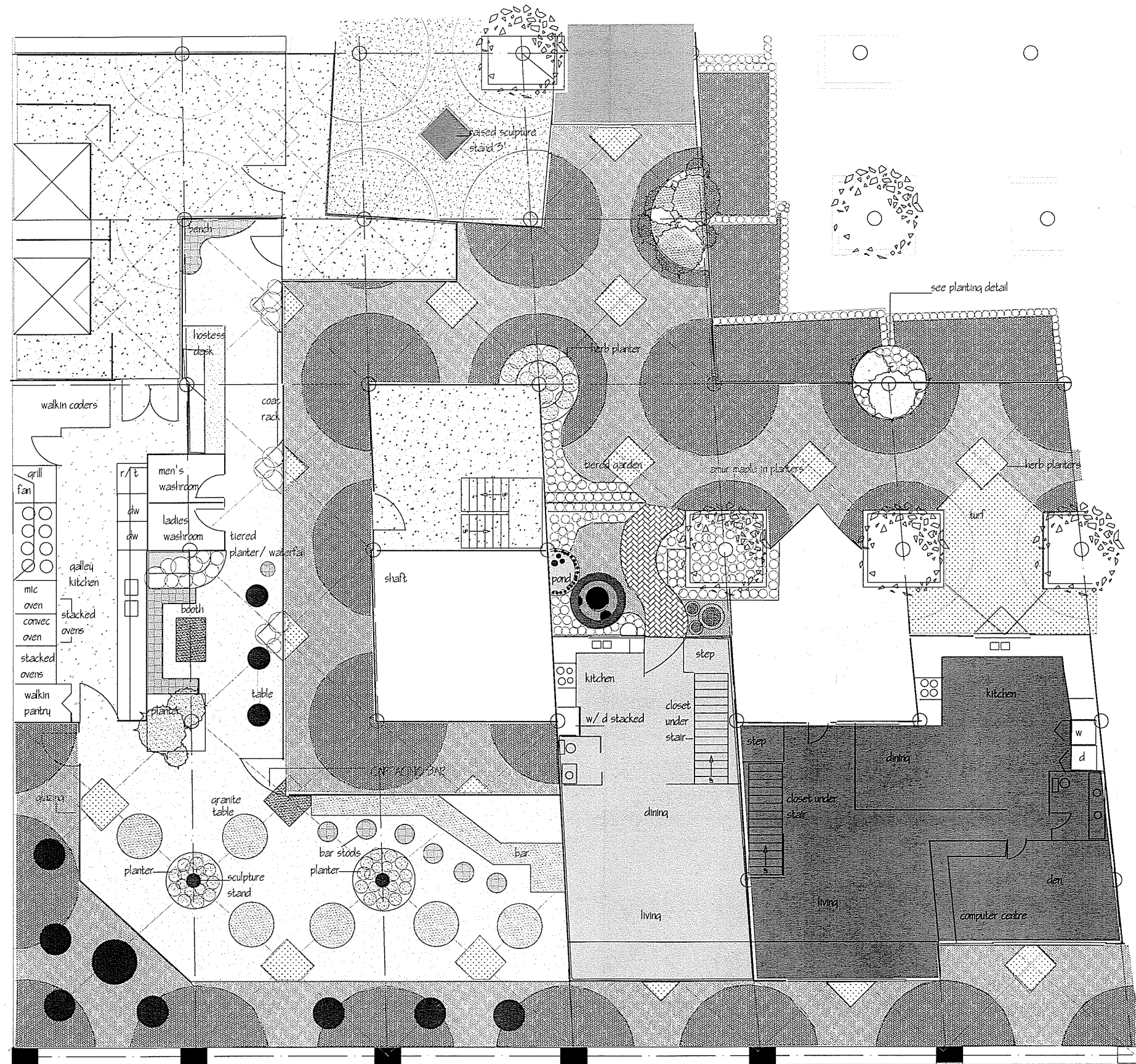
Note:
 Leasable Tenant Spaces Include:
 Two-story Residential Units
 Three-story Residential Units
 Cappuccino Bar
 Restaurant

Amenities include:
 Gallery Space
 Daycare Facilities

Scale: reduced from 1/16" = 1'

Ninth Floor Rooftop Gardens Plan

Figure 6.11

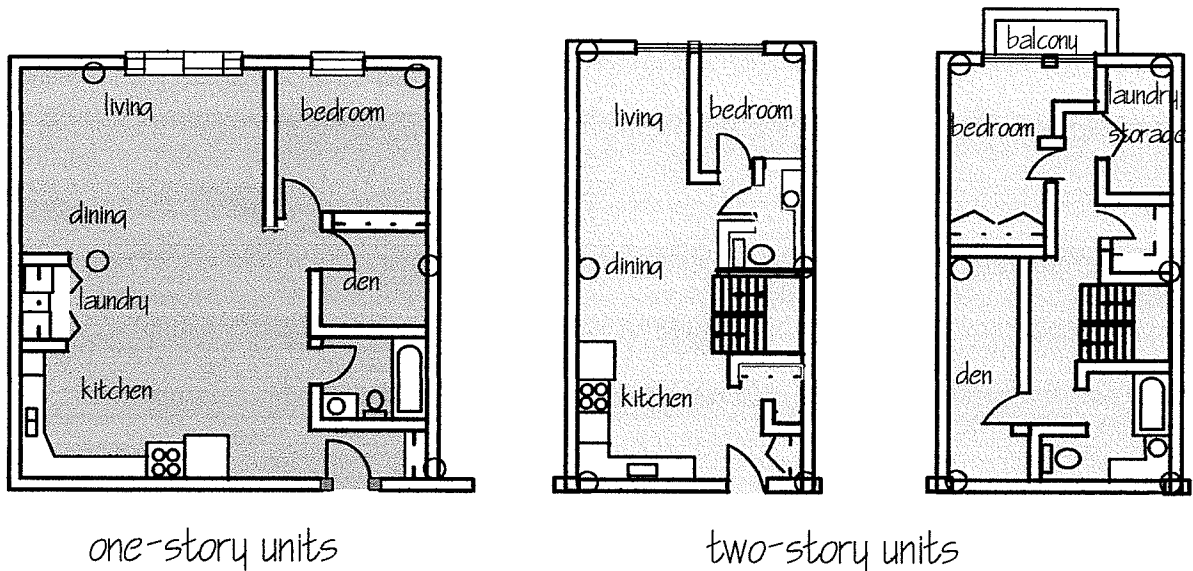


Scale: Reduced from 1/4" = 1'

Ninth Floor Detail Plan

Figure 6.12

Proposed Residential Tenant Spaces



There is an opportunity for a diverse grouping of floor plans. In addition to the one-story units and two-story units, there are also a number of loft-style spaces available. Some units are available with partial third story with roof deck garden spaces.

Figure 6.13

6.3 Proposed Amenity Spaces

6.3.a. Interior Landscape

Integrating the landscape with the interior of a built structure presents its own set of challenges. Although provisions are proposed to integrate environmental systems throughout the design, there is still a considerable degree of technological control by human presence.

There is a visual confinement of the indoor space – dependence of plants on artificially created environment, which is necessary for their sustenance, and the visual limitations of that environment. Lighting is extremely important and in this study a great deal of the light in the interior landscape areas is going to be dependent on artificial means.

Seasonal plants are being proposed for each floor in the escalator planters. Plant material will be removed and replaced throughout - poinsettias at Christmas, lillies at Easter, tulips, hyacinths in spring, perhaps chrysanthemums in off seasons.

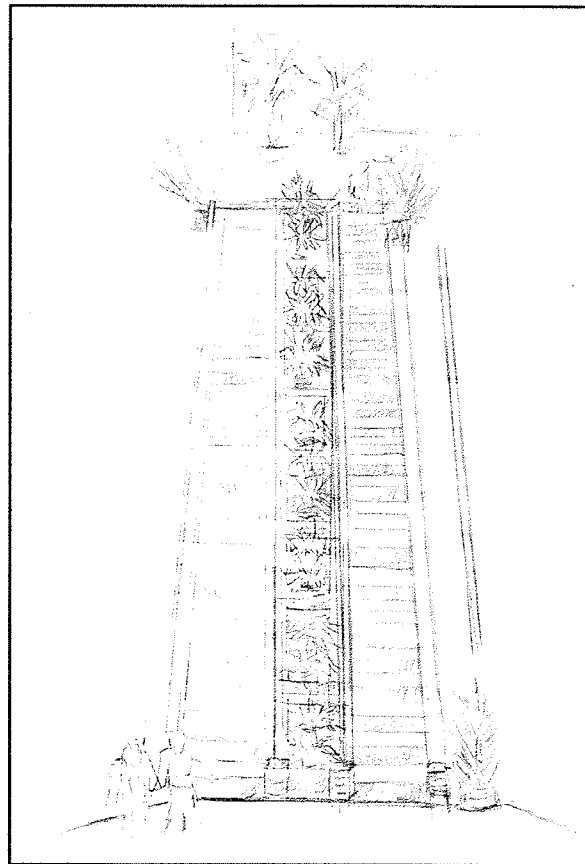


Figure 6.14 Sketch of escalator planting

6.3.b. Proposed Courtyard

A large light opening approximately measuring 140 feet by 160 feet following the column grid will be cut into the centre of the building from the fifth to the ninth floors inclusive. This area will provide a semi-public courtyard and will function as a light well for the inner-facing residential units. There will be as much emphasis on the use and enjoyment of the courtyard at its grade level as there is on the opening from above.

The open courtyard starting on the fifth floor offers the diversity of programming community events for the residents of the building. Surrounded by semi-private courtyards the public space is enclosed by raised planters of under-story Amur Maple and ground cover. The courtyard provides the necessary fresh air requirement for the residential floors five through eight.

Access is provided from both north and south entrances as required by the National Building code. A quiet resting area is proposed for the north entrance. The central area of the courtyard is open for events and functions within the residential sector of the building. A bosque of ornamental crabapples flanks the southeast corner of the courtyard (See Plan) and is integrated with a moveable maze-like structure intended for the youth of the residential areas. A grid-like fountain system is integrated with plant material and small sculptural elements. A main sculpture platform is attached.

The courtyard is programmed to be a central gather place with the inclusion of plant material that varies with the seasons provides a green oasis for all residents year round. As a semi-private roof deck building services include a storage and service entry for the courtyard as well as space allowed for equipment, plantings and so on.

Lighting is supplied with paver lighting, wall lights on the tiered structures, and one main light feature offset in the north west sector. More details can be viewed in my personal portfolio.

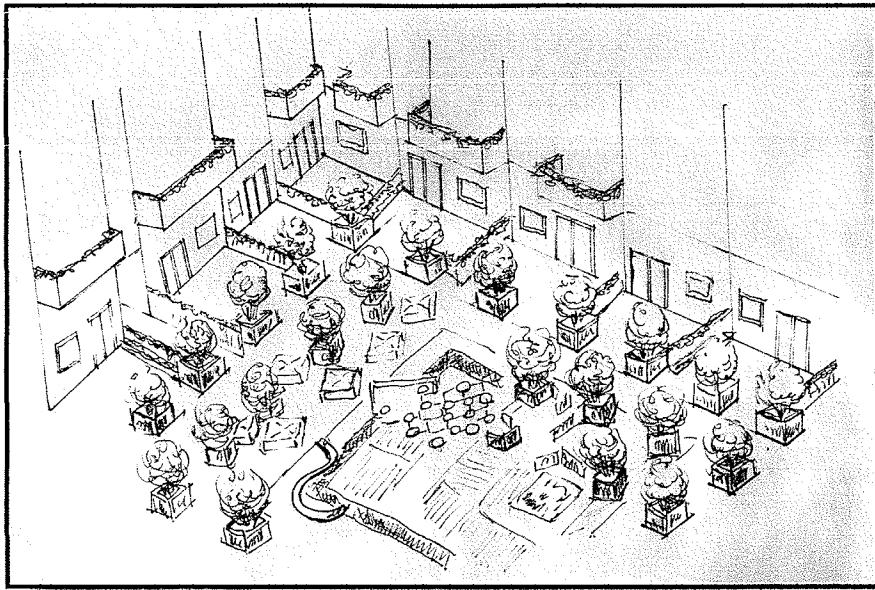


Figure 6.15 Isometric sketch of proposed courtyard.

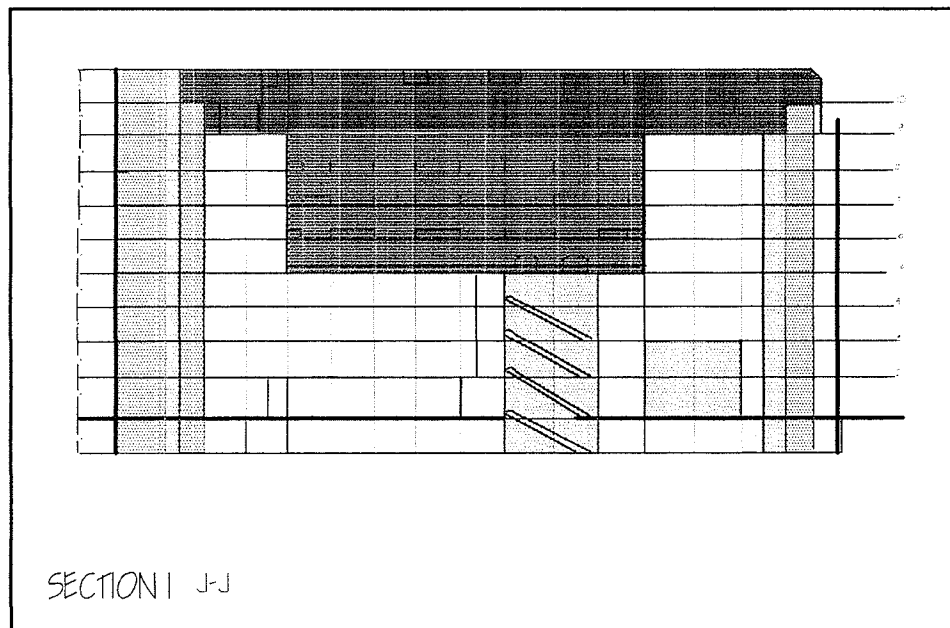
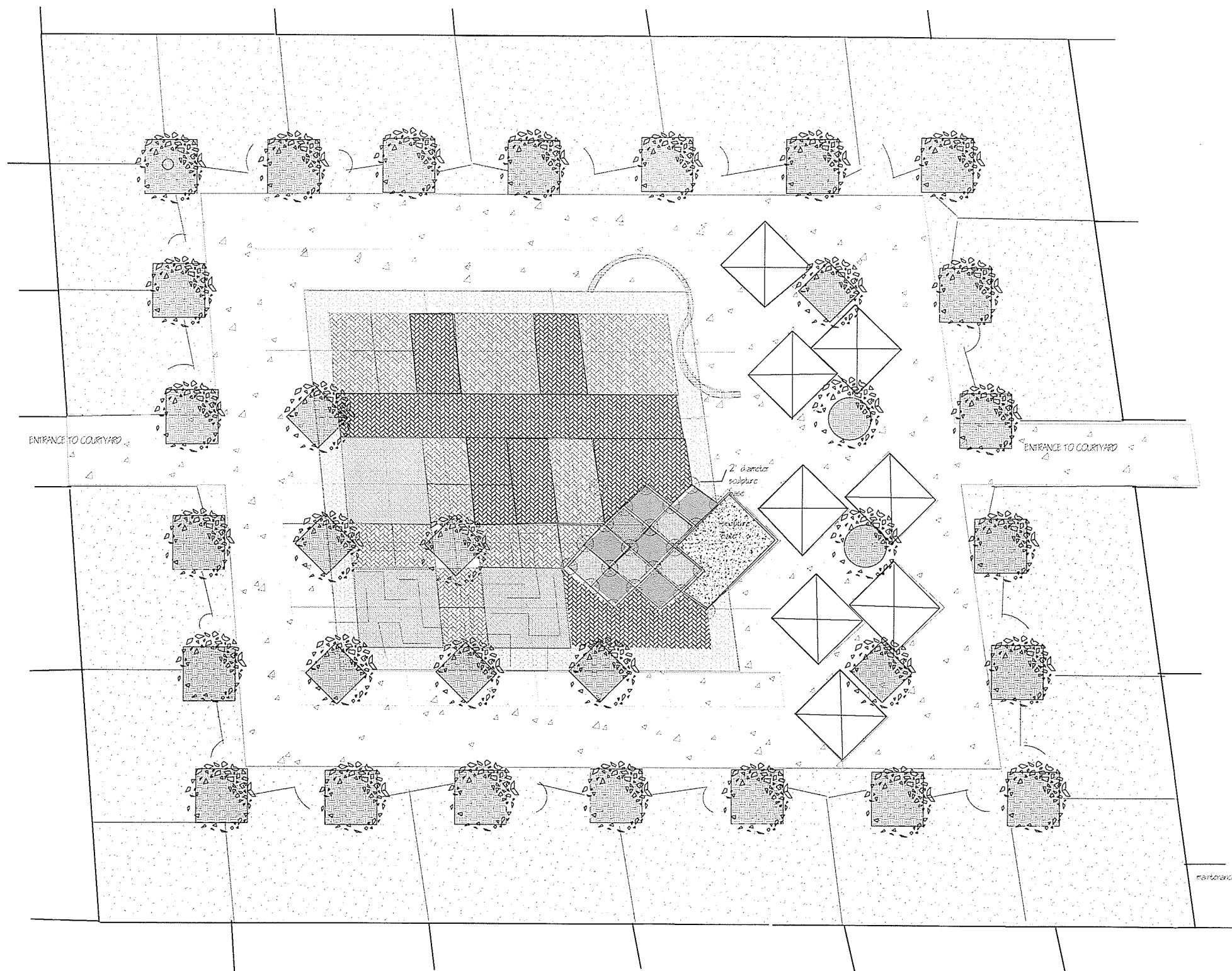


Figure 6.15.a. Section showing cutouts for courtyard and building up residential on ninth floor.



Scale: reduced from 1/4" = 1'

Courtyard Detail Plan

Figure 6.16

6.3.c. Proposed Roof Garden

The ninth floor roof garden provides several tenant spaces. Residential units create structure for the dynamic street, which overlooks the tenant courtyard of the fifth floor. Tiered planters, trees in raised pots and planters overhanging the balcony railings from the sixth, seventh and eighth floor frame the open courtyard. Three elevators open onto a public open plaza featuring an alle of midsize (under-story) Amur Maple.

Amenity spaces include the gallery space that offers indoor/outdoor sculpture spaces and installation areas integrated with plant material. The floor space area on one floor is 1920 square feet and twenty-four feet high (partial second story). One of the principal amenities in the roof garden is the water wall cascading off of the first floor of the gallery space.

A forty-foot wide water wall fronts the gallery space. Water falls at a rate of 1800 gallons per minute from twenty feet over a mahogany colored granite covered wall similar to Paley Park (see Photo No. 6.0, Johnson, 1991).



Photo No. 6.0

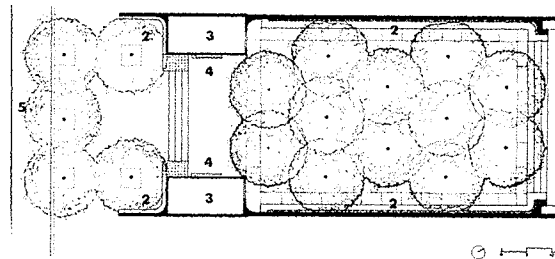


Figure 6.17 Plan of Paley Park, 1989

Unlike Paley Park, Photo No. 6.0 the catch basin is 8 feet wide on the West Side and 16 feet wide on the East Side. Water plants inhabit the mosaic tiled-covered bottom in the summer. The mosaic tiles are reminiscent of the forest floor in a diverse light and dark granites. Water lights are fixed to the basin floor but not embedded into the mosaic. Small horizontal directed lights in the sidewalls are just under the surface of the water.

These are used to create a glowing effect of the water. Amber floodlights facing upwards serve to light the wall of water. They are 250 W quartz with rock guards and cast bronze grills. Automatic timers control sequence lighting fixed with GFI switches. The catch basin features a built-in overflow around the outside edge. Servicing for the water wall and basin is supplied directly below the feature.

The water wall provides 'white noise' that becomes a neutral sound to mask the street noise or urban clamor. It serves as a focal point and a backdrop as one exits the elevators and enters the public plaza and pedestrian area of the roof garden. It becomes a sculptural element.

Two eating facilities anchor the southwest and southeast corners of the development. There is a cappuccino bar/pub on the southwest corner and a restaurant on the southeast corner. The gallery serves as a corridor between the bookend eating spaces. The galley kitchen of the restaurant services a two-story bar overlooking the southeast corner of the market area atria and gardens. These comprise 1,536 sq. ft of seating space and 832 sq. feet of outdoor seating. The cappuccino bar/pub offers 1,024 sq. ft of seating space and 572-sq. ft. of outdoor seating space.

Daycare facilities provide services to the young urban professionals and other tenants space providing. The mandate includes child development play spaces featuring division in crafts, gardens, construction, indoor play area, outdoor play area, library/reading center/ quiet area and a full kitchen and eating area and a teacher's office. According to the International Building Code 10 m² of outdoor space are required per child and 3.5 m² of indoor play space for each child exclusive of all fixed furnishings (bathrooms, storage, which is indicative that there is enough space for 40 children.

Thirteen two and three story residential units occupy the ninth floor. The units are complete with semi-private courtyards to a level entry. With solar panel roofs and promenade roof deck gardens add to the further green of the redevelopment.

Residential requires a minimum of 278 parking spaces. These are designated spaces in the parking garden on the top two floors leading to the roof garden and directly off the walkway linked to the residential elevator. Further parking is required for other tenant spaces and is provided in the parking garden and surrounding area.

6.4 Proposed Drainage

The most significant feature of the roof garden is the required drainage. A drainage plan is supplied and section details follow. Runoff could be collected and circulated into the irrigation system for both the courtyard and rooftop gardens. Collector pipes could be shared between the ninth-floor units, enter the collection grate and channeled to the shafts. The shafts then could channel the storm-water runoff to holding tanks in the lower level of the redevelopment where the water could be stored and reused throughout the entire building for irrigation purposes.

Drain inlet system adapted from Hydrotech cad drawing in Cunningham, 2001, with permission from Cunningham, 2001.

Collectors on the ninth and fifth floors are located in the corner of the shafts.

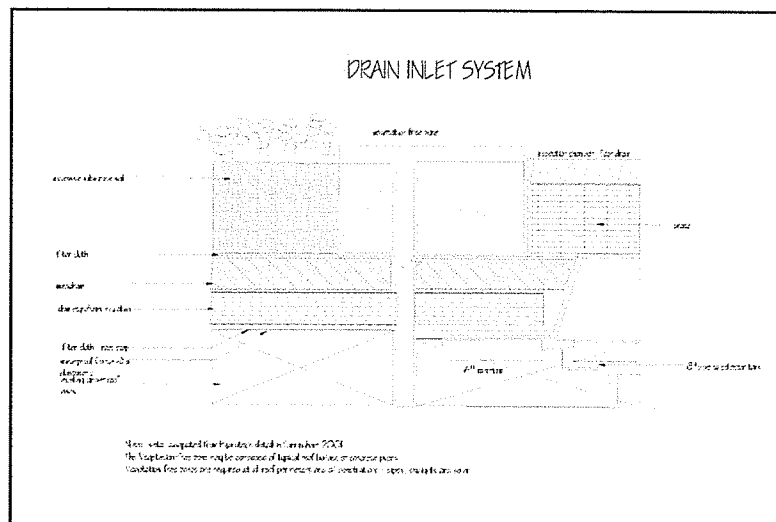


Figure 6.18 Drain Inlet System

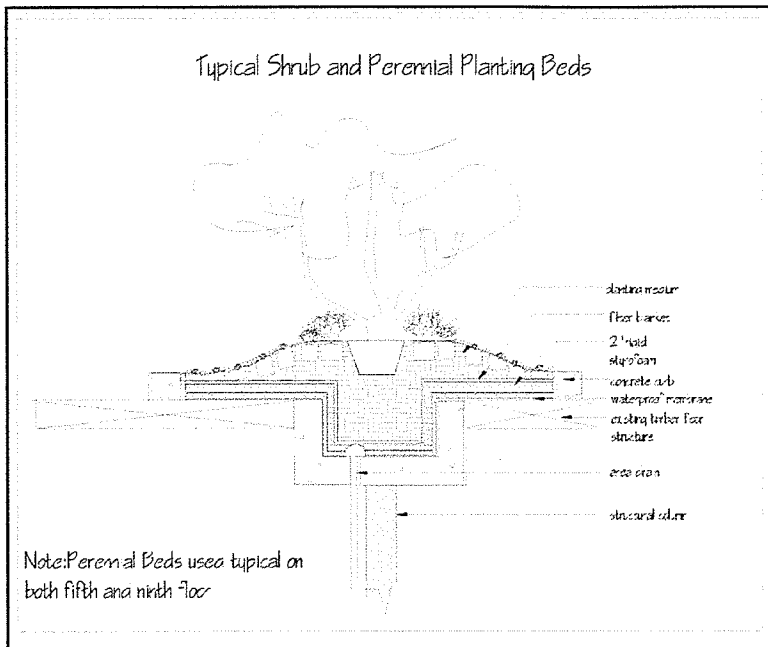


Figure 6.19 Planter System Built into Roof System

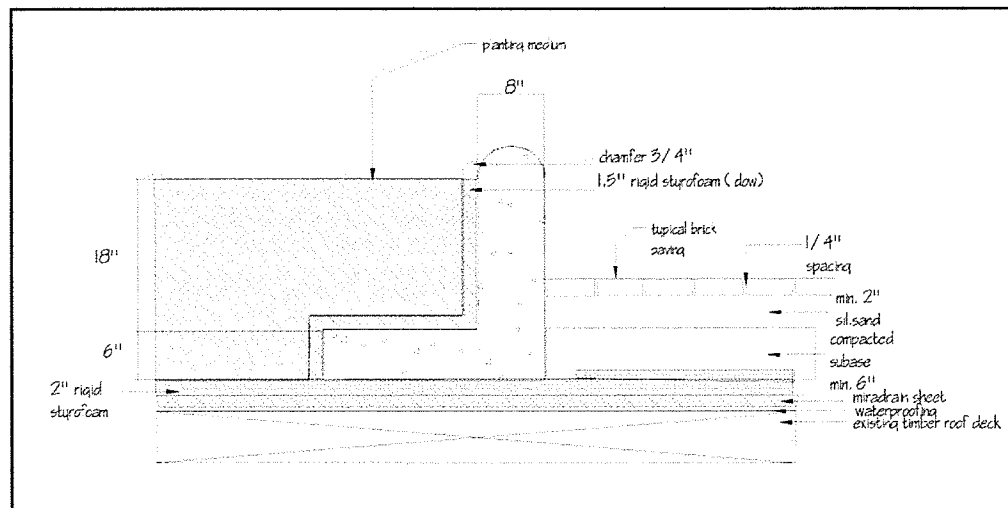


Figure 6.20 Planter and Paver Detail Built up from Roof Deck

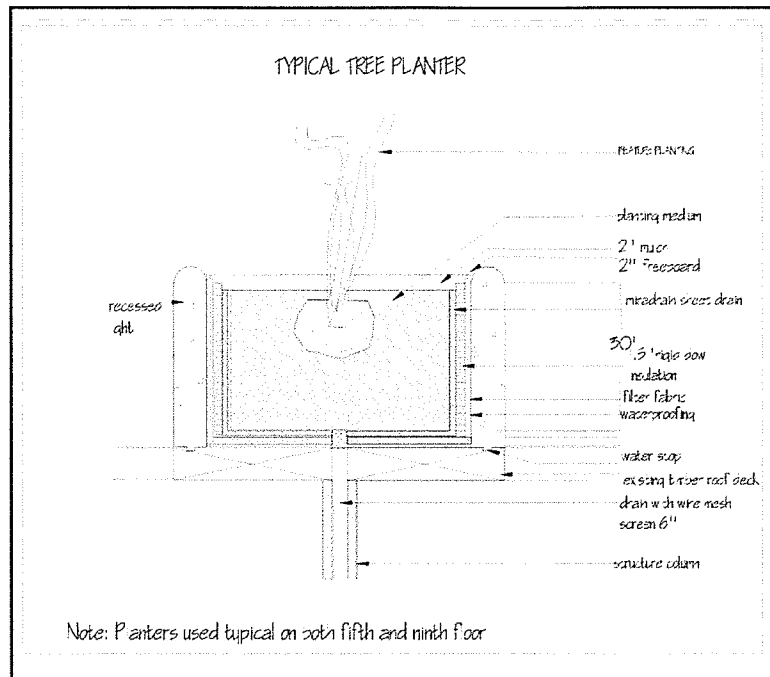


Figure 6.21 A Typical Tree Planter Fifth and Ninth Floors

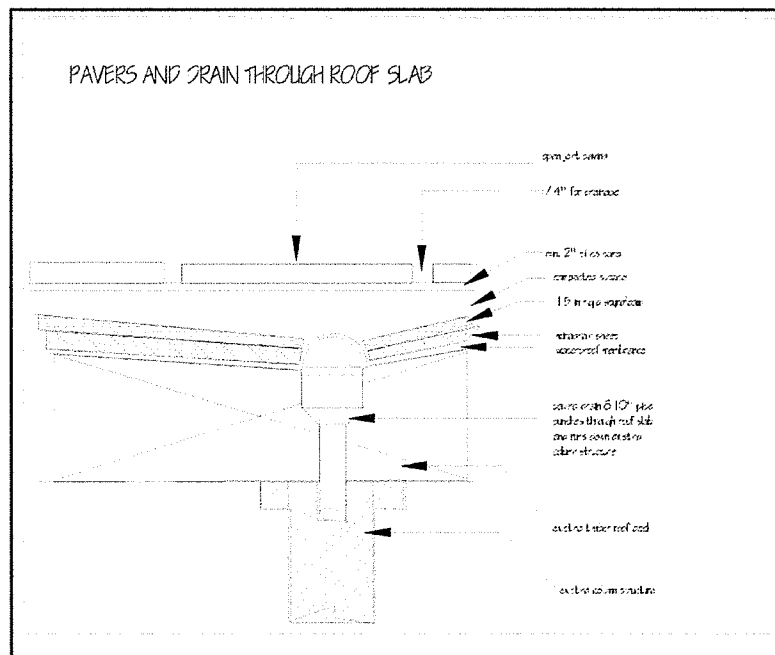
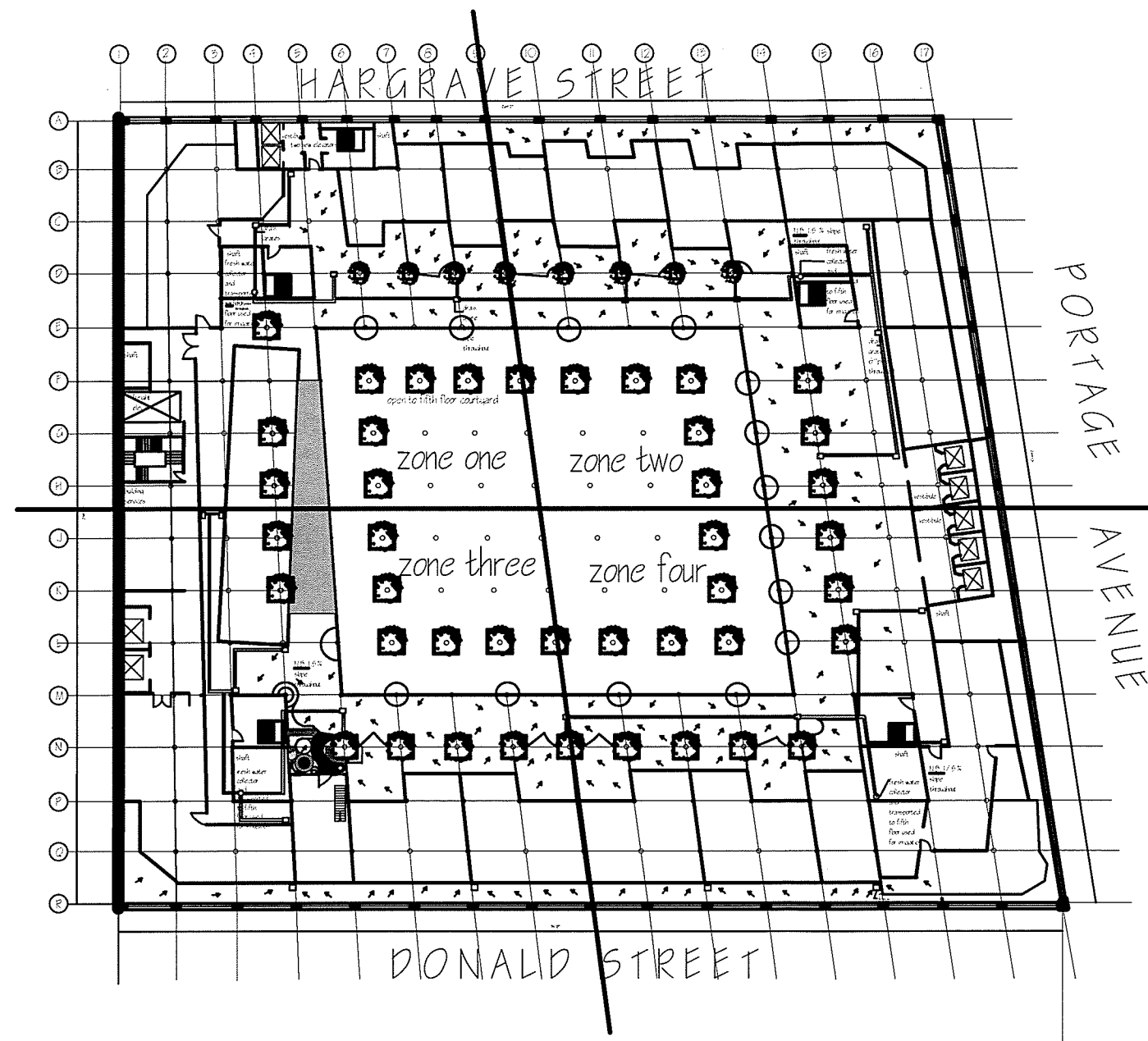


Figure 6.22 Paving with Drain through Roof Slab



Scale reduced from 1/16" = 1'

Drainage Detail Plan

Figure 6.23

6.5 Proposed Planting Details

Figure 6.24 the section below details the relationship between the flooring, planter and fountain indicating the proposed depression areas for planting and fountain purposes. This detailing is typical to both the main level fountain system and the lower level fountain system. It could also be adapted to the pond/planting section in the open courtyard.

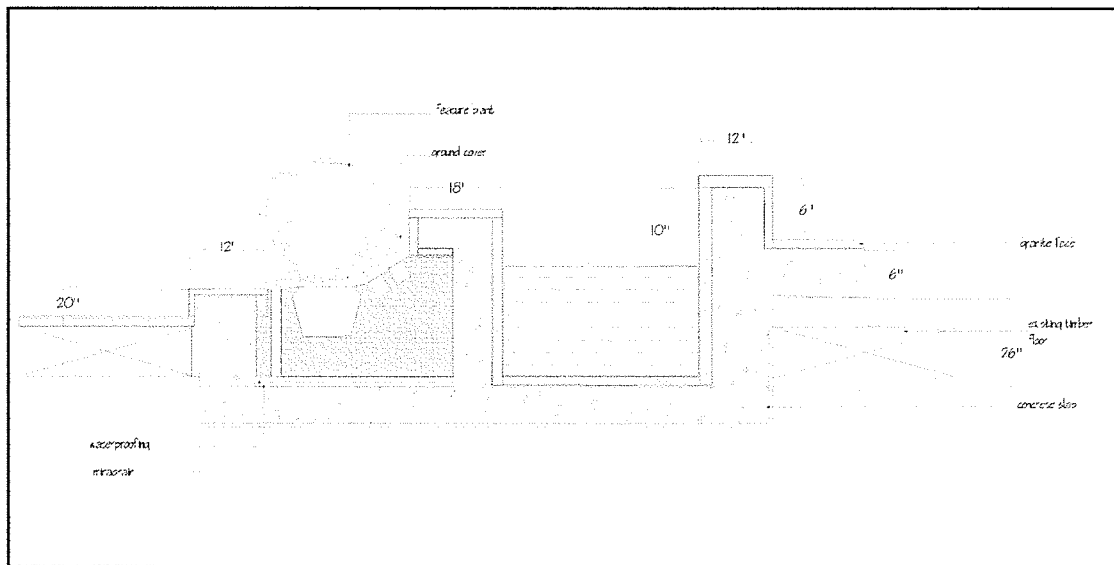


Figure 6.24

Planting Bed and Water Element

Planting instructions would be described on final construction drawings but for the purposes of this proposal a general planting detail is described in Figure 6.25. Due to the extent of the use of ground cover plants in several areas of the interior landscape, a plant space is recommended at 12 inches on centre. This allows room for maintenance and plant development.

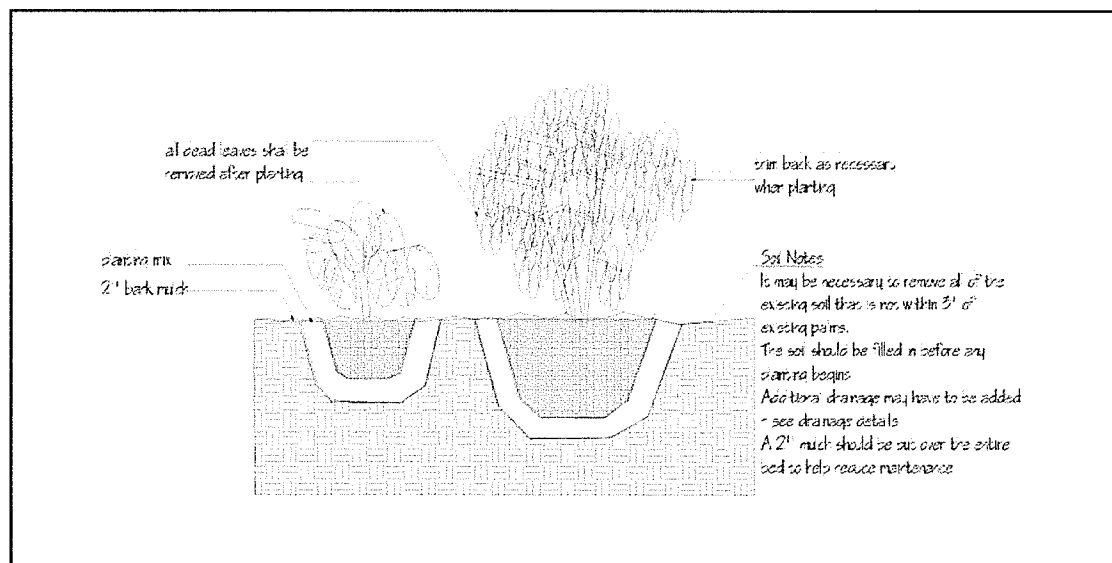


Figure 6.25

Planting Detail

6.5.a. Interior Landscape Proposed Planting Plans

Throughout the proposal, there are numerous opportunities for the development of public open space. Entry areas incorporating the fountain systems are the most predominant; however, pedestrian nodes in the form of escalator landings and other entrances offer a further opportunity interior landscape. Further garden spaces are incorporated adjacent to the escalator areas. Proposed planting plans throughout begin with the lower level and end with a proposed plant list. Numbers of species required are not included.

Proposed plant lists are developed from the list of bioreactor plants in Chapter Five. Other species have been integrated in some of the areas for other significant reasons. The use of bromeliads is an aid to maintenance. They require less water, will still develop in low light, and are hardy in high traffic areas. Ferns represent part of a tropical system and work well as understory plantings. They are not particularly hardy in high traffic because the outer leaves will brown quickly when conditions are not optimal.

Height variation and the development of an ecological system in an interior landscape could be equal to exterior landscape plans. Figure 6.27 shows the variation of heights of some of the plantings that are used in the following plans.

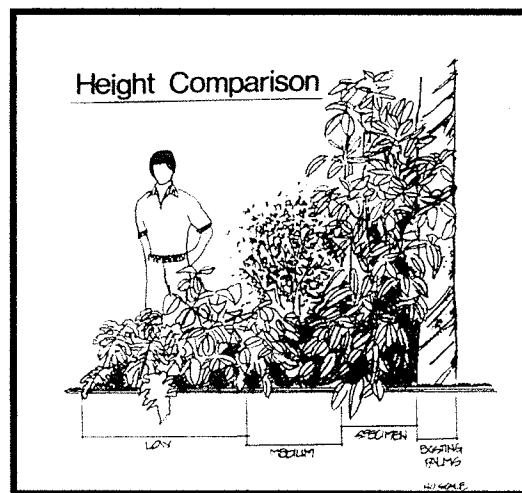














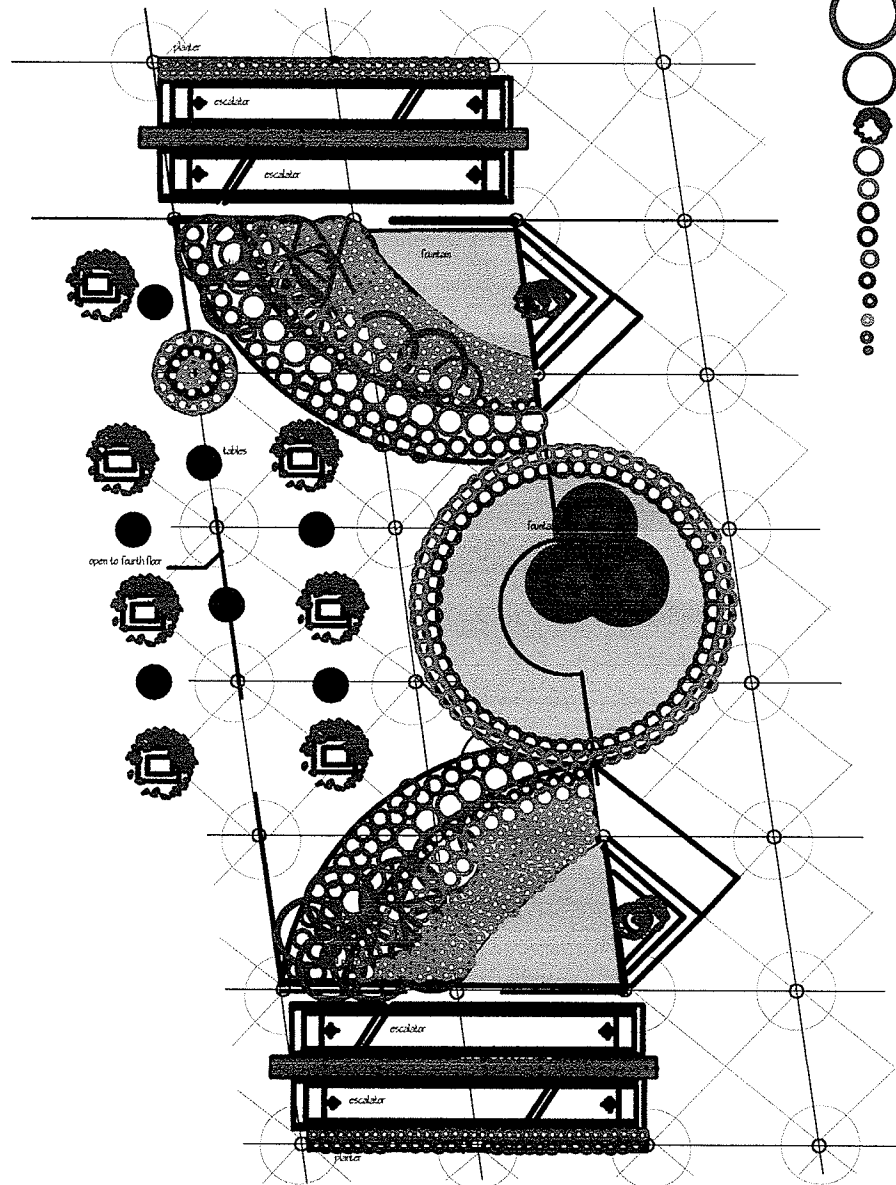


Figure 6.27 Source: Pierceall, Interiorscapes, 1987

Lower Level Interior Landscape-Garden Space

Legend

-  Weeping Fig
-  Lady Palm
-  Norfolk Island Pine
-  Accent Seasonal Plant
-  Boston Fern
-  Chinese Evergreen
-  Poinsettia
-  Chrysanthemum
-  Azalea
-  Chrysanthemum
-  Grape Ivy
-  Golden Pothos
-  English Ivy
-  Seasonal Plants



Proposed Planting Plan

Figure 6.28

Lower Level Interior Landscape-Food Court

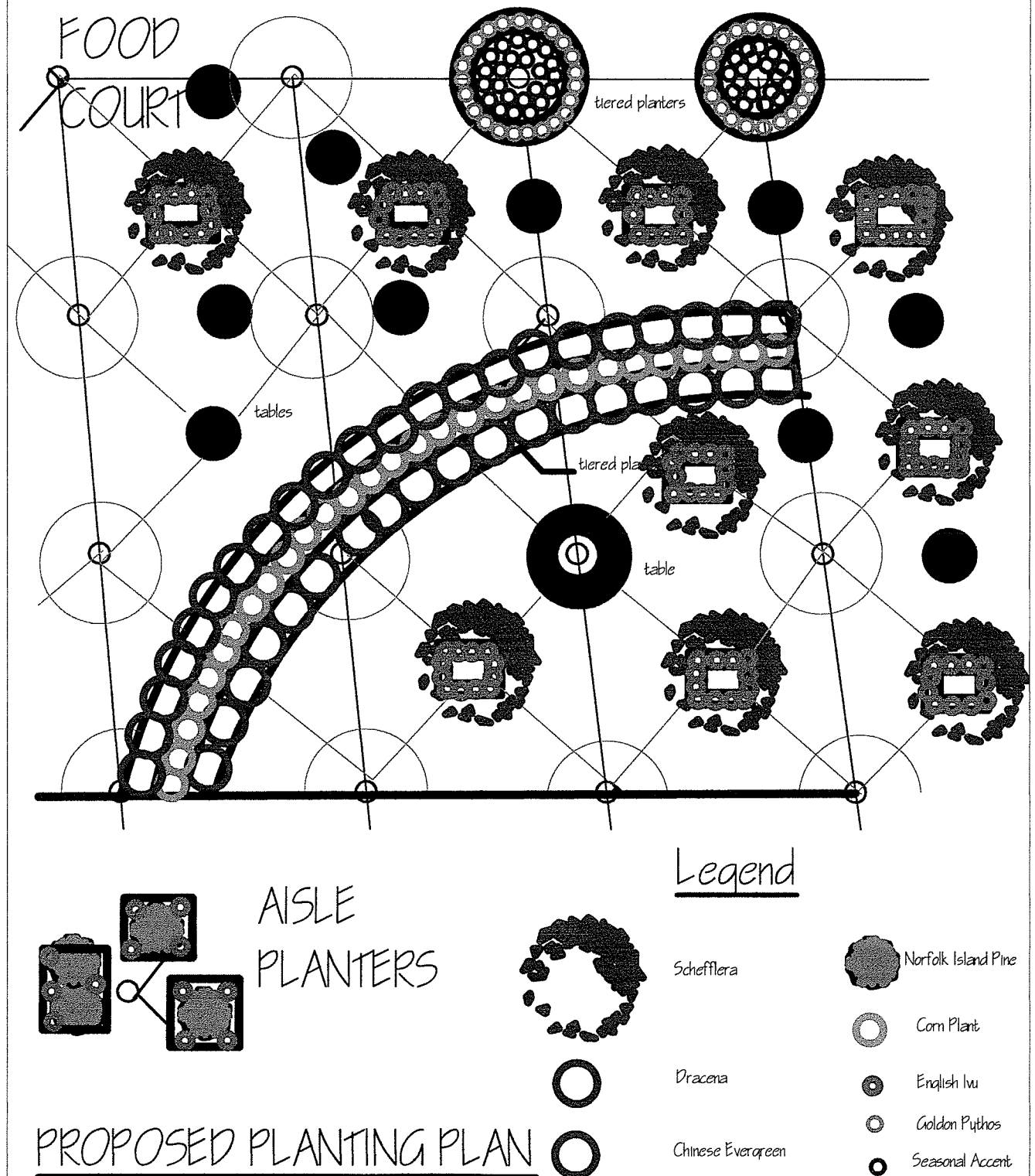
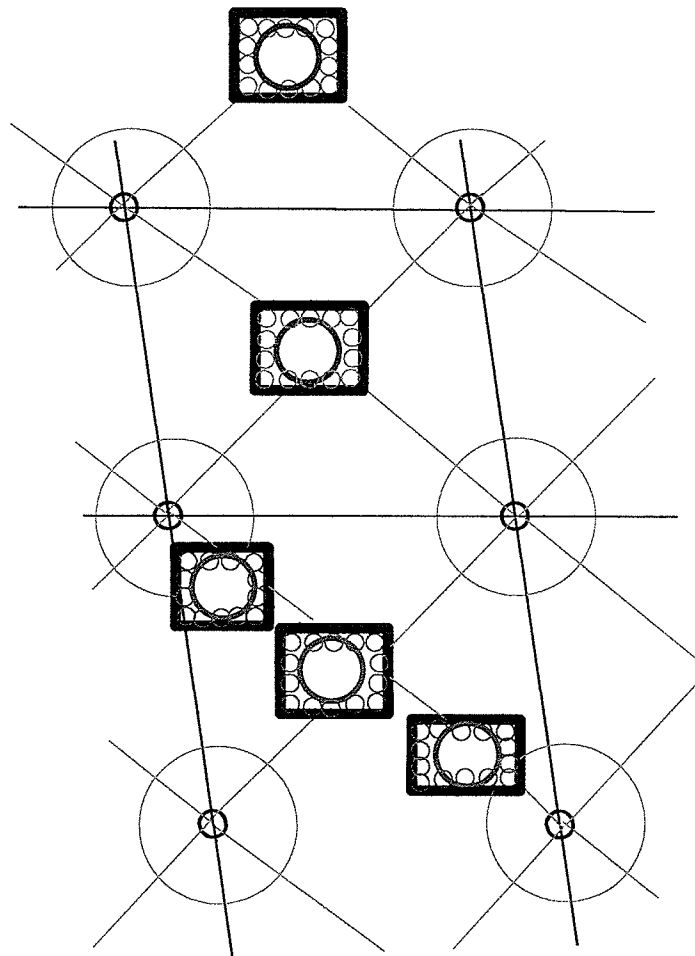






Figure 6.29

Lower Level Interior Landscape
Typical Planter

Legend







-  Peace Lilly
-  Schefflera
-  Golden Pothos
-  English Ivy

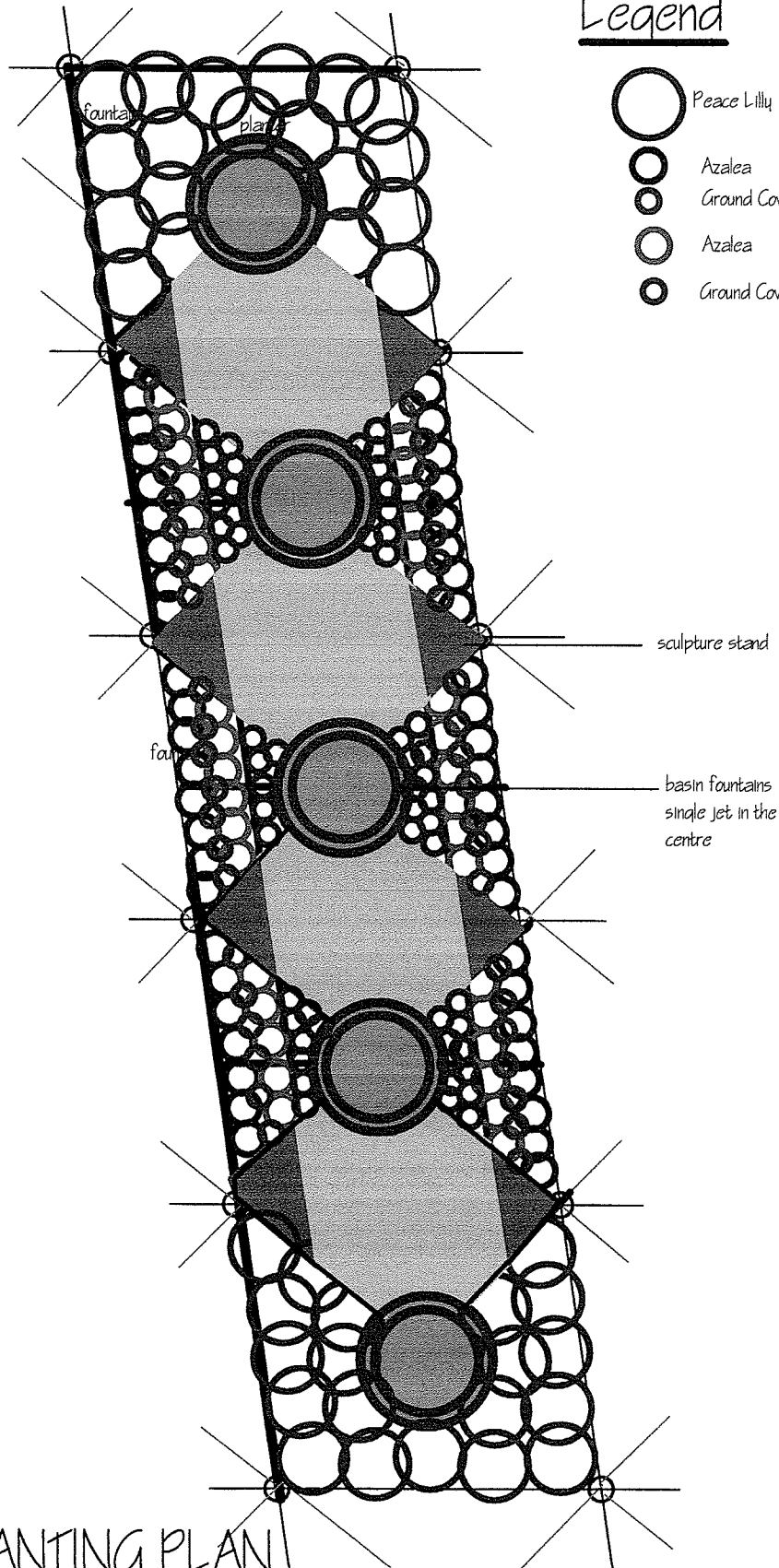
Proposed Planting Plan

Figure 6.30

Interior Landscape - Main Floor Fountain system

Legend

-  Peace Lilly
-  Azalea
-  Ground Cover
-  Azalea
-  Ground Cover



PLANTING PLAN

Figure 6.31

Throughout the entire development there is a need to develop small interior landscape areas wherever possible. This promotes a healthier environment throughout the building. On the floors where there is a higher concentration of leasable space, garden space becomes more difficult. Figure 6.32 is a planter grouping that is proposed for the east and west entrance nodes of the main floor development. The group includes planters at heights of eighteen inches, two feet, two feet six inches, three feet, and three feet six inches. Proposed plant material is indicated on the detail.

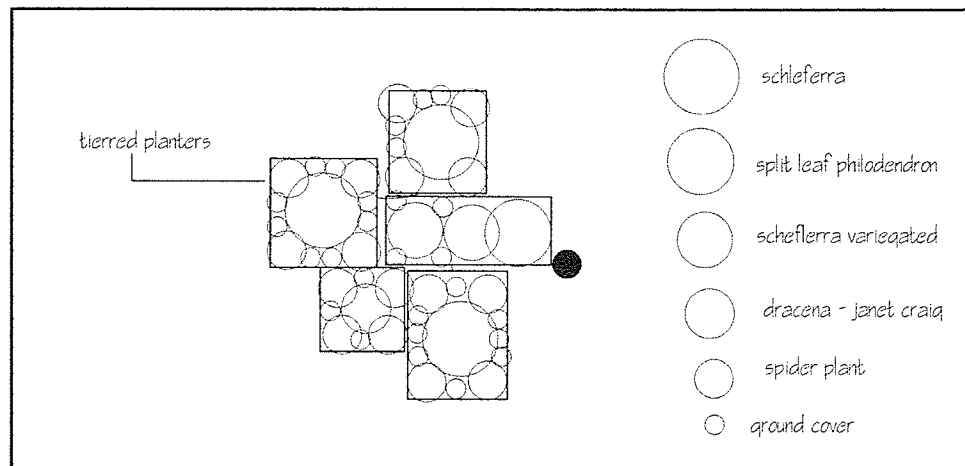


Figure 6.32 Proposed Main Floor Planter Plan

Second Floor Proposed Planting Plans

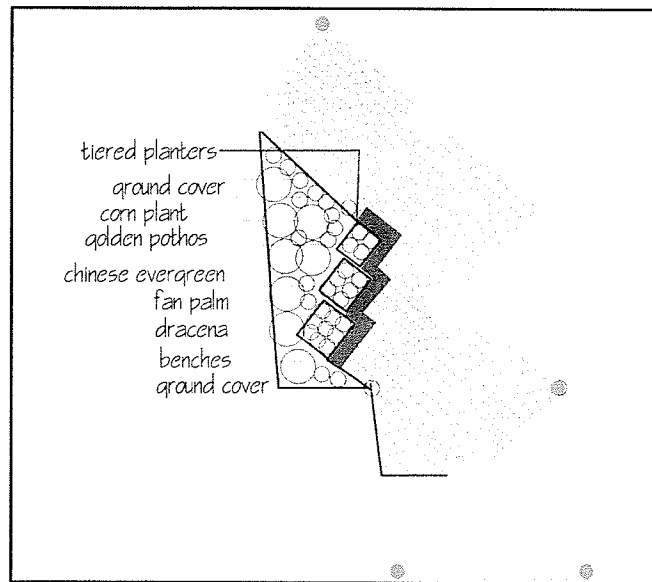


Figure 6.33 Escalator landing public open space

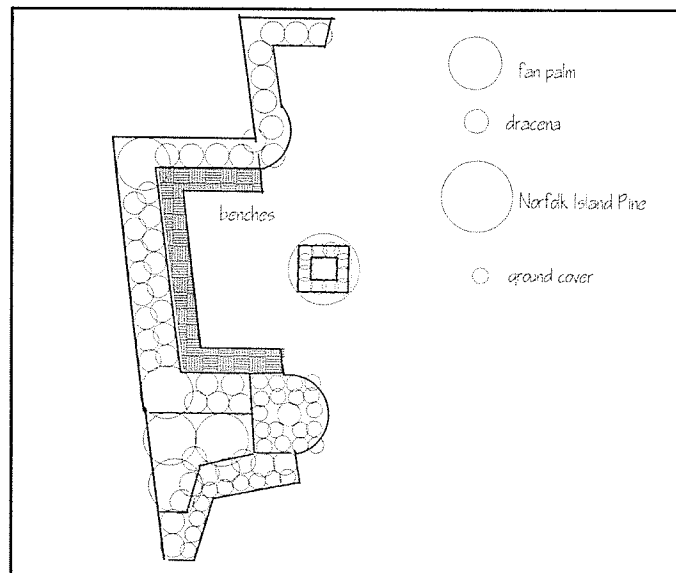


Figure 6.34 Escalator Landing Public Open Space

Proposed Third Floor Planting Plans

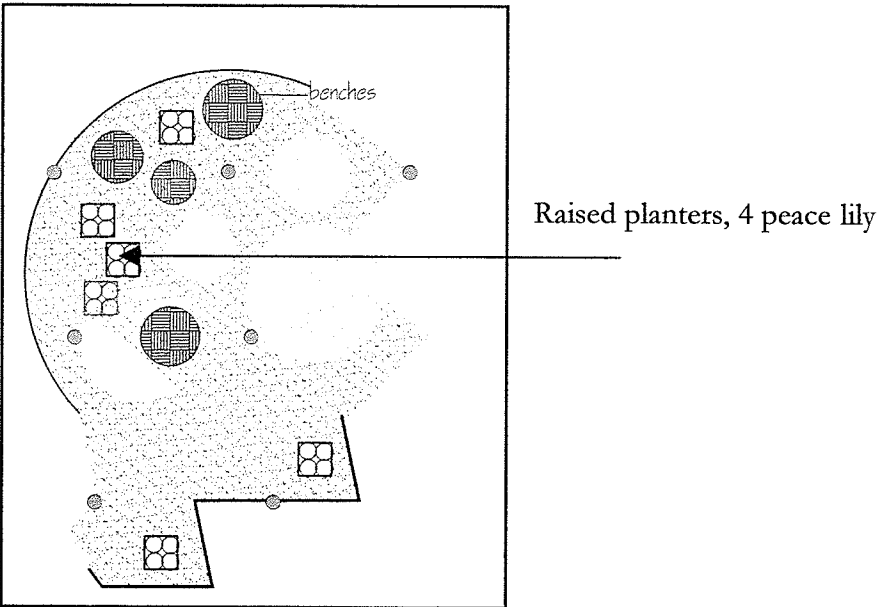


Figure 6.35 Escalator Landing Public Open Space

Plants include:

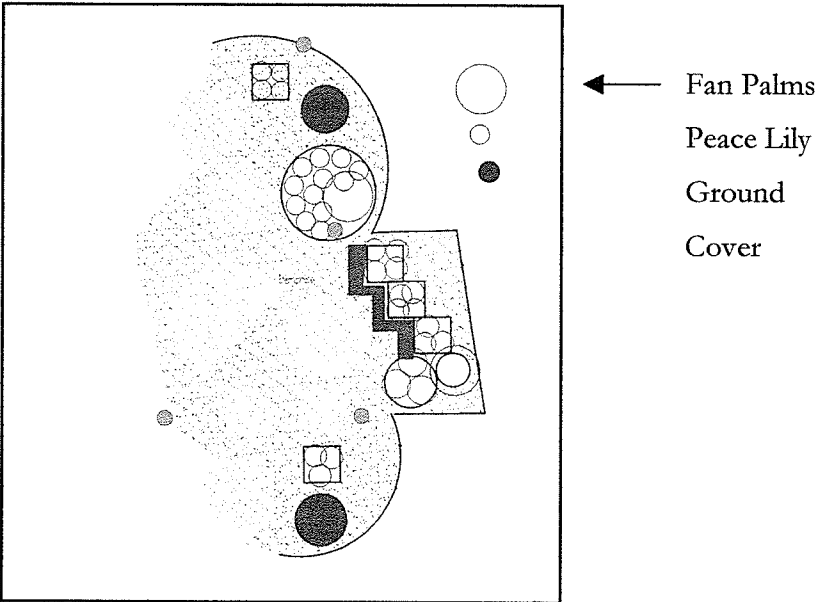


Figure 6.36 Escalator Landing Public Open Space

Proposed Fourth Floor Planting Plans

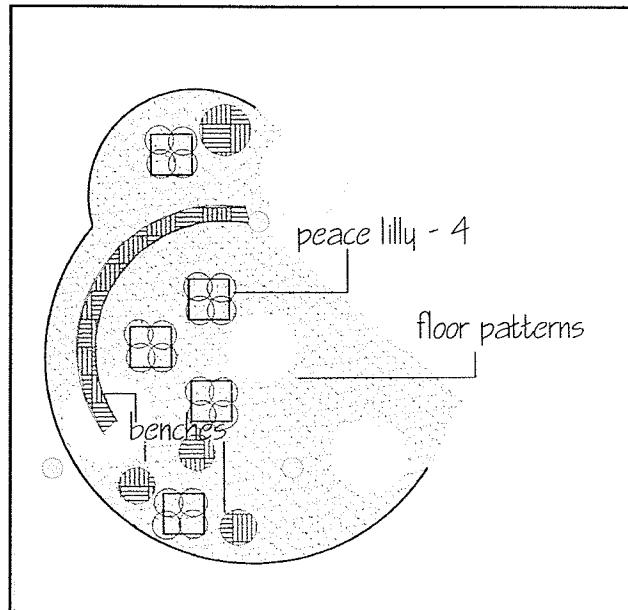


Figure 6.37 Escalator Landing Public Open Space

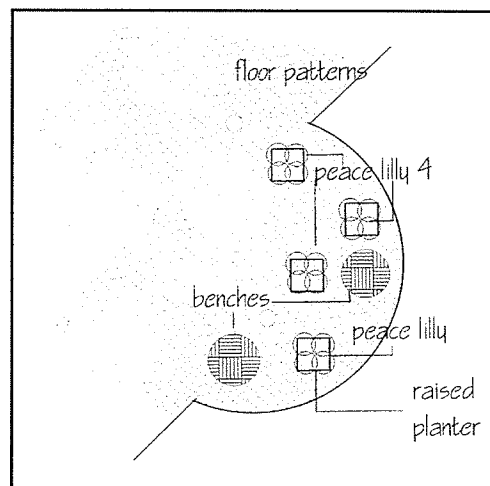


Figure 6.38 Escalator Landing Public Open Space

Planting throughout the interior landscape plans is proposed from the list of Bioreactor plants listed in Chapter Five. The original list was comprised from a study done by NASA and the Wolverton Environmental Institute.

Table 6.1

Plant List (Proposed) Lower level through Fourth floor.							
KEY	BOTANICAL NAME	COMMON NAME	CALIPER	HEIGHT	POT SIZE	OTHER REQUIREMENTS	QUANTITY
TREES:							
ARA	<i>Araucaria heterophylla</i>	Norfolk Island Pine	4 in	7-8 ft	18 in pot		Varies
BRA	<i>Brassia actinophylla</i>	Schefflera Umbrella Tree	6 in	7-8 ft	30 in pot	Multi-stem	
CHA	<i>Chamaedorea seifritzii</i>	Bamboo Palm	4-6 in	7-8 ft	30 in pot		
PBA	<i>Ficus elastica 'Burgundy'</i>	Burround Rubber Tree	4-6 in	7-8 ft	18 in pot		
FBM	<i>Ficus Benjamin</i>	Weeping Fig	4-6 in	7-8 ft	18 in pot	Multi-Stem	
FBM	<i>Ficus Benjamin</i>	Weeping Fig	+ 4 in	13-14 ft	30 in pot	Multi-Stem	
RHA	<i>Rhapis excelsa</i>	Lady Palm	4-6 in	7-8 ft	18 in pot		
SHRUBS:							
ASP	<i>Asplenium nidus</i>	Bird's Nest Fern		24 in	14 in pot		
ASQ	<i>Azalea 'Silver Queen'</i>	Silver Queen Chinese Evergreen		24-30 in	14 in pot		
BA1	<i>Brassia arborescens</i>	Hawaiian Schefflera		4-4.5 ft	14 in pot		
BA2	<i>Brassia arborescens</i>	Hawaiian Schefflera		5.5-6 ft	17 in pot		
BRO	Bromeliads	Bromeliads		3 ft	17 in pot		
DA	<i>Dierbachia amoena</i>	Great Dumb Cane		3-5 ft	14 in pot		
DAC	<i>Dracaena deremensis</i>	Janet Craig Dracaena			pot		
MON	<i>Monstera deliciosa</i>	Split-Leaf Philodendron			4 gal pot		
PIT	<i>Pittosporum tobira</i>	Japanese Pittosporum		3-5 ft	14 in pot		
SW	<i>Sequoia sempervirens</i>	Coastal Redwood			10 in Pot		
GROUND COVER:							
CCM	<i>Chlorophytum comosum</i>	Variegated Spider Plant			1 gal pot		
CRA	<i>Cissus Rhombifolia</i>	Grape Ivy			1 gal pot		
EA	<i>Epipremnum aureum</i>	Golden Pothos			1 gal pot		
PC	<i>Philodendron Cordatum</i>	Common Philodendron			4 in Pot		
HE	<i>Hedera Helix</i>	English Ivy					
HEL	<i>Helleborus scaberrimus</i>	Boxwood			4 in pot		
ACCENT OR SEASONAL PLANT:							
CHR	<i>Chrysanthemum spp.</i>	Chrysanthemum Variety			8 in pot		
CUC	<i>Cyclamen</i>	Variety			8 in pot		
FUC	<i>Fuchsia fulgens</i>	Flame Fuchsia			8 in pot		
RHO	<i>Rhododendron 'Iceland'</i>	Azalea Iceland			in pot		
		Tulip			8 in pot		
EUP	<i>Euphorbia pulcherrima</i>	Poinsettia			8 in pot		
EAS	Easter Lilly				8 in pot		
RHO	<i>Rhododendron 'Formosa'</i>	Azalea Formosa			8 in pot		
RHO	<i>Rhododendron 'periclymenifolium'</i>	Azalea Pink Lace			8 in pot		
STP	<i>Streptocarpus</i>	White Bird of Paradise			8 in pot		
NYM	<i>Nymphaea</i>	Tropical Waterlily			4 in		

6.5.b. Courtyard Planting Plans

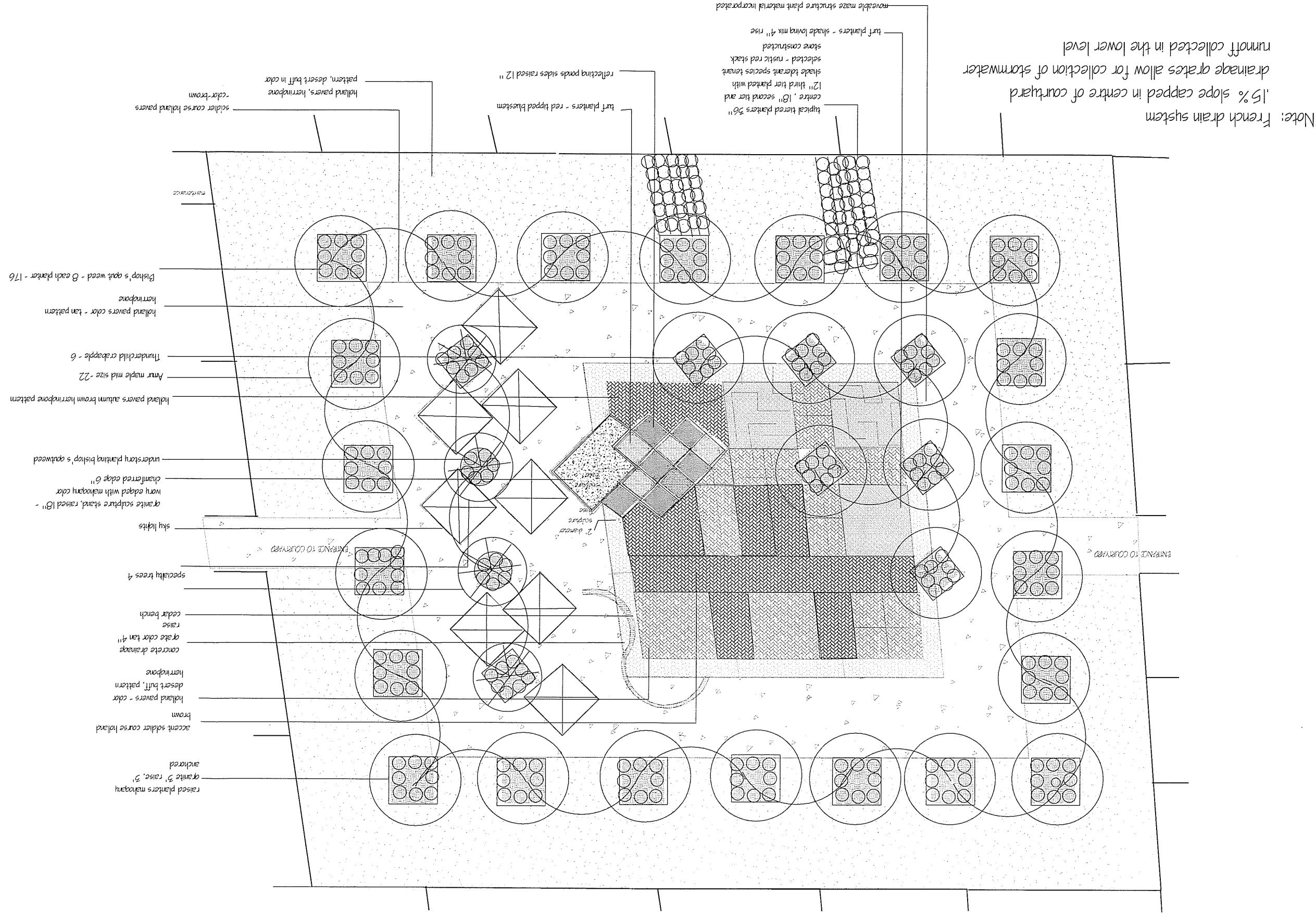
Semi-private courtyards are created around the periphery of the public open space courtyard with tiered planter retaining walls. Due to the lack of sunlight filtering down from the open courtyard shade-loving plants are recommended for these planters. Final decision can rest on the owner of the residential property; however, a list can be obtained from on-staff maintenance.

Light is made up of three types of light: natural light, direct sunlight, and reflected light. Although there are no specific studies recently indicating the photoperiod effect on plant growth, research does show that plants utilize all three types of light to extend their growth time.

Figure 6.39 shows the sun angles and shade observed when in the courtyard. Sun angles are for Azimuth, 50 dig. N. Latitude – winter, December 22, spring/fall, September 22 and March 21 and June 22 for the summer. Light wells are incorporated into the courtyard design to help filter some natural light through to the lower levels in the building. As is shown there is not a lot of light reaching the lower levels. In this instance the lower levels will supplement plant growth light with artificial sources.

Courtyard Planting and Paver Plan

Figure 6.40



6.5.b. Proposed Courtyard Planting Plan

Semi-private courtyards are created around the periphery of the public open space courtyard with tiered planter retaining walls. Due to the lack of sunlight filtering down from the open courtyard shade-loving plants are recommended for these planters. Final decision can rest on the owner of the residential property; however, a list can be obtained from on-staff maintenance.

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Figure 6.39 shows the sun angles and shade observed when in the courtyard. Sun angles are for Azimuth, 50 deg. N. Latitude – winter, December 22, (on the right) and June 22 (on the left) for the summer. Light wells are incorporated into the courtyard design to help filter some natural light through to the lower levels in the building. As is shown there is not a lot of light reaching the lower levels. In this instance the lower levels will supplement plant growth light with artificial sources.

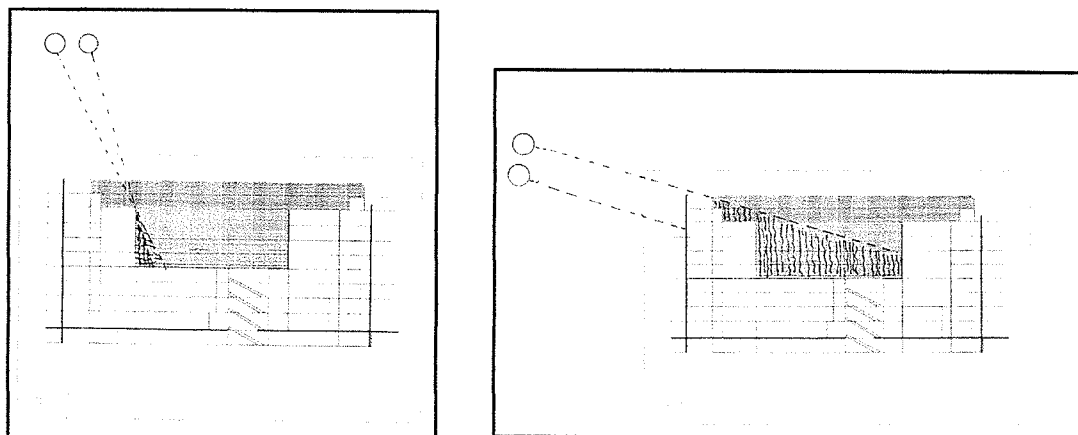


Figure 6.39 Proposed Corutyard sun angles shade diagram

6.5.c. Proposed Roof Garden Planting Plan and List

There are a number of limitations to plant material that can be used on a roof garden development. Perspective owners can plant the semi-private courtyards. The tree planting includes Amur Maple under story, with Bishops Goutweed and Sedums for ground cover. The herb boxes that are integrated into the paving of the streetscape will integrate an entire range of herbs that can be utilized either by residents or by the food services.

Indigenous plant material is highly recommended from a maintenance point of view. The turf boxes will be planted with a mix of Kentucky Blue Grass, Creeping Red Fescue and Little Blue Stem. This will sculpt into a range of grasses. Evergreen species include the use of a range of Juniper.

Table 6.2 Proposed Plant List Roof Garden

KEY	BOTANICAL NAME	COMMON NAME	CALIPER	HEIGHT	POT SIZE	REQUIREMENTS	QUANTITY
TREES:							
ALA	<i>Acer amara</i>	Amur Maple	Medium	8	5gal		25
CHA	<i>Chamaedorea elegans</i>	Parlor Palm		8	5gal		4
SHRUBS:							
HAJ	<i>Hieracium verticillatum</i>	Arbutus			2gal		1
JUN	<i>Juniperus horizontalis</i>	Swarm Juniper Var.			2gal		20
JUN	<i>Juniperus horizontalis</i>	Juniper Blue Chip			2gal		20
PRJ	<i>Prunus laurocerasus</i>	Prunella	Medium		2gal		6
PERENNIALS:							
ASC	<i>Sedum 'Aureo-Aurea'</i>	Sedum			6" pot	12" or centre	as required
APJ	<i>Sedum 'Autumn Joy'</i>	Sedum			6" pot	12" or centre	as required
FRJ	<i>Sedum 'Frontalium'</i>	Sedum			6" pot	12" or centre	as required
KAM	<i>Sedum 'Kamtschatka'</i>	Sedum			6" pot	12" or centre	as required
VM	<i>Viola Minor</i>	Perennial			6" pot	12" or centre	as required
WM		Water Lily			6" pot		as required
Ground Cover:							
AR	<i>Asplenium Platyneuron</i>	Carpet Blade			5" pot	12" or centre	
CRF	<i>Creeping Red Fescue</i>	Creeping Red Fescue					1/2 m ²
BLF	<i>Blue Fescue</i>	Blue Fescue					1/2 m ²
PPG	<i>Poa Pratensis</i>	Kentucky Blue Grass					1/2 m ²
Lup	<i>Lupinus</i>	Maize Cereal					

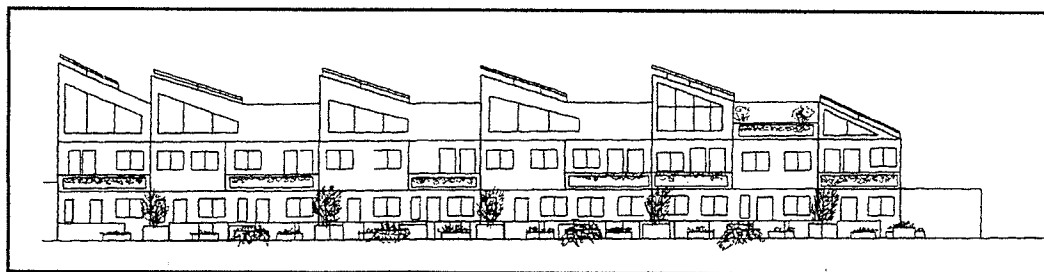


Figure 6.42 North-South, Section-Elevation E-E Roof Garden Residential Streetscape mounted solar panels.



Figure 6.41

6.6 Proposed Solar Panels – Photovoltaic (PV) Cells

When integrating solar energy into a design a major concern has been the cost effectiveness of the end result. Research has shown that although the initial cost of implementing the solar panels into a roof system is more costly, the end result in energy savings compensates. Current demand and supply is creating a more viable market for the panels. According to the University of Michigan, School of Natural Resources and Environment, (2002), there are a few benefits to using solar power:

1. Solar cells are totally silent,
2. The fuel is free and completely renewable
3. There are no emissions
4. PV cells are highly reliable and very low-maintenance.

There are, in addition, two types of solar power system – active and passive. The active system supplies energy through the direct conversion of sunlight into electricity. A passive system directly lessens or amplifies the heating and lighting effects of sunlight, thereby lessening the electrical energy requirements of the building. The proposal of solar panels for the purposes of this practicum is to use PV Cells on the southern exposure of the second floor of the Gallery space and on the south exposure of the residential units. Since Winnipeg is in 50 degrees North Latitude, a passive system is proposed. This will supplement other heating systems.

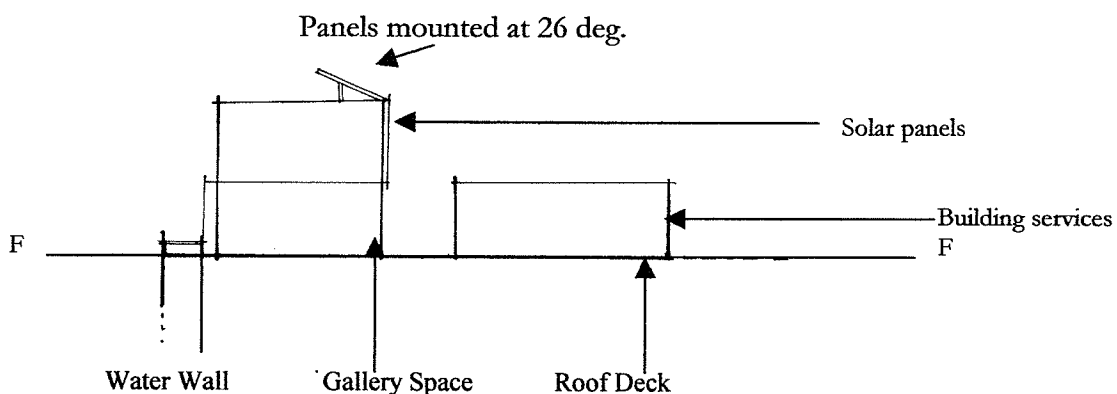


Figure 6.42 Elevation-Section shows the position of the solar panels

6.7 Conclusion

The program development led to the design of a series of tenant spaces integrated with public open space and green space. The design of the public open space furthermore led to the design of an interior landscape fountain system, an open courtyard beginning at the fifth floor and an extensive exploration into the development of the roof garden. The roof garden required drainage plans, planting plans, and elevations of proposed streetscapes.

Once this task was completed elevations were required showing the incorporation of solar panels. Upon completion of the design proposals, the Eaton building takes on the image of a green building – a living breathing entity - and begs the question of linking to other buildings in the downtown core.



Photo No.7.0 Air Photo City of Winnipeg Downtown Core 1:20,000 Atlas Geomatics, (2000).

7.0 CONCLUSIONS

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7.1 Introduction

Housing was the key objective in this practicum. This was derived from the inherent need to acquire a sensibility for people and why people live where they do. How does an urban core adopt a unique development with a sense of place involving an integrated systems approach to a case study? In essence, the objective evolved to create a green environment within the concrete jungle of an urban core. Research indicated that the downtown or CBD of Winnipeg required attention. The City of Winnipeg had recognized the need for revitalization. The North Portage Development Plan, CentrePlan, CentreVenture, and Plan Winnipeg, all currently in action, promote revitalization in the downtown core. The pedestrian is a key element in all of the plans.

Mixed-use developments offer a type of housing and associated lifestyle, which was not previously available. In order to be successful, location is a prime consideration. The Eaton building and property was in a position to create such an environment and was connected to other downtown amenities by the walkway system. This practicum was intended to become a prototype, which could be applicable to other situational empty retail buildings. As the study progressed, an integrated systems approach evolved and housing became less of the focus but still equally important. Without people we simply have no vitality.

Housing, as a downtown development, has some strong adversary:

1. Conversion or redevelopment of empty retail buildings is expensive partially due to size, and partially due to heritage preservation;
2. Suburbs appeal to many people. They appear to offer an unique identity, safety, noise barrier and green environments;
3. Automobiles are very popular;
4. Many people seek to live on the outside edge of an urban centre; and
5. Cybervision. People retreat to their homes to spend time with computer technology.

7.2 Mixed-use Trends

Research over the past years has shown the following trends. Although the following was based on research from the United Kingdom, the basic structure can be applicable to North American urban centres and more specifically to Winnipeg as indicated below.

1. The vitality of town centres is essential to their attractiveness, and is a characteristic which mixed-use development ideally seeks simultaneously to harness and enhance (OPDM, 2002).

Although the trend in Winnipeg is to promote the heritage district of the Warehouse District, the actual CBD or urban centre can be expanded to include the Eaton Property. As a prototype the town centre would then expand and redevelop incorporating the links discussed in the following section.

2. The interrelationship between activity and attractiveness is fundamental to the observed quality of historic town centres, exemplified by the role of commercial activity in creating a successful urbanism (OPDM, 2002).

In order to promote an urban core city function could be considered. Cities traditionally functioned differently when the main form of transportation was pedestrian motivated. In order to return to pedestrian environment, people would have to live in the immediate proximity.

3. The introduction of a mix of uses including housing can stimulate the evening/weekend economy, and prevent 'dead' office zones; but these needs to be moderated against the negative impact of anti-social entertainment uses on residents (OPDM, 2002).

Programmatic events offered within a mixed-use development can promote a healthy community. This particular project offers several spaces that can be utilized in this manner. Outdoor events can be facilitated in the Courtyard or Roof Gardens and Indoor events can be facilitated in the Market Garden under the atria or across the street in the former Power house building.

4. Variety and vitality may be achieved equally by a mix of uses within a development as by a mix of different uses in a street: a street with a

variety of small shops will tend to be more lively and attractive than the same street with a combination of multiple retail stores and offices (OPDM, 2002).

For the purposes of this particular project, the integration of a series of boutiques and related services, as well as other light retail commercial is proposed. Street entrances are available on the main level.

5. The restoration and adaptation of old buildings provides a ready-made context for new uses, and stimulate the incorporation of modern additions and provide a spur for good design (OPDM, 2002).

Winnipeg could benefit from the retrofit and redevelopment of more of the old buildings in the core. This has become very evident with the Red River College Development and Mountain Equipment Co-op store. Although both involve some demolition of the existing structures, the end result is providing context to link to other structures as well as the buildings past. Before other buildings can suffer the same fate of the Eaton building, we should more aggressively attempt to adapt or retrofit existing buildings to modern uses.

6. The more complex planning and design process involved with incorporating a mix of uses within a development appears to provide a certain stimulus to the designers, which is reflected in the quality of the resulting scheme (OPDM, 2002).
7. A buoyant housing market, combined with the climate of plan-led development has encouraged housing developers-generally considered to be more flexible than institutional investors – to turn their attention to town centre sites and to become major deliverers of mixed-use development. This is an interesting paradox, given the general tendency to mistrust short-term opportunism when compared with long-term strategic investment (OPDM, 2002).
8. Mixed-use schemes offer a variety of dwelling types aimed at different segments of the market: young professionals, middle-aged couples, affordable housing for families, and the elderly. The take-up on mixed-use schemes has tended to exceed developer expectations in recent years. This may be due to innovative products that offer a type of housing and associated lifestyle that was not previously available (OPDM, 2002).
9. Research indicates that affordable housing can be effectively incorporated in the high-quality mixed-use schemes; but this needs to be set against the strong resistance expressed by some developers and

institutional investors against mixed tenure within a single development (OPDM, 2002).

10. Mixed-use development in town centres offers the potential to achieve lower rates of car ownership and usage due to proximity to facilities rather than the character of mixed-use development (OPDM, 2002).
11. The mixed-use lifestyle is part of the policy mix to support sustainable transport usage, offering the possibility of promoting a multi-modal travel style, of reducing dependence on the private car, and of encouraging innovative transport responses (OPDM, 2002).

As mentioned before, Winnipeg currently has a policy structure, which includes The North Portage Development Plan, CentrePlan, CentreVenture, and Plan Winnipeg. There is an ongoing effort to draw people back into the downtown core with initiative programs. Demographics and social change often do not occur as quickly as might be expected and are often cyclical.

-adapted from a report to OPDM, 2002.

Since the Bruntland Commission became headlines in conjunction with the energy crises of the 1970s there has been an ongoing buzz about sustainability. Sustainability, (reduce, reuse and recycle) in the 21st century is imperative. Universal design was another design guideline that was not always considered. The City of Winnipeg adopted the Universal Design Code as part of the Building Code in 2002. Again, this guideline is important to future development schemes.

7.3 Green Roofs

Rockefeller Centre is an integrated series of roof gardens and public open plazas. Photo No. 7.1 is an historical sketch of the centre before gardens were in place. Photo No. 7.2 shows Rockefeller Centre after gardens and plaza were developed.

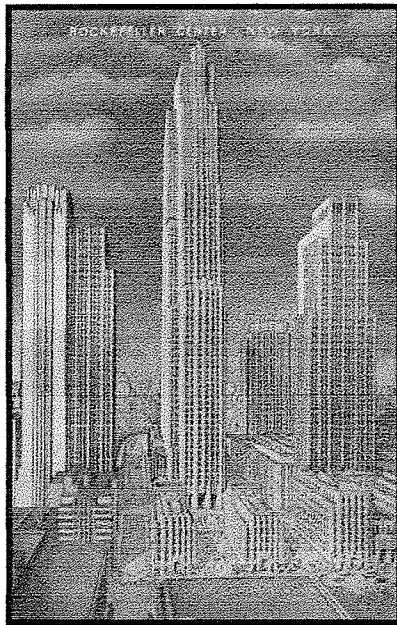


Photo No.7.2 Rockefeller Centre
Source: www.vintageviews.com

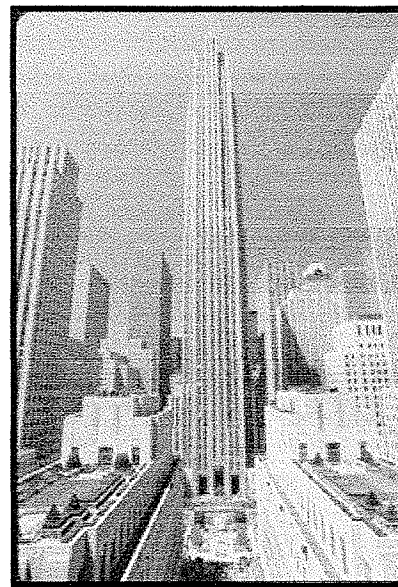


Photo No.7.3 Rockefeller Centre
Source: www.fsweb.wm.edu/amst

The Eaton building and property are only a small portion of an untapped resource. Photo No.7.4 shows the immediate area around the practicum site with green roofs. For the purposes of this conclusion a solid green has been used as a metaphor; however, the entire area could become an integrated system of green roofs. Inside the system there could be a variety of green spaces. These could include formal gardens, small gardens in housing projects, indigenous gardens; private gardens semi-private gardens and public open space. In addition, within the green system, there could be a number of atria linking buildings together.

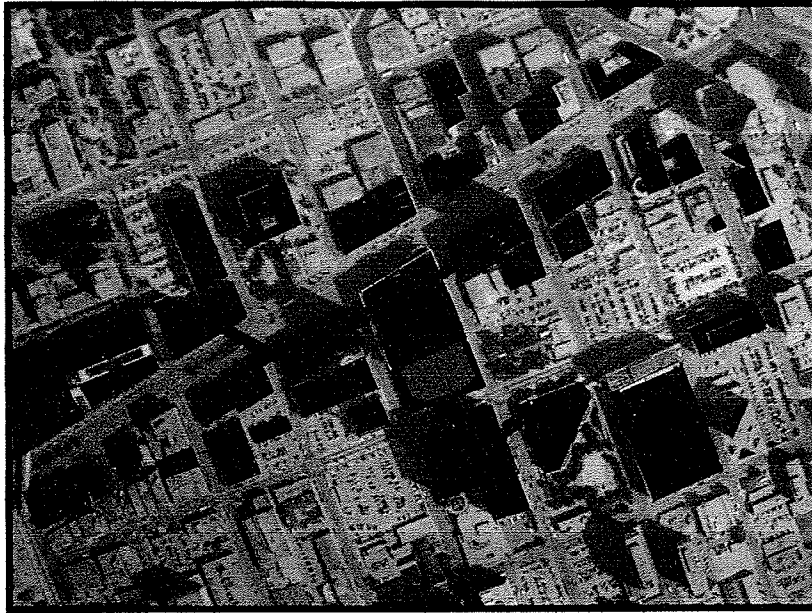


Photo No. 7.4 adapted from Air Photo City of Winnipeg, Downtown core, Atlas Geomatics flown at 20,000 ft. (2000).

The Winnipeg Free Press, Wednesday, October 20, 1999 reported that on October 19, 1999, the store bells at the Eaton's store rang for the last time, ending 94 years of retail history on Portage Avenue (A10). Osmington, a Toronto Developer who currently owns the Eaton Catalogue Buildings is quoted. "Osmington clearly sees a potential in the building that could not be realized by Eatons. What its plan might be is not known...Osmington is expected to make arguments that the city's heritage bylaw is excessively strict. Such arguments should be listened to with an open mind, not just because the bylaw might prevent redevelopment of the Eaton's building, but because it might be interfering with redevelopment of many other properties. Beyond that, however, there is no need or reason for governments at any level to get overly involved in the future of the Eaton's building." Photo No. 7.5 shows the ongoing demolition of the Eaton Building as preparations are underway for a new arena.

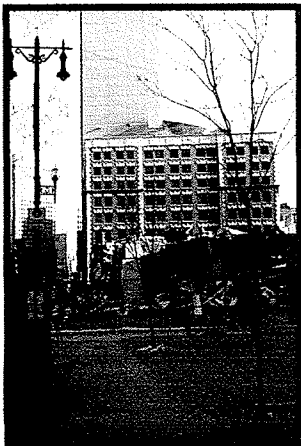


Photo No. 7.5 Eaton Property Jan., (2000).

7.4 Recommendations

As the Eaton building was being demolished, other buildings of heritage distinction have come more into focus. The Hudsons Bay Building, constructed of reinforced

and steel, is situated three blocks south of the Eaton property. Retail business is still being conducted in the building; however, there has been some concern by analysts regarding the ending of the store's career. The Bay building currently has six floors that each appear to be different heights. It is approximately 124 ft. by 160 ft. and has some interesting building characteristics. Apart from the actual ornamentation on the exterior there are corner entrances. This allows for a unique plan to be integrated. Rounded corners can be extremely beneficial within a dynamic roof garden system. Considering the fact that there are only six floors there is ample room to provide for a roof garden incorporating housing at least two stories, probably three or four stories. With the direct connection to Portage Place feasibility becomes more viable. Building upgrades (particularly egress, and fire safety) and parking would have to be addressed. At the lower elevation, a roof garden could be viewed from many of the tall buildings in the immediate vicinity. Keeping in mind that historical buildings are important to the dynamics of the downtown core -

1. The use of an integrated systems approach could be beneficial to all developments in the downtown core. Storm water runoff, solar heat, heating and cooling systems from ground water, wind powered energy, and green belts are not new concepts. They simply grew out of fashion as technology pushed toward an intense use of energy.
2. The rethinking and expansion of how we treat the heritage of the downtown urban cores could be beneficial. There could be untapped programs available.
3. The inclusion of a Green Code in the Building Code could be extremely beneficial. With planning programs in place a section of every built space could be used to create a dynamic public open space. This in turn would promote vitality in the urban core. If every building had a unique space perhaps courtyard, perhaps atrium perhaps green roof, would a sense of place not then be created?

Architecture is a potentially dangerous tool, environment can be used to manipulate people – taking surroundings for granted and rarely bringing them to full consciousness --- can be used to influence our actions.

- Christopher Day, *Places of the Soul*, (1990).

APPENDIX

INTRODUCTION

APPENDIX I

Plates of maps and plans referred to in the text. - This appendix represents a collection of historical maps and plans that are not as relevant to the outcome of the project as perhaps some information was; however, represent the history of the building and property.

APPENDIX II

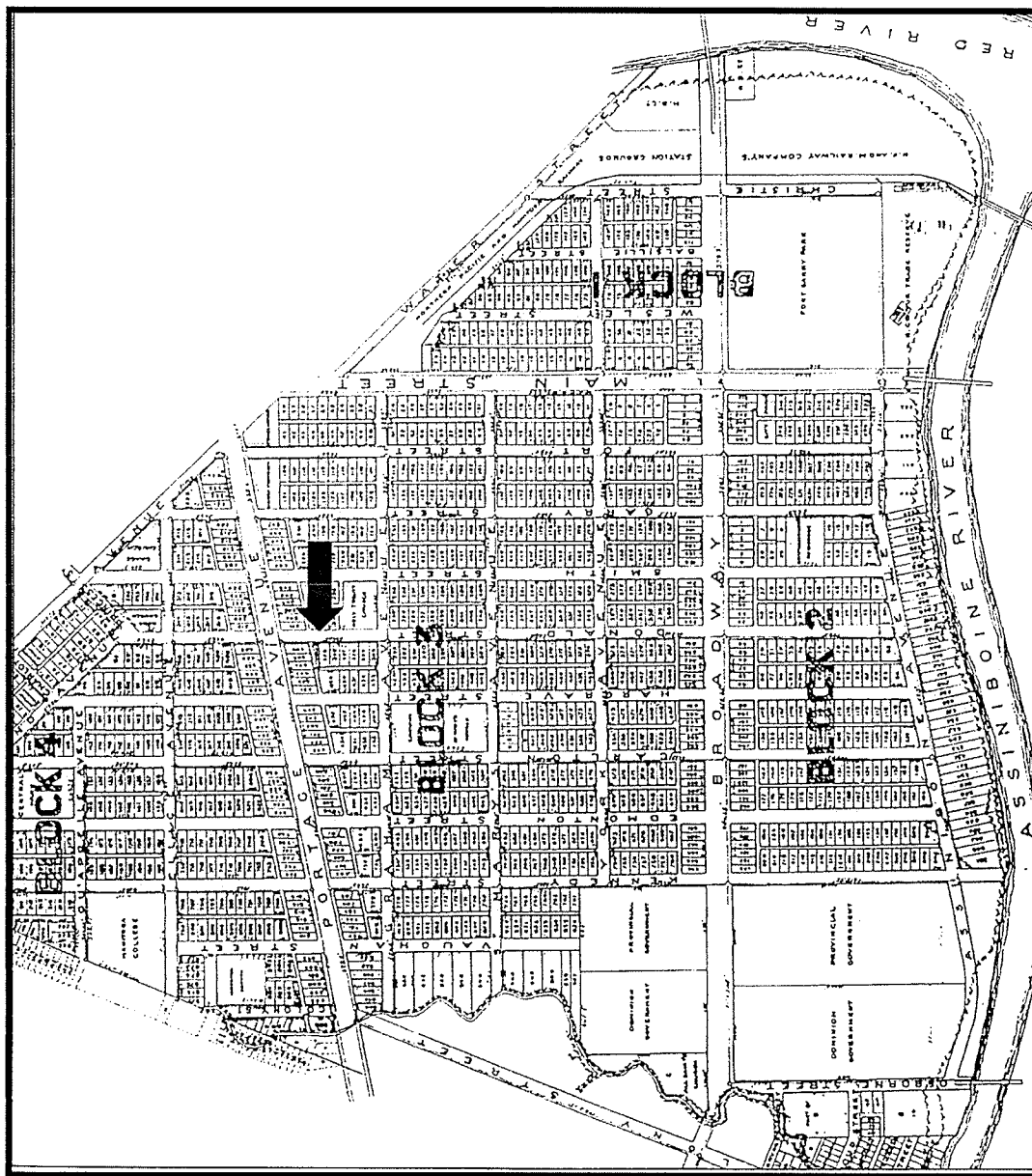
The Planting Guide included offers useful information for selected interior plants and is relevant to the interior landscape.

APPENDIX III

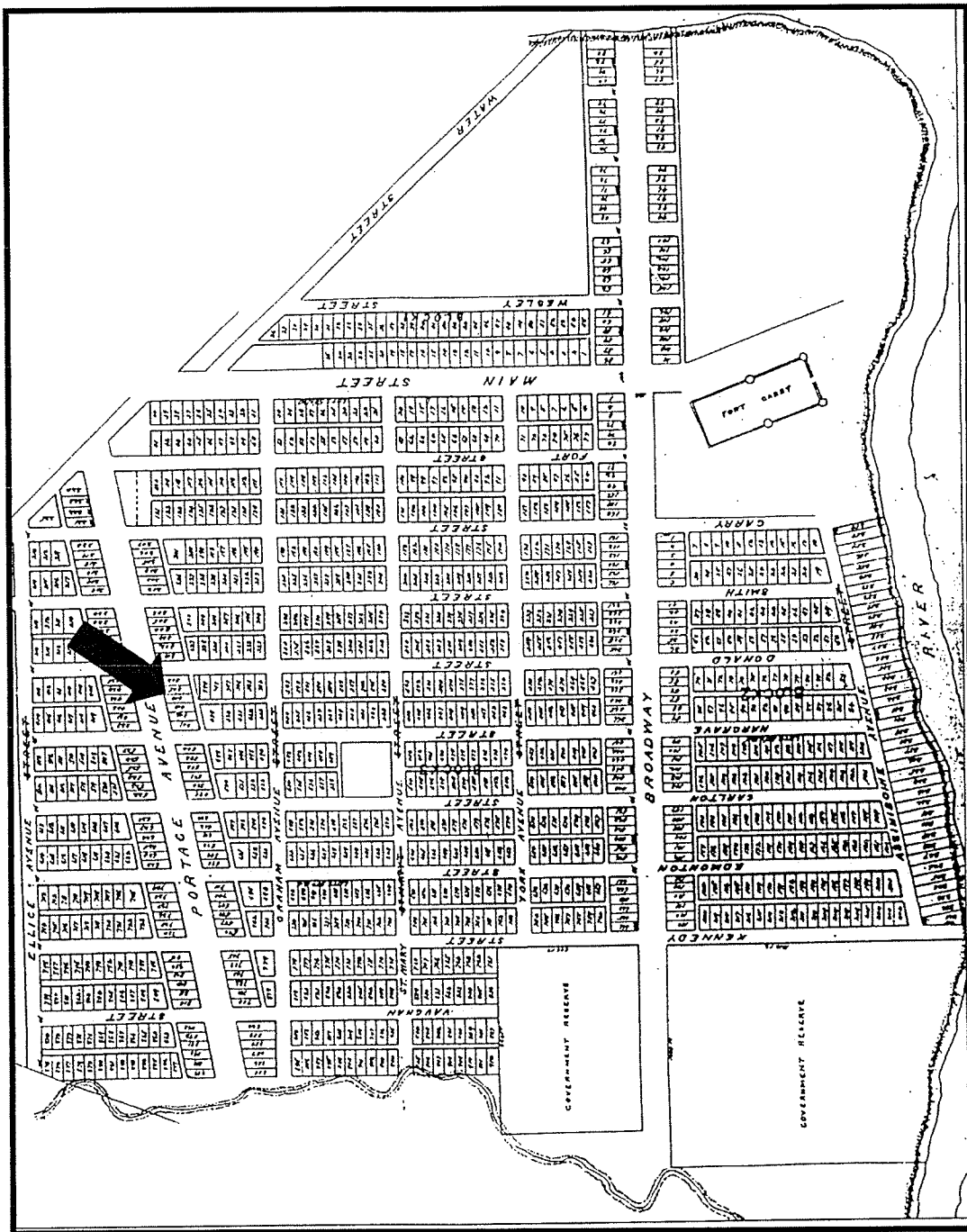
Letters of Permission

APPENDIX IV and V – Boards and PowerPoint Slides from the actual presentation.

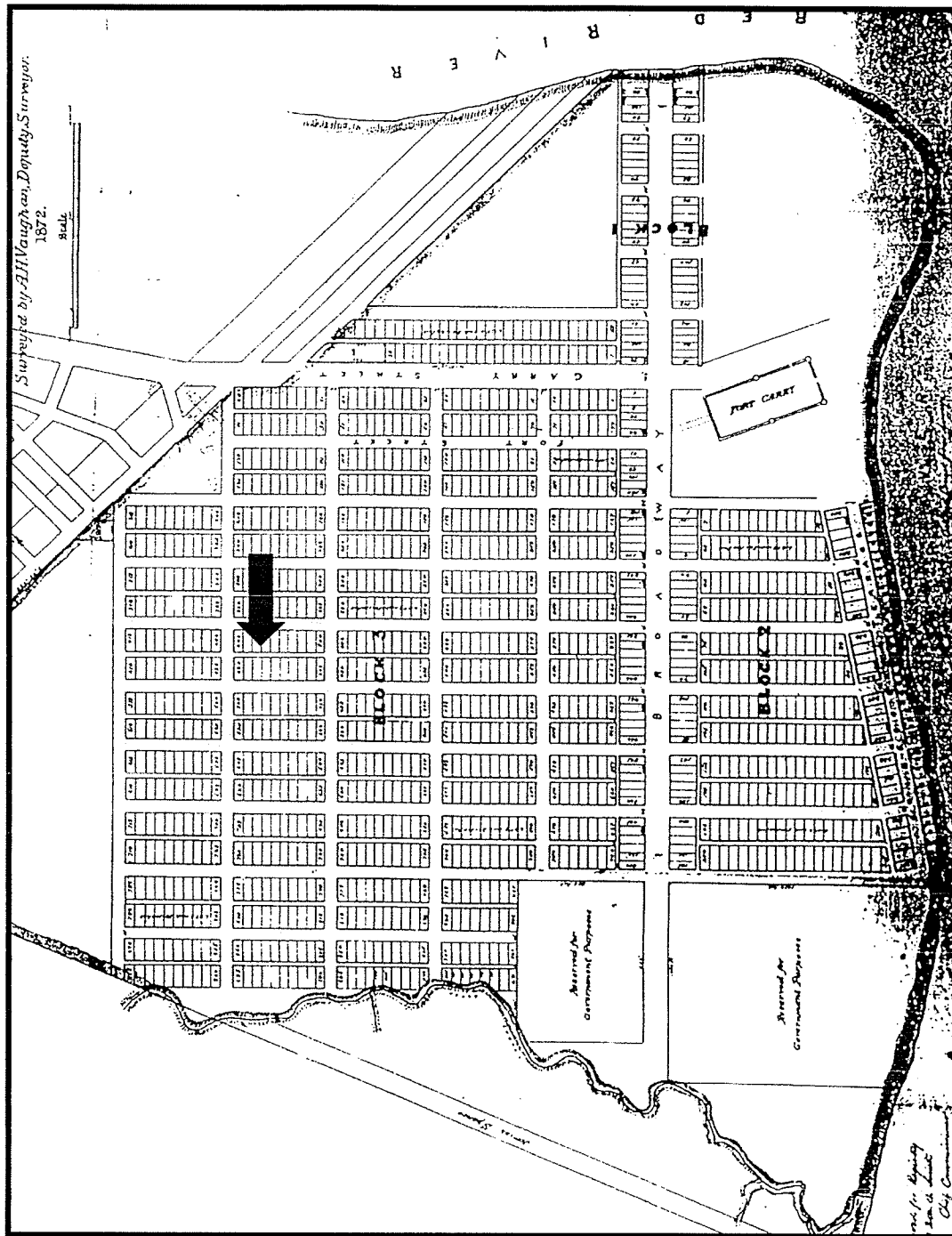
The National Building Code referred to in this particular project can be accessed when required. Sections used are listed in the Reference Section of this practicum.



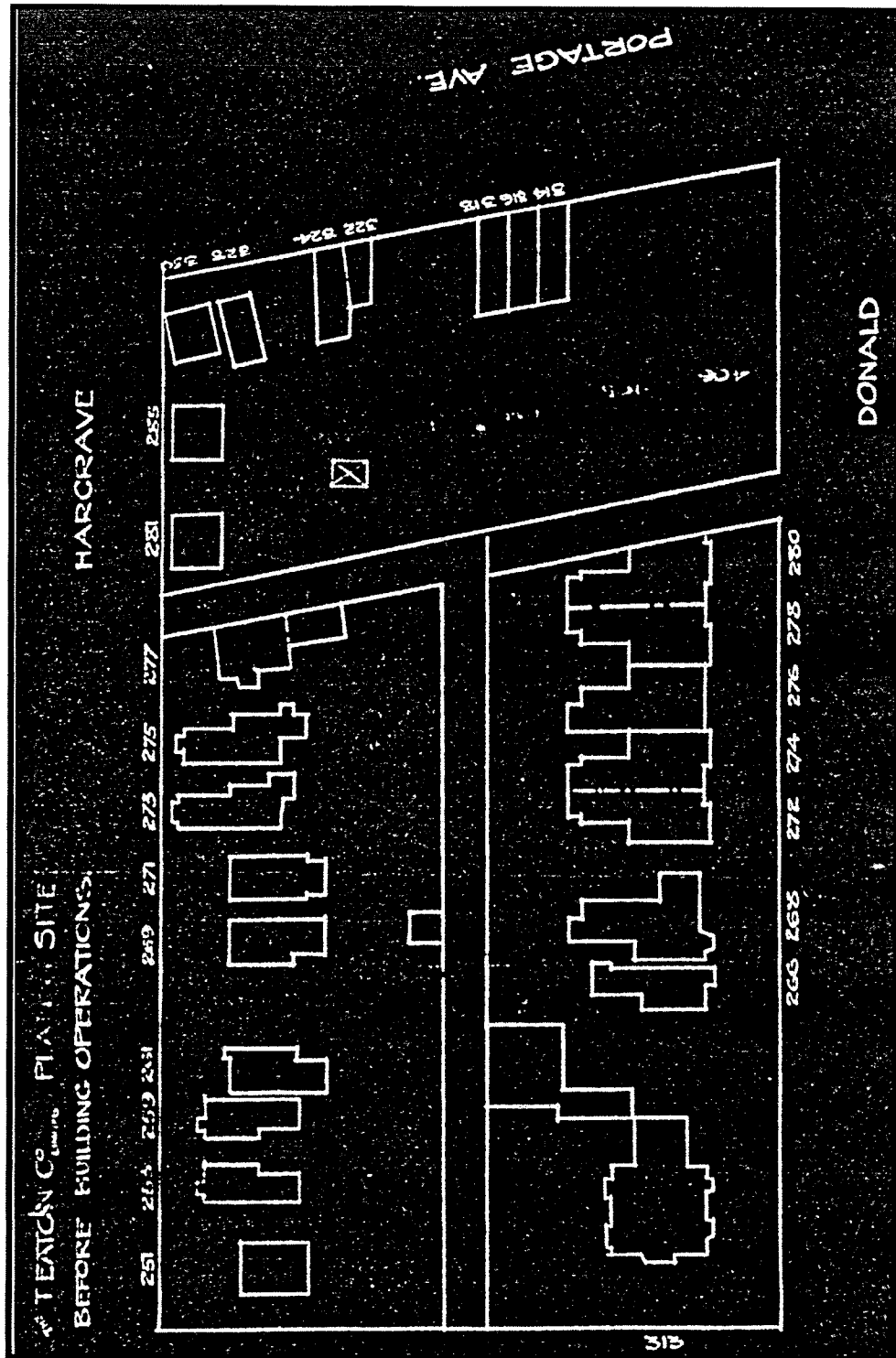
Map 3, "Plan of the H. B. Co. Reserve (Plan 129), 1881. This was the final form of the Hudsons's Bay Reserve at Winnipeg (arrow at location of Eaton Store)." R. R. Rostecki, City of Winnipeg, Historical Buildings Committee.

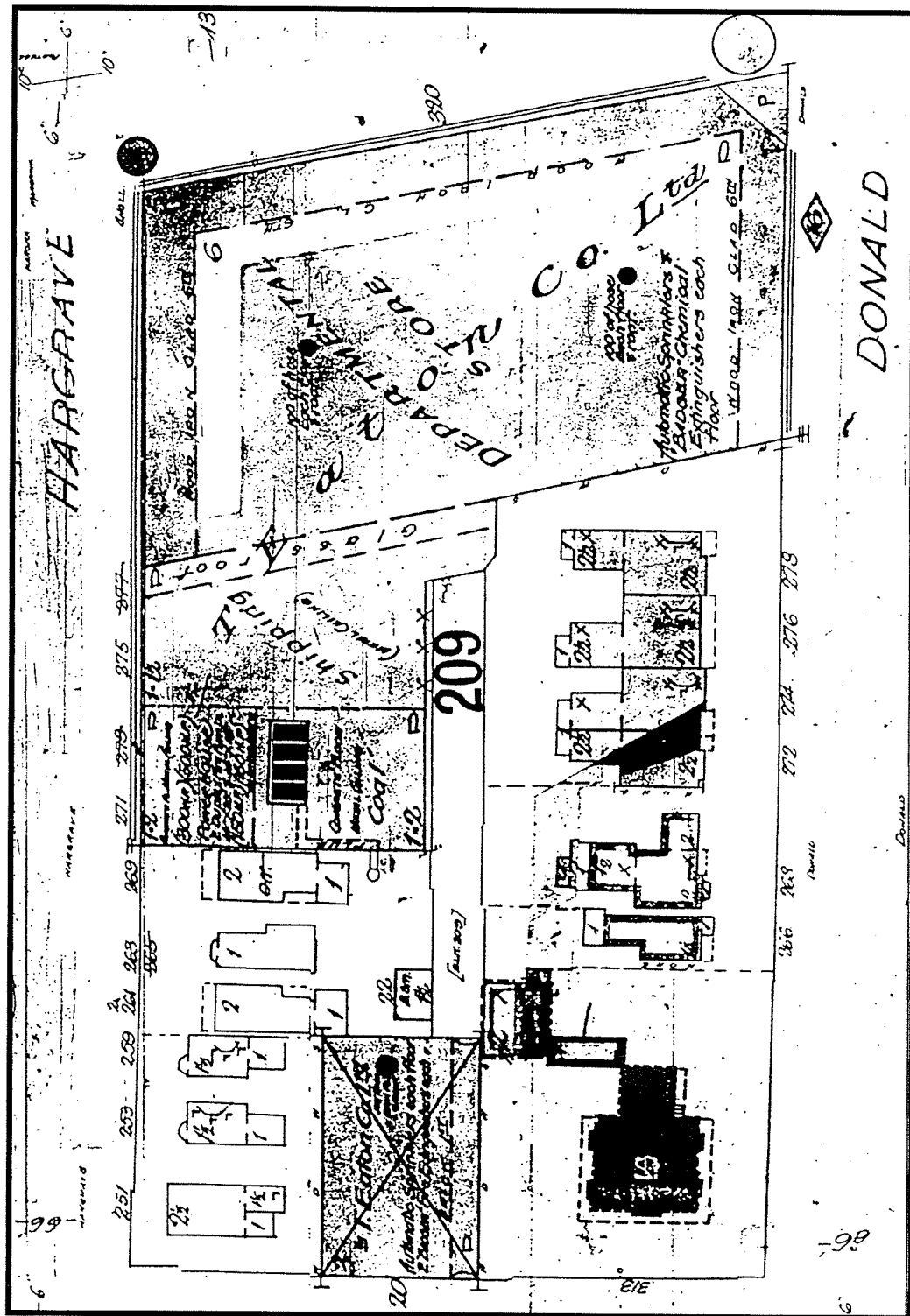


Map 2 "Plan of the H.B. Co. Reserve (Plan 81), 1879, certain realities of Winnipeg life had been realized by the H.B. Co. Land Department, and so their plat was altered to take into account Portage Avenue. Very saleable lots were created on both sides of the Avenue by this station, leading to the eventual rise of a commercial district (arrow at location of Eaton Store). R. R. Rostecki, City of Winnipeg, Historical Buildings Committee, (2000).



Map 1, Plan of the Town of Selkirk (Plan 18), 1872. – Source: City of Winnipeg, Historical Buildings Committee – R.R. Rostocki, (2000). “The original layout of the Hudson’s Bay Reserve in Winnipeg made no allowance for the Portage Trail which ran through it (arrow at location of Eaton Store)





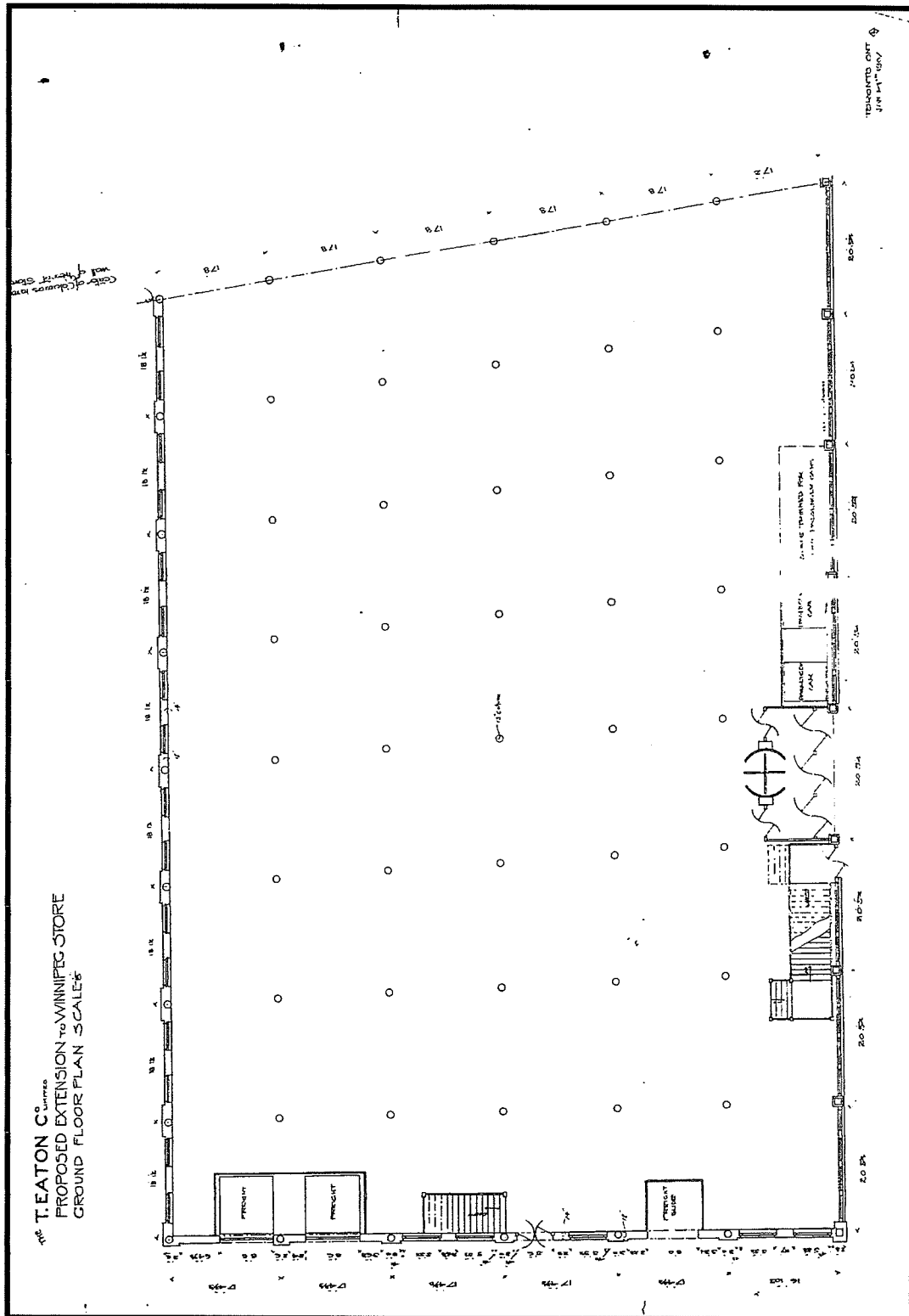


Figure No. A-1 1907 Proposed Hargrave Extension –blueprint reduced from 1/16"=1' Ground Floor Plan – City of Winnipeg Archives.

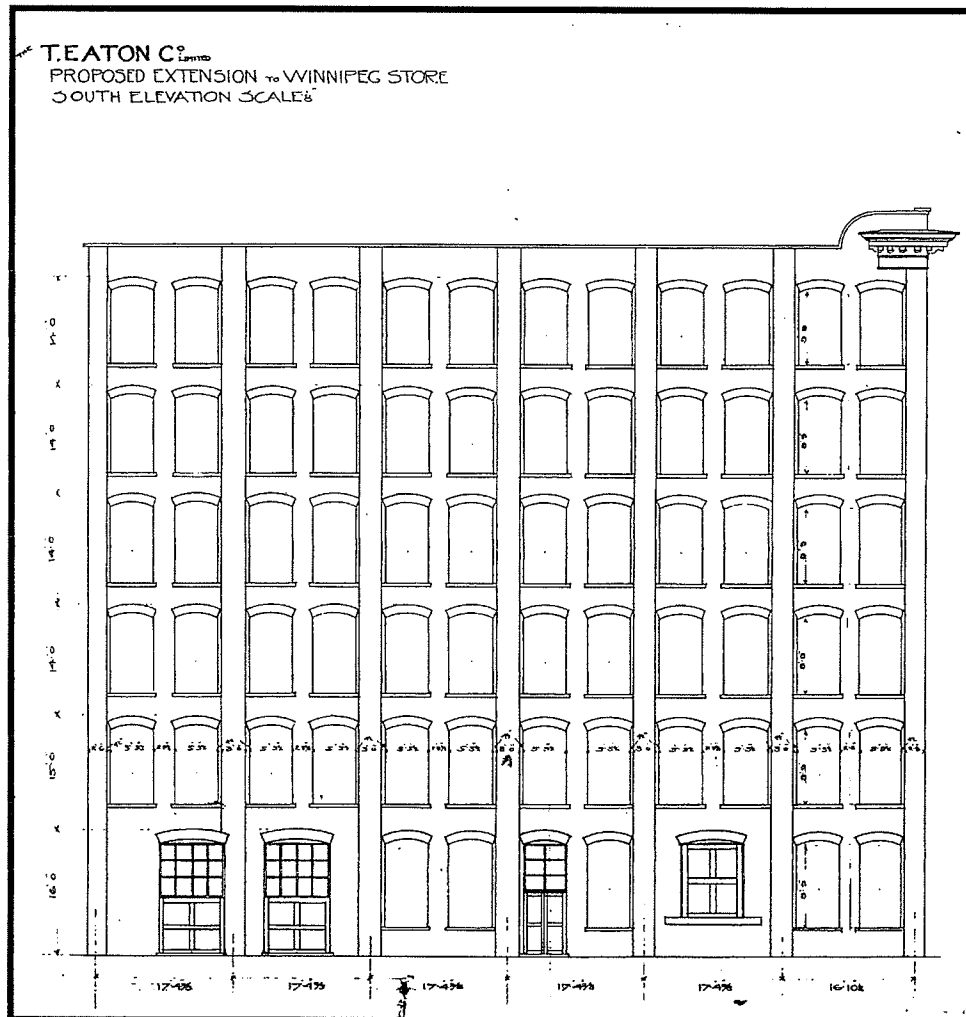


Figure A-2 Elevation of Proposed Hargrave Street 1907 – blueprint reduced from 1/16"=1' compliments of City of Winnipeg Archives.

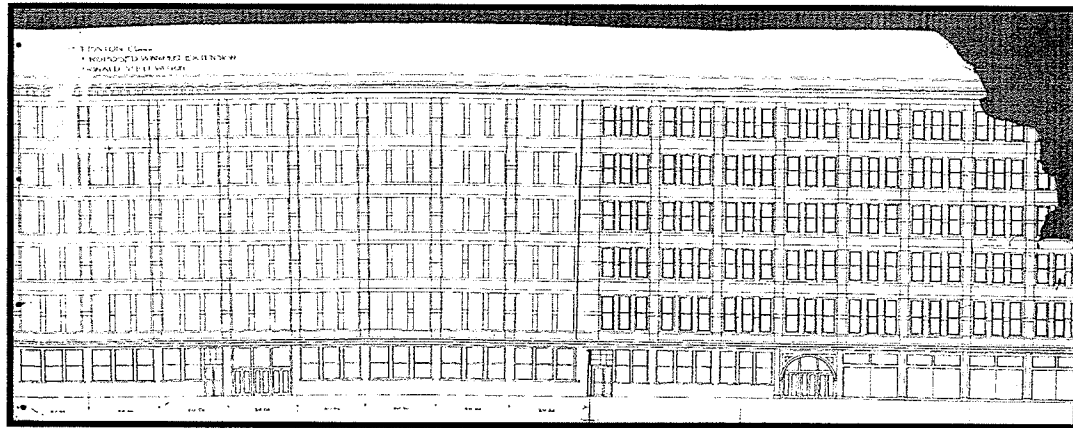


Figure No. A-4 Proposed Winnipeg Extension Donald Street Elevation, 1907, blueprint reduced from 1/16"=1', compliments of the City of Winnipeg Archives.

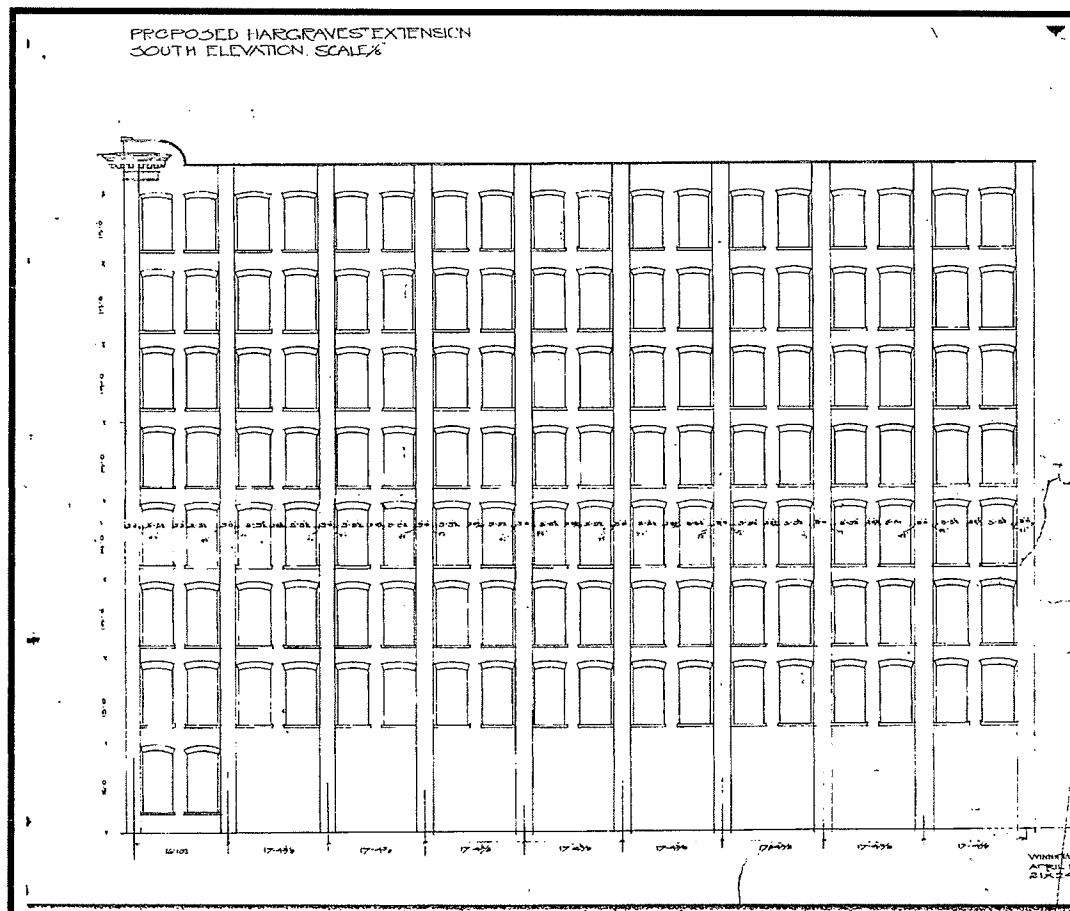
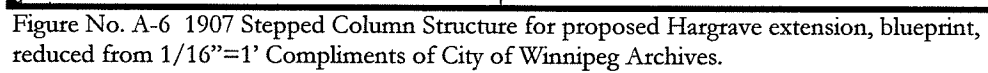


Figure No. A-5 1907 South Elevation of Proposed Hargrave Extension, blueprint reduced from 1/16"=1', compliments of the City of Winnipeg archives.



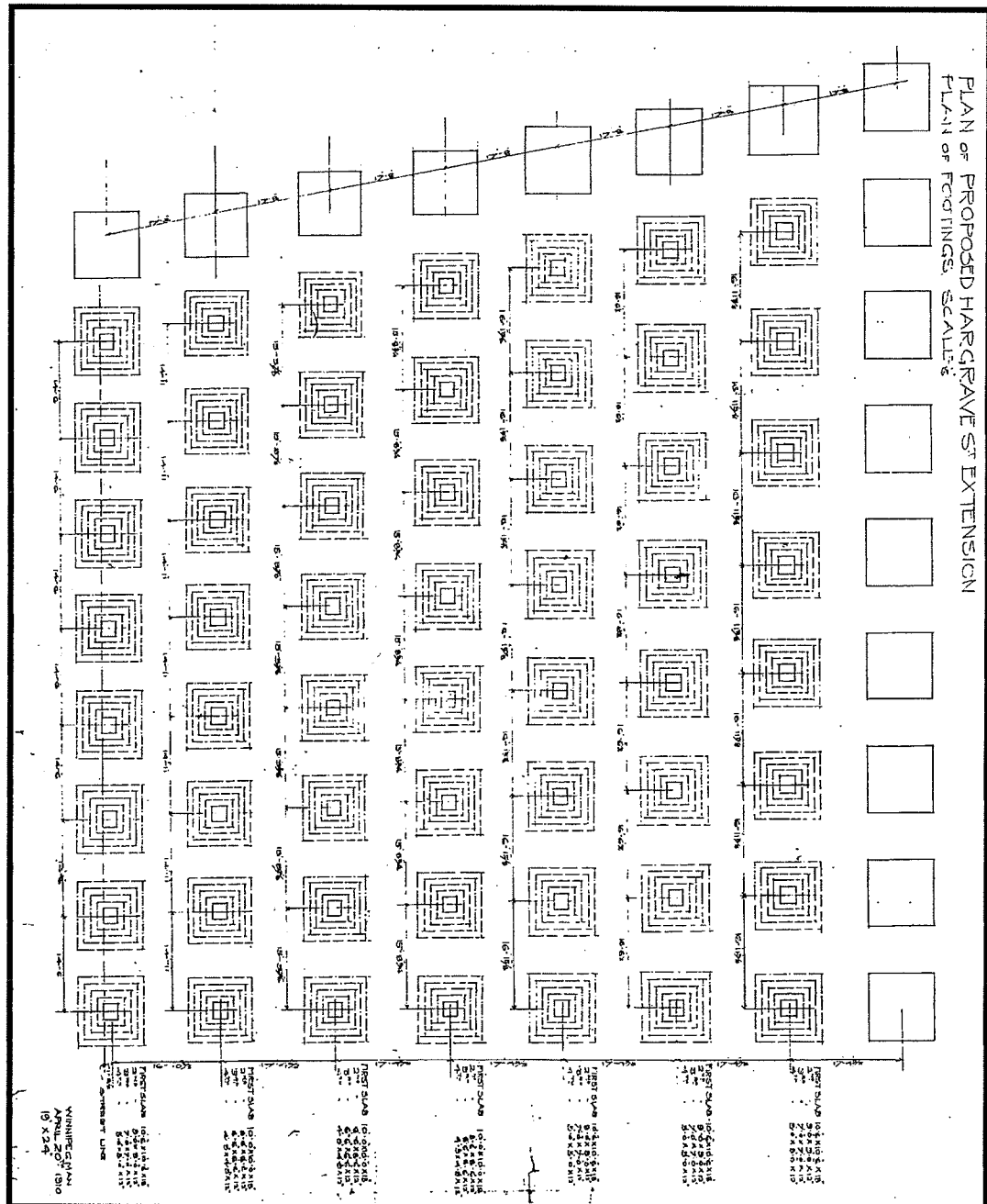


Figure No. A-7 1907 footing proposed Hargrave Extension, blueprint reduced from 1/16"=1', compliments of the City of Winnipeg Archives.

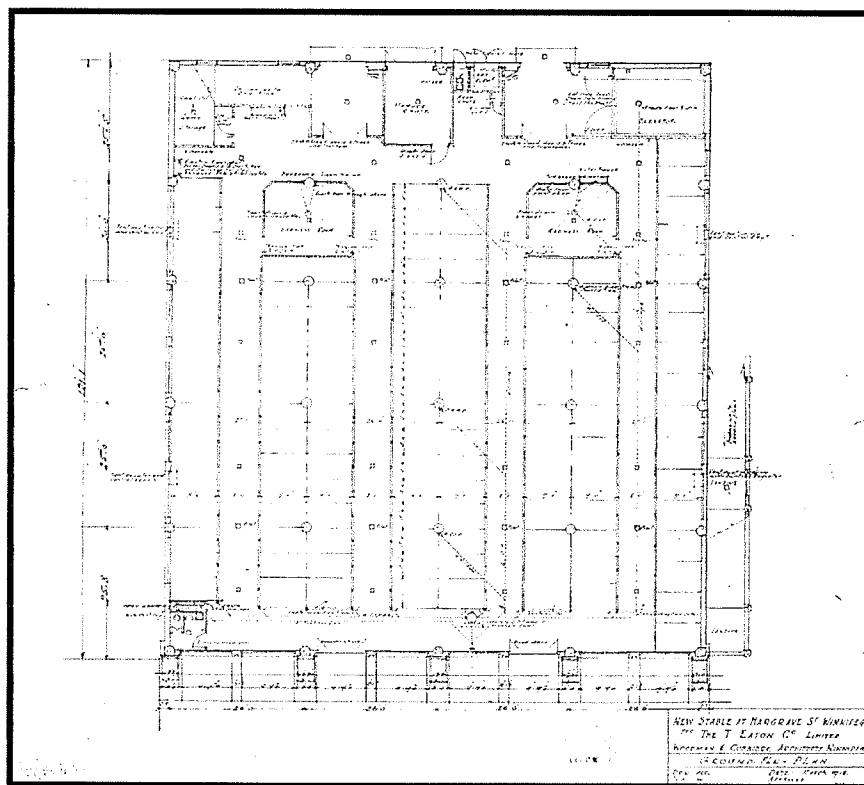


Figure A-8 1918 Plan of Stable Ground Floor, blueprint, reduced from 1/8"=1', compliments of City of Winnipeg Archives.

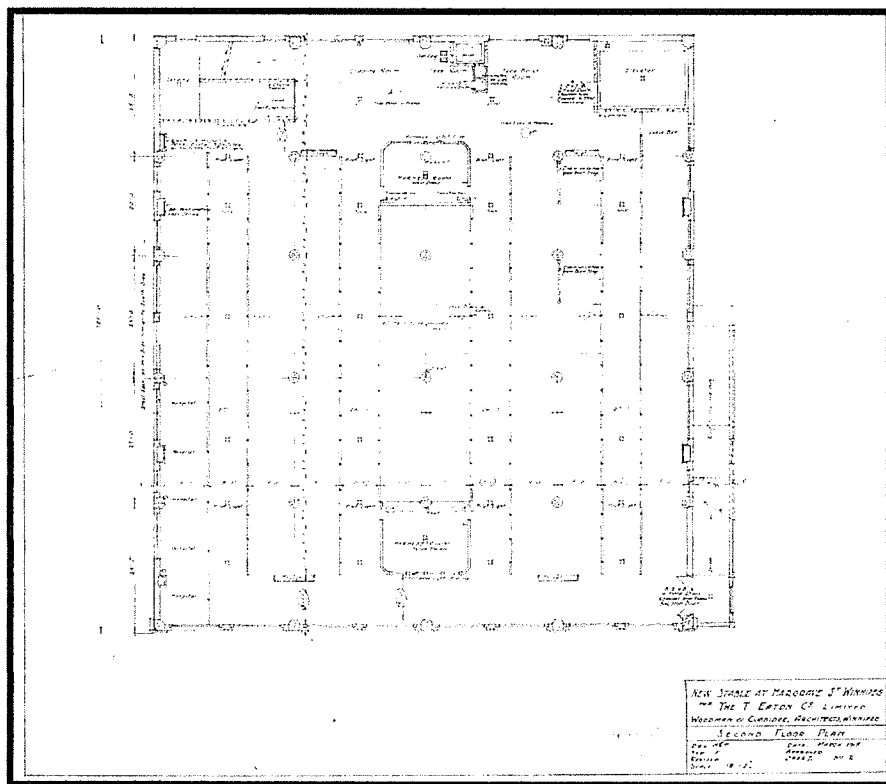


Figure A-9 1918 Second Floor Plan, New Stable, blueprint reduced from 1/8"=1', compliments of City of Winnipeg Archives.

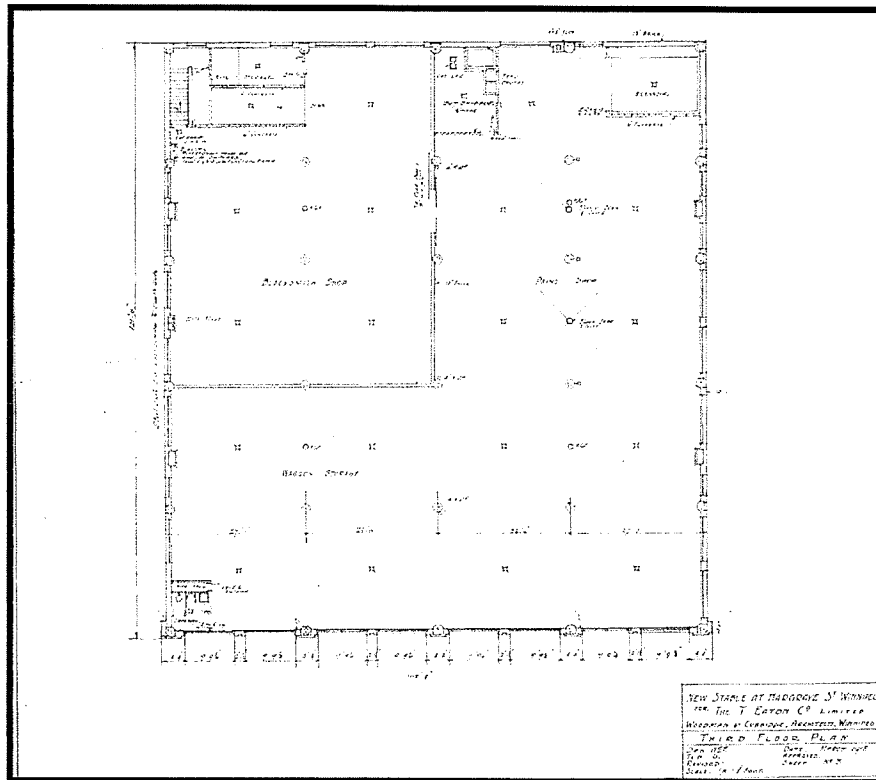


Figure A-11 1918 Third Floor Plan Stable, blueprint reduced from 1/8"=1', compliments of City of Winnipeg Archives.

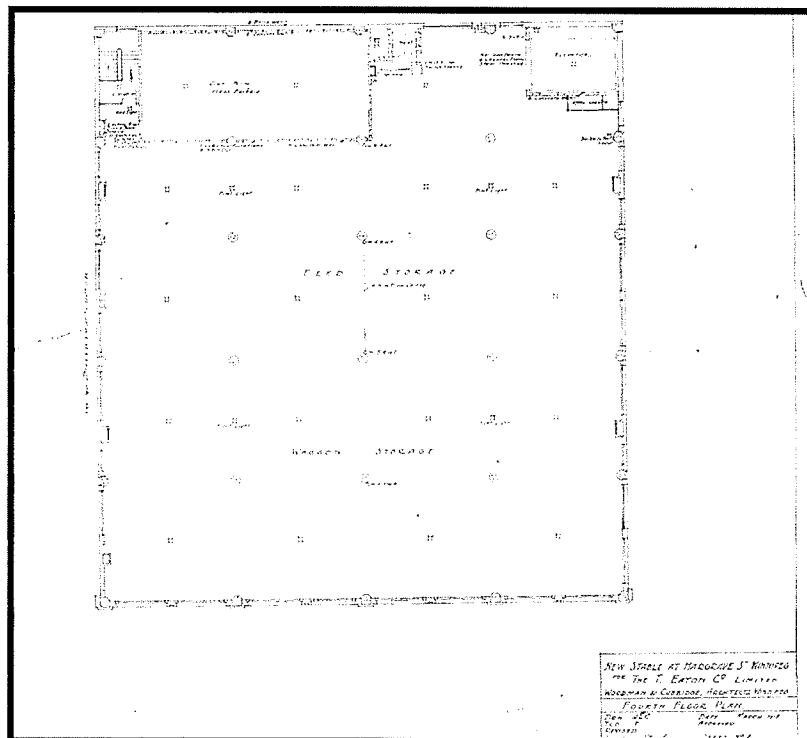


Figure A-12 1918 Fourth Floor Plan, Stable, blueprint reduced from 1/8"=1', compliments of City of Winnipeg Archives.

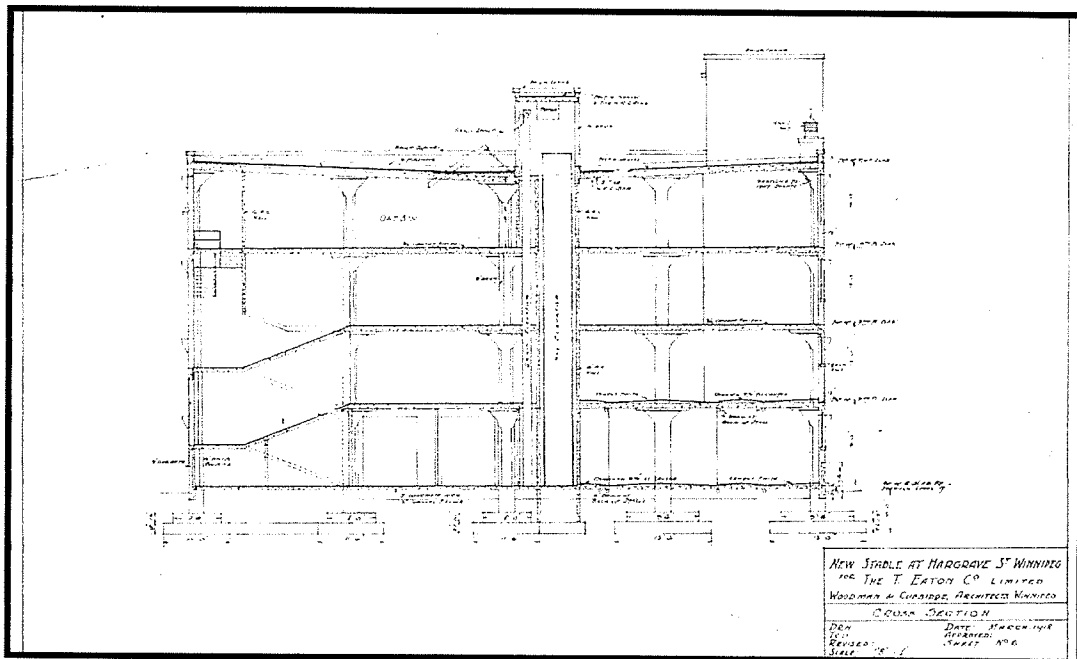


Figure A-13 1918 cross section Stable, blueprint, reduced from 1/8"=1' compliments of City of Winnipeg Archives.

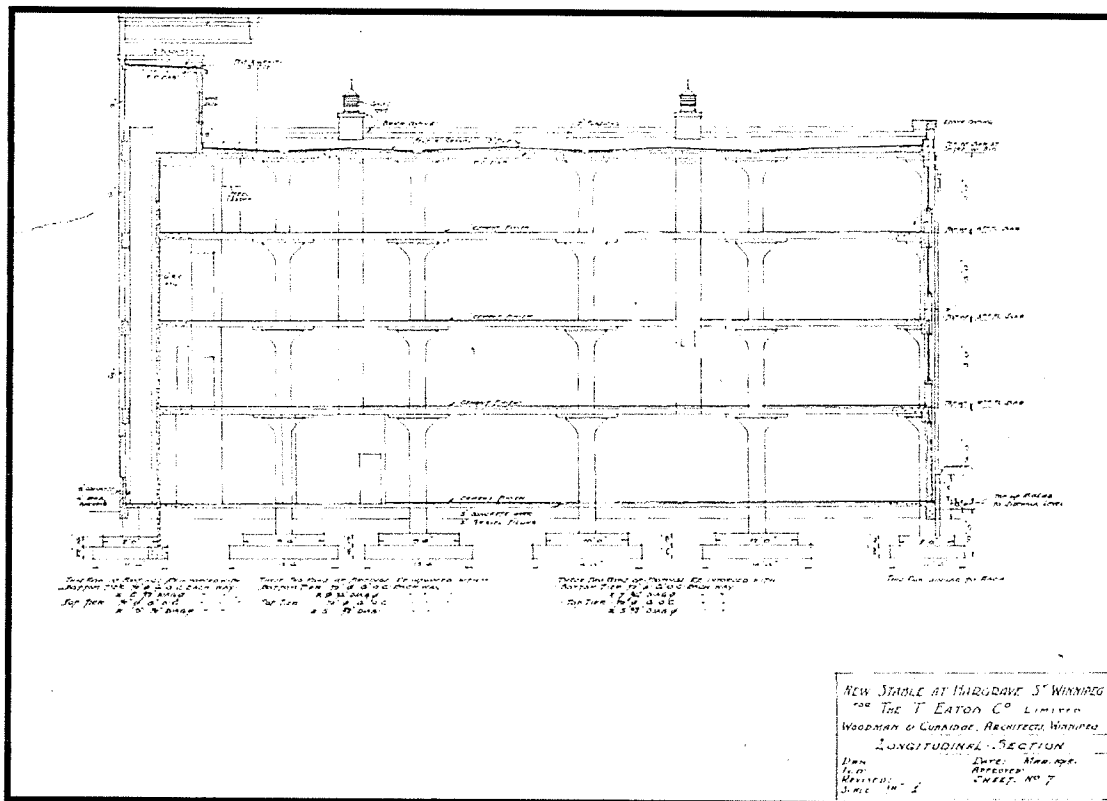


Figure A-14 1918 Longitudinal Section Stable, blueprint reduced from 1/8"=1', compliments of City of Winnipeg Archives.

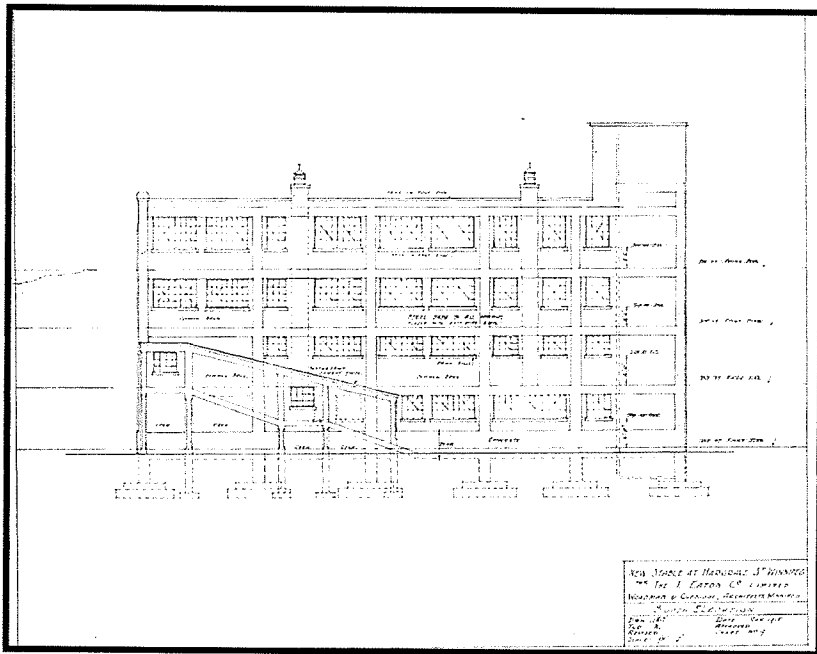


Figure A-15 1918 South Elevation Stable, blueprint, reduced from 1/8"=1', compliments of City of Winnipeg Archives.

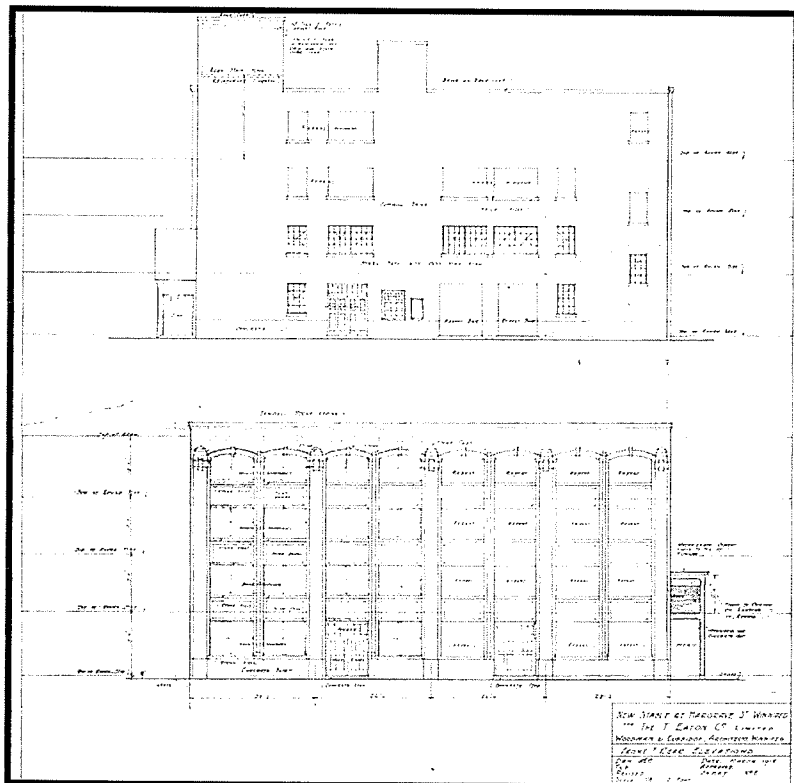


Figure A-16 1918 Elevations, Stable, blueprint reduced from 1/8"=1' compliments of City of Winnipeg Archives.

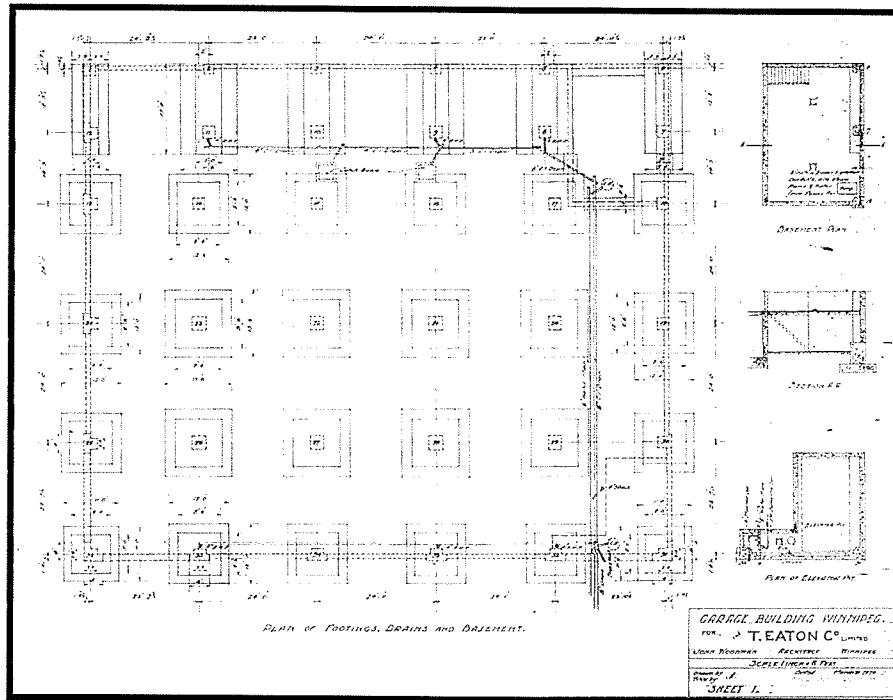


Figure A-17 1926 Garage Building, Plan of Footings, blueprint reduced from 1/8"=1', Drains and Basement, compliments of City of Winnipeg Archives.

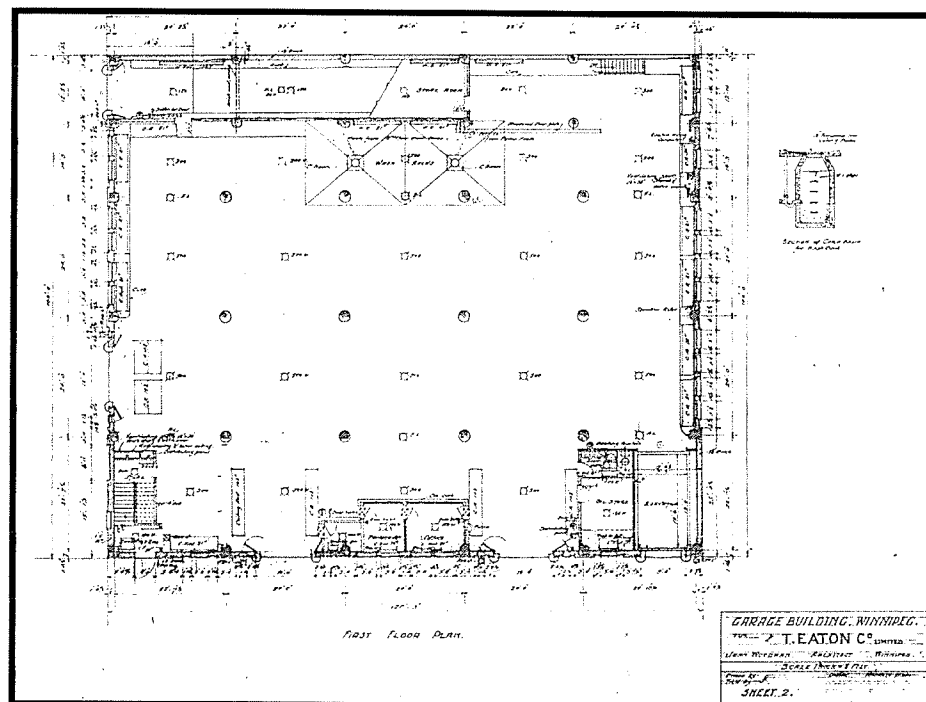


Figure A-18 1926 Garage Building First Floor Plan, blueprint reduced from 1/8"=1', compliments of City of Winnipeg Archives.

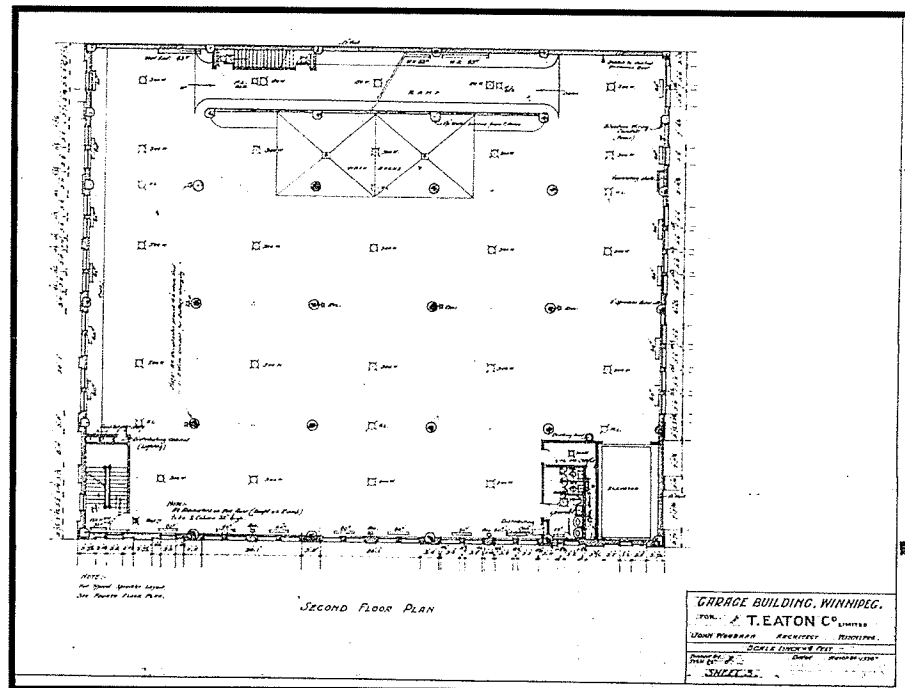


Figure A-19 1926 Garage Building Second Floor plan, blueprint reduced from 1/8"=1', compliments of City of Winnipeg

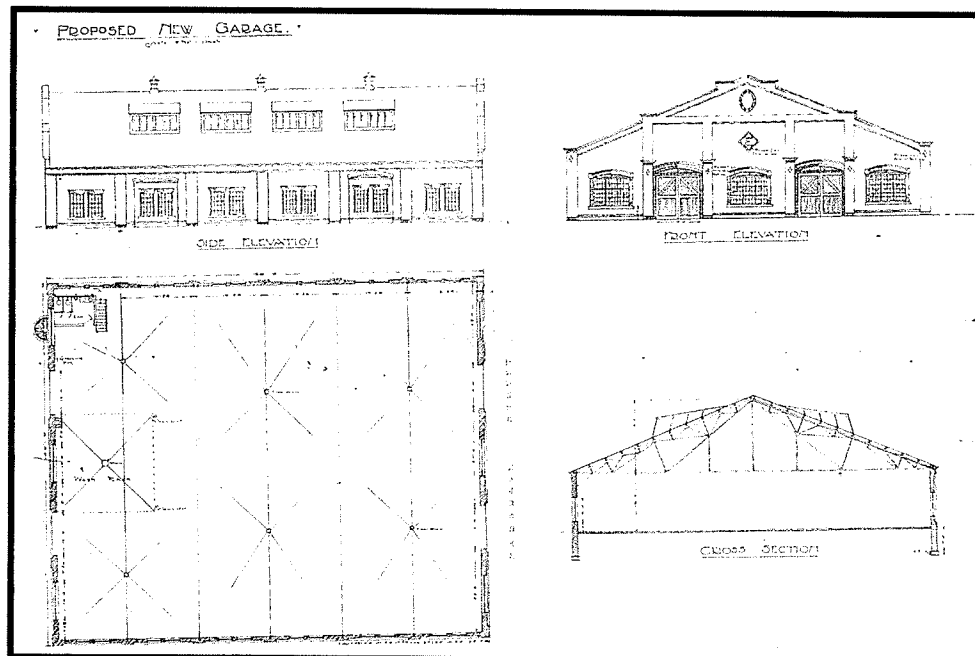


Figure A-20 1926 proposed Garage Building Elevation, Section, blueprint reduced from 1/8"=1', compliments of City of Winnipeg Archives.

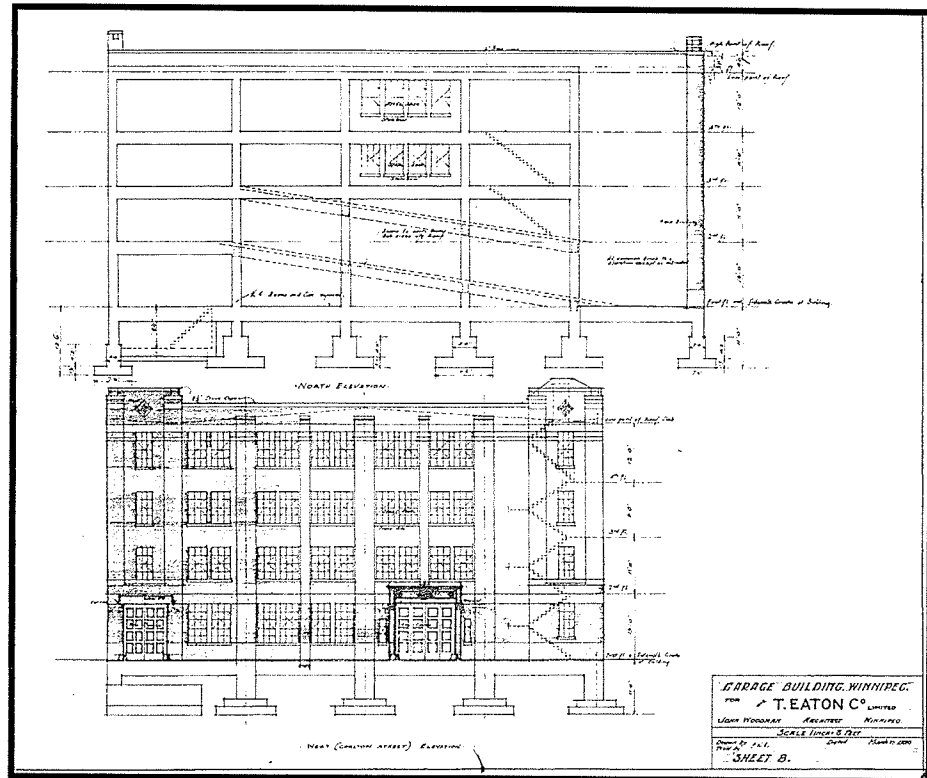


Figure A-21 1926 Garage Building Elevations, blueprint reduced from 1/8"=1', compliments of City of Winnipeg Archives.

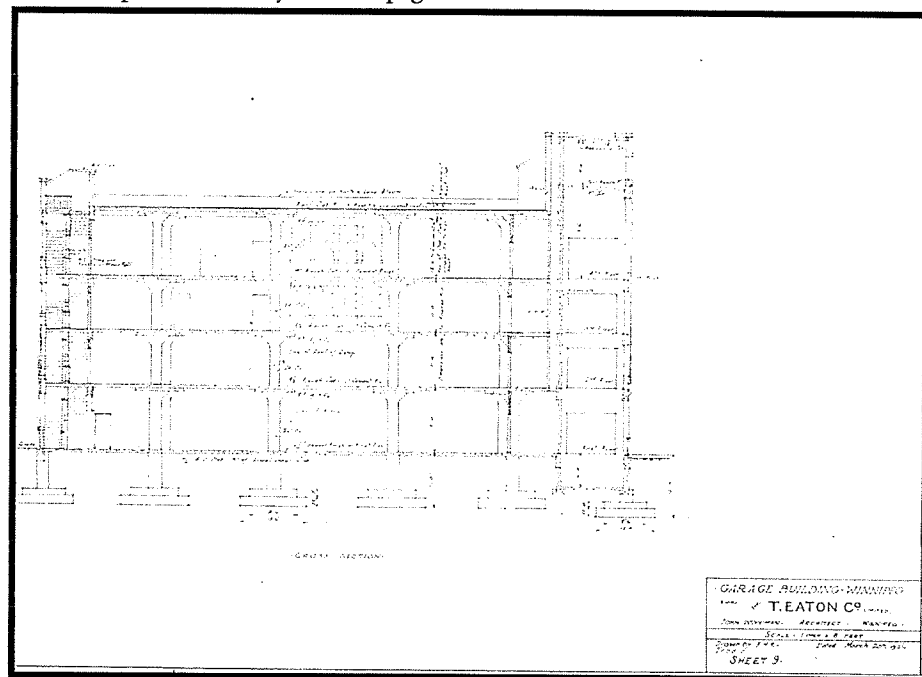


Figure A-22 1926 Garage Building Cross Section, blueprint reduced from 1/8"=1', compliments of City of Winnipeg Archives.

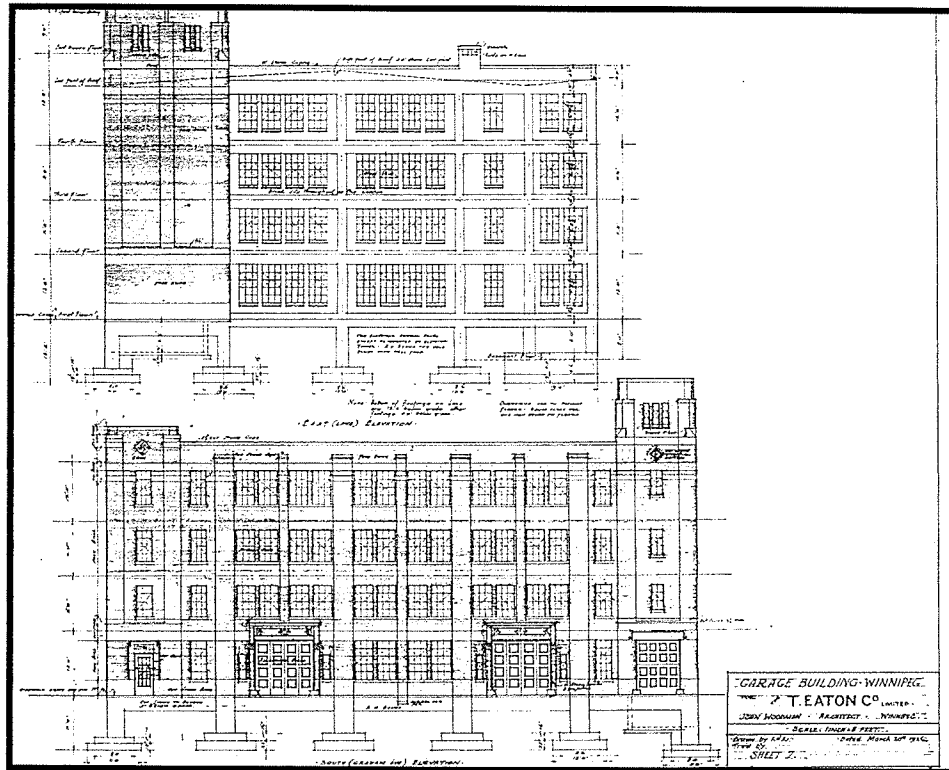


Figure A-23 1926 Garage Building, Elevations, blueprint reduced from 1/8"=1', compliments of City of Winnipeg Archives.

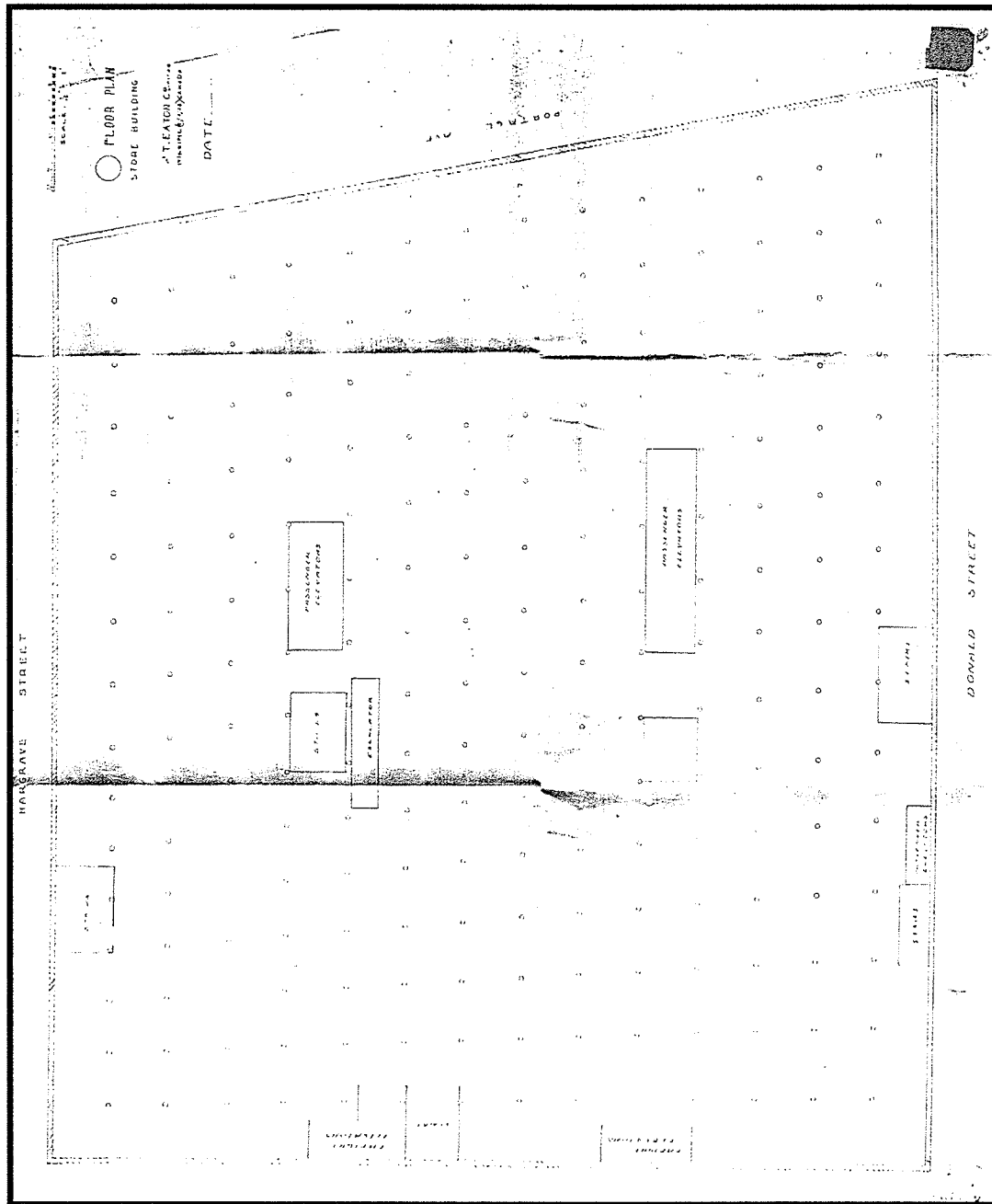
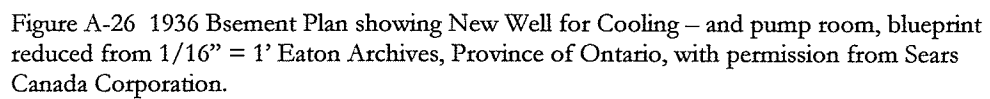


Figure A-24 1928 6th floor plan changes in egress, white print, 11x17 reduced from 1/32"=1"
 Eaton Archives, Province of Ontario, with permission from Sears Canada Corporation.



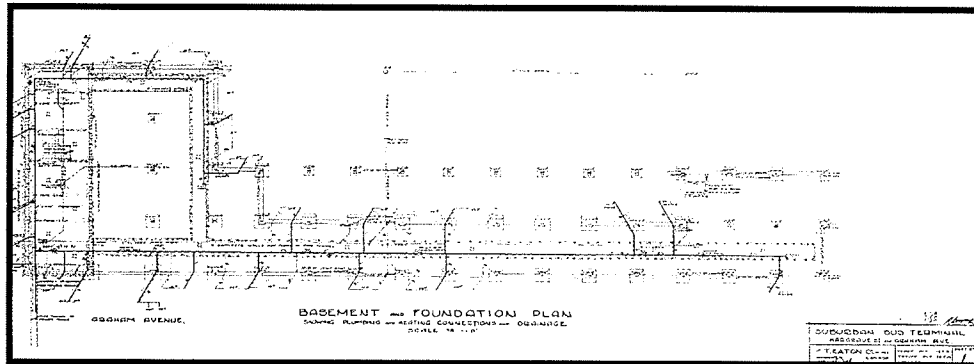


Figure A-27 1936 Suburban Bus Terminal, Hargrave St. And Graham Ave., Basement and Foundation Plan, blueprint reduced from 1/8"=1', compliments of City of Winnipeg Archives.

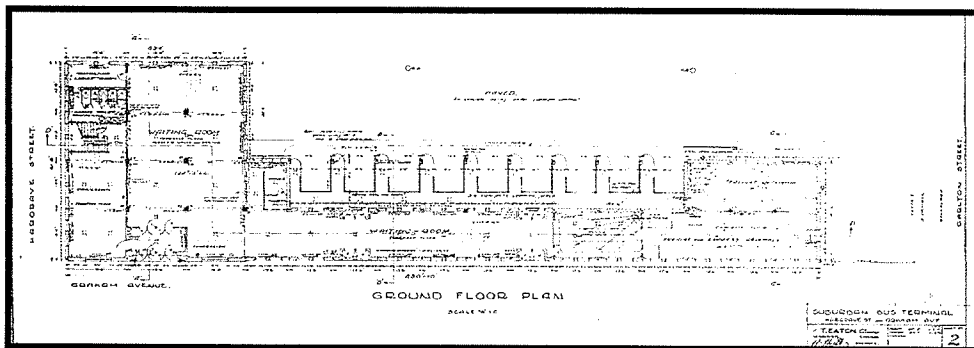


Figure A-28 1936 Suburban Bus Terminal, Hargrave St. And Graham Ave., Ground Floor Plan, blueprint reduced from 1/8"=1', compliments of City of Winnipeg Archives.

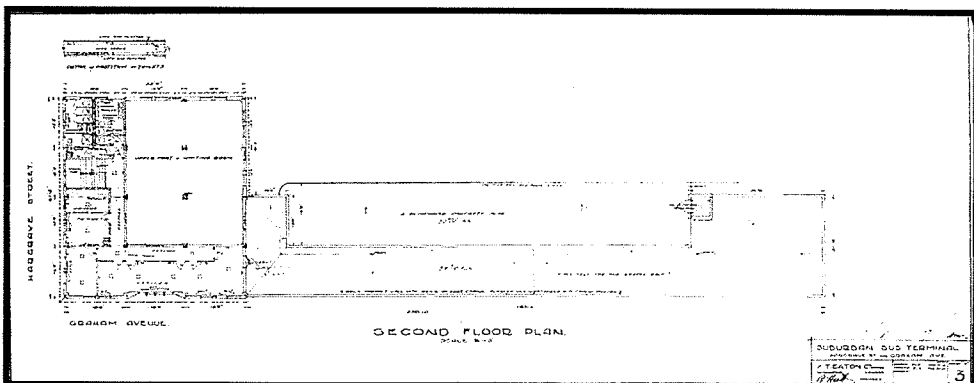


Figure A-29 1936 Suburban Bus Terminal, hargrave St. And Graham Ave., Second Floor Plan, blueprint reduced from 1/8"=1', compliments of City of Winnipeg Archives.

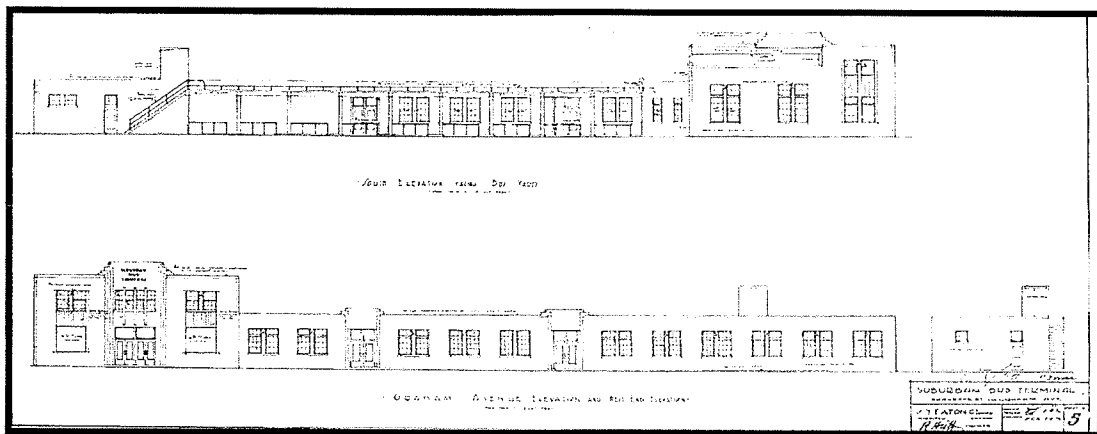


Figure A-30 1936 Suburban Bus Terminal, Hargrave and Graham Ave., Elevations, blueprint, reduced from $1/8"=1'$, compliments of City of Winnipeg Archives.

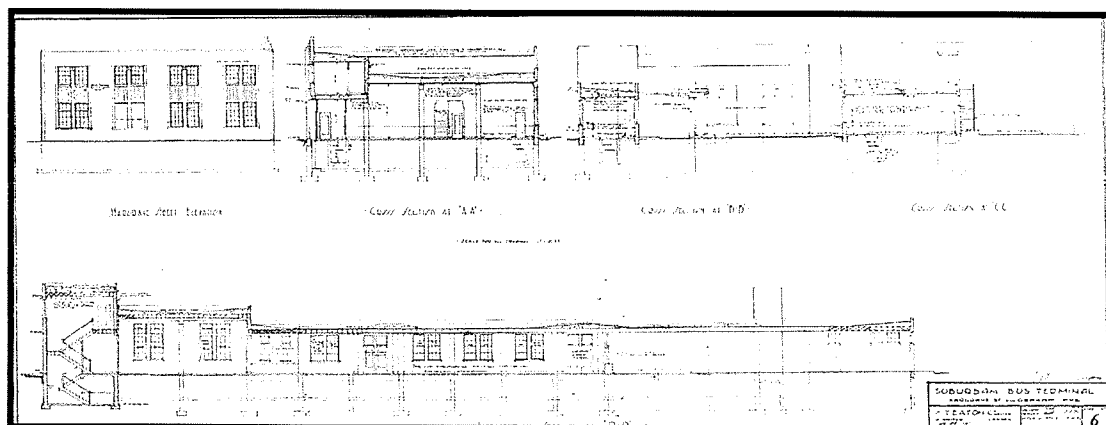


Figure A-31 1936 Suburban Bus Terminal, Hargrave and Graham Ave., Cross Sections, blueprint, reduced from $1/8"=1'$, compliments of City of Winnipeg Archives.

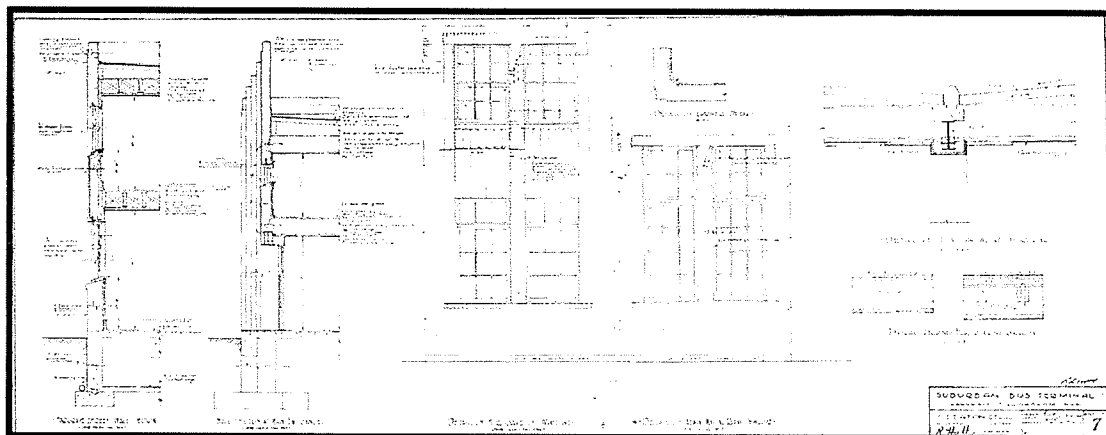


Figure A-32 1936 Suburban Bus Terminal, Hargrave and Graham Ave., Details, blueprint, reduced from $1/2"=1'$, compliments of City of Winnipeg Archives.

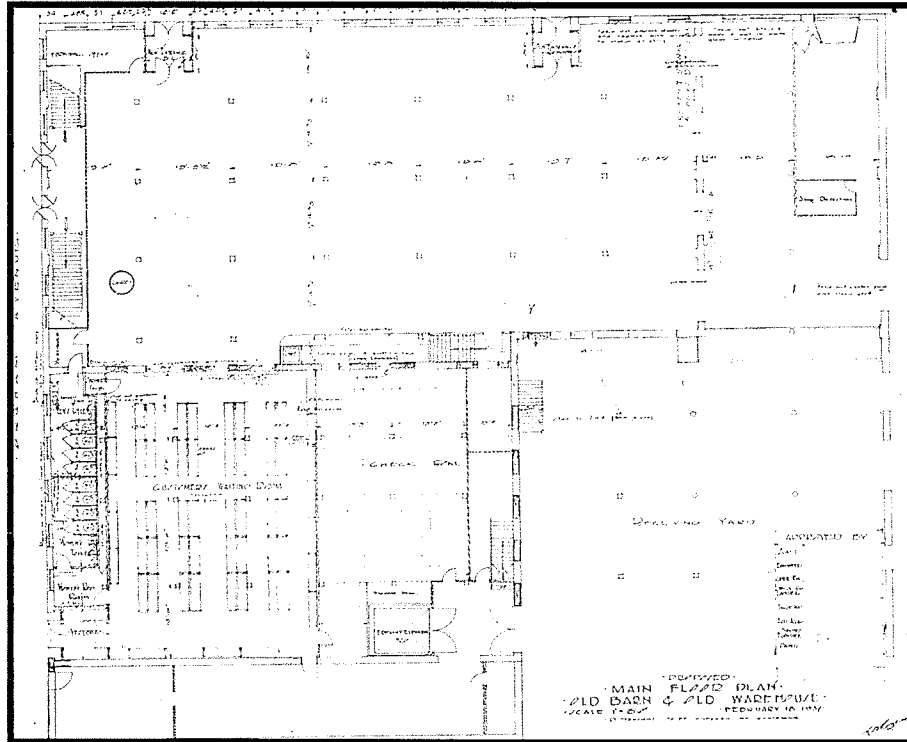


Figure A-33 1937 Proposed Main Floor Plan Old Barn & Warehouse, blueprint reduced from 1/8"=1', compliments of City of Winnipeg Archives.

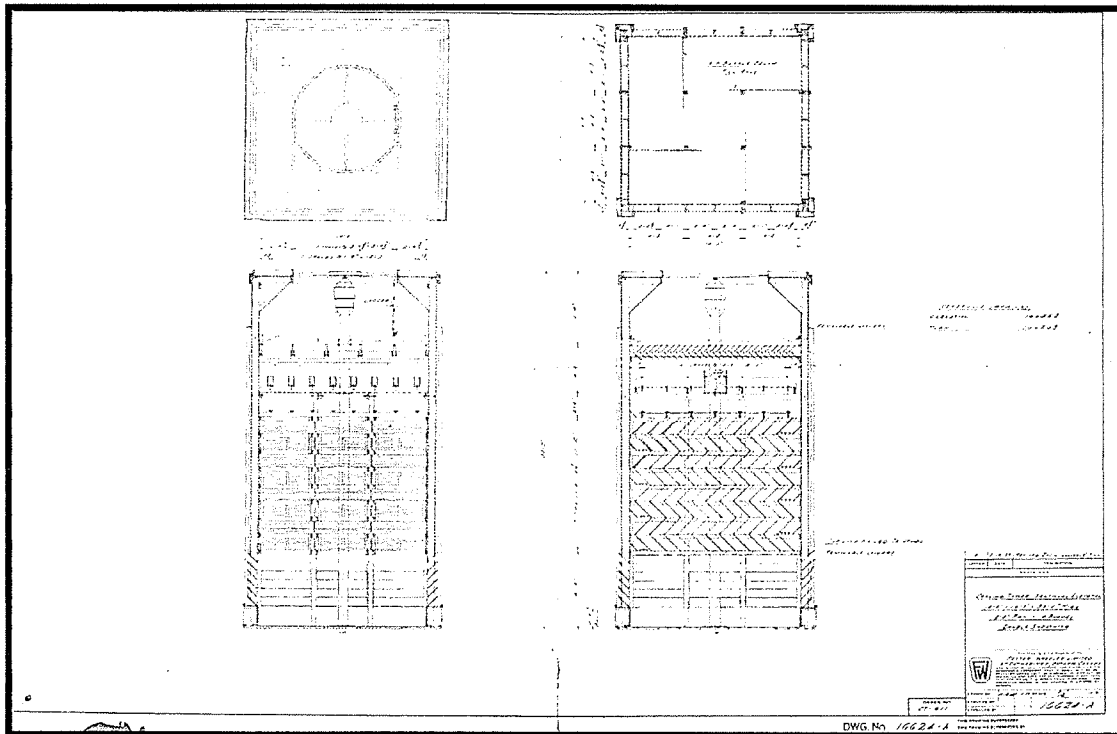


Figure A-34 1939 Section, Elevation, Cooling Tower, blueprint reduced from $\frac{1}{2}''=1'$, compliments of City of Winnipeg Archives.

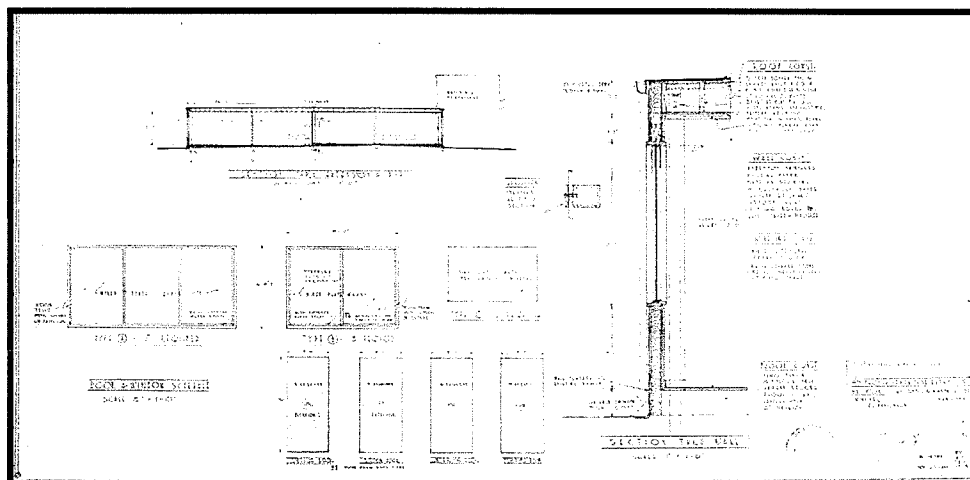


Figure A-35 1948 9th floor penthouse extension sections, blueprint reduced from $\frac{1}{16}''=1'$ compliments of City of Winnipeg Archives.

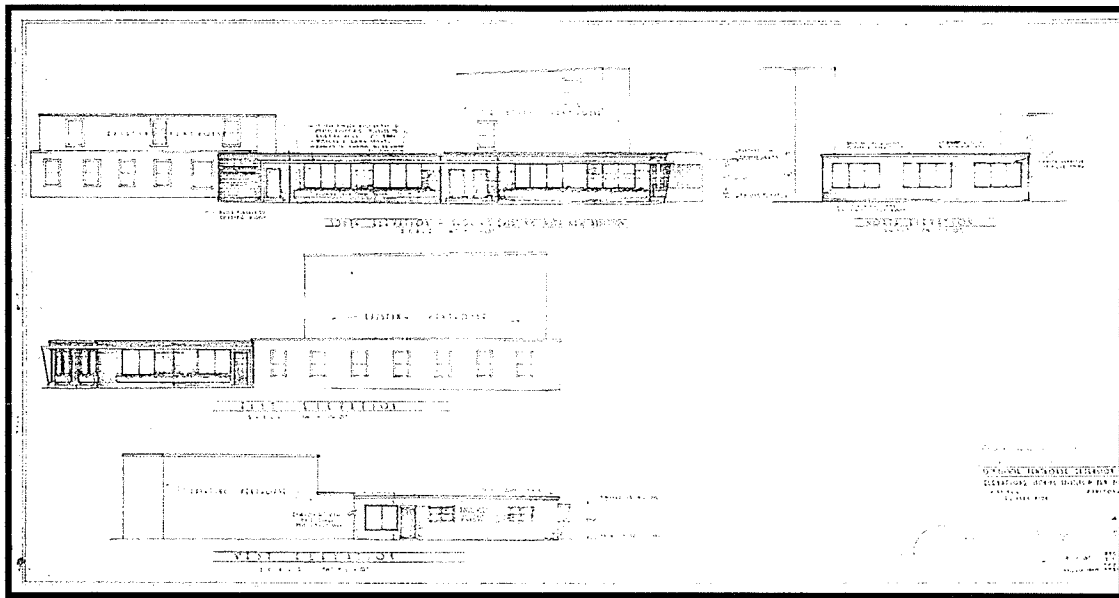


Figure A-36 1948 9th Floor Penthouse Extension Elevations, blueprint reduced from 1/16"=1' compliments of City of Winnipeg Archives.

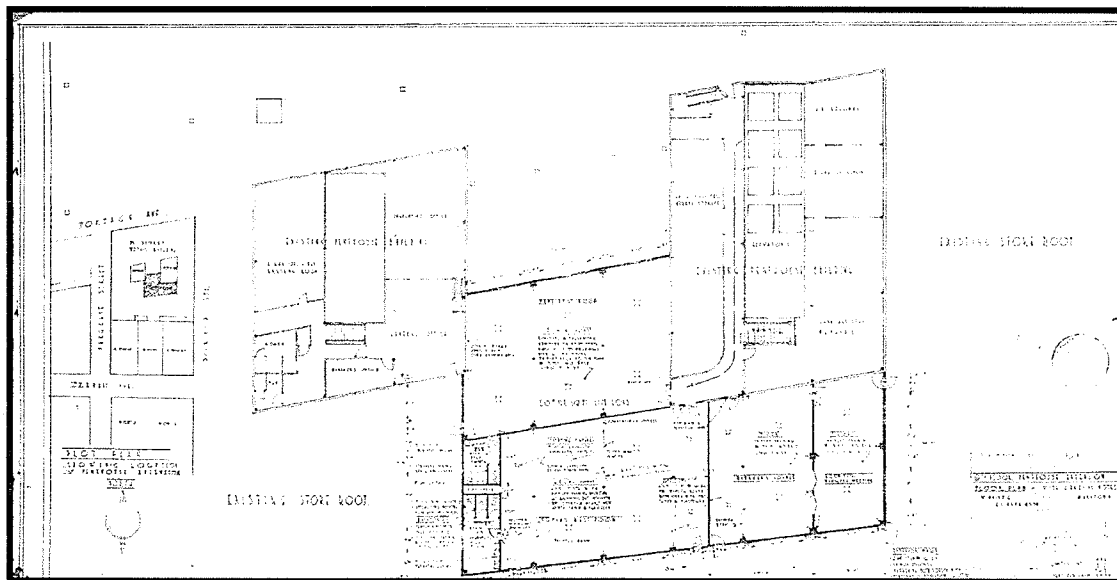


Figure A-37 Existing 1948 Roof 9th Floor Penthouse Extension Floor Plan, blueprint reduced from 1/16"=1' compliments of City of Winnipeg Archives.



Photo No. A1, Proposed Cross Over Graham, 1916 Eaton Archives

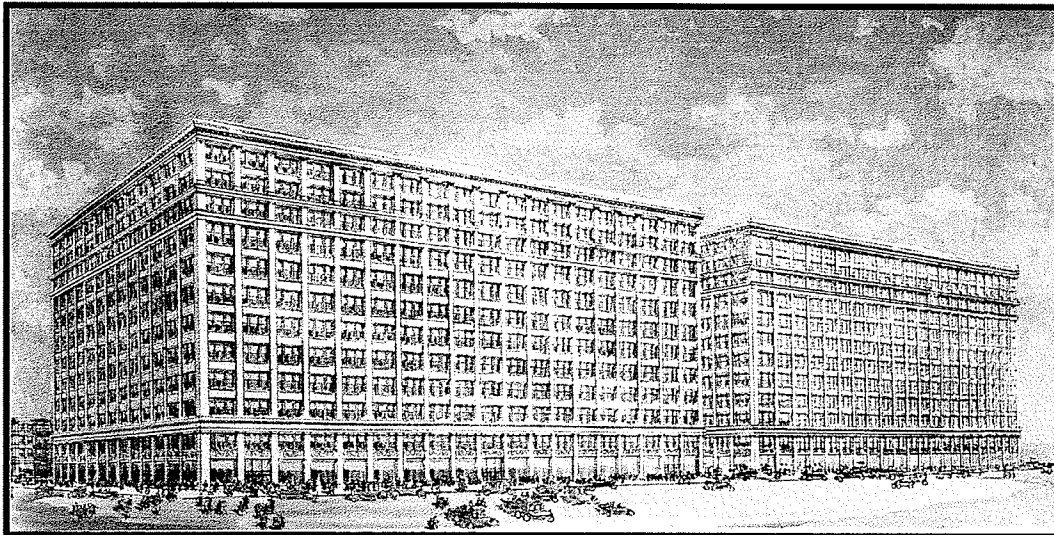


Photo No. A2, Original Drawing Proposed Extension 1916 Eaton Archives, Province of Ontario, with permission from Sears Canada Corporation.



Photo No. A3, Original Drawing Proposed 1916 Eaton Archives, Province of Ontario Archives, with permission of Sears Canada Corporation.

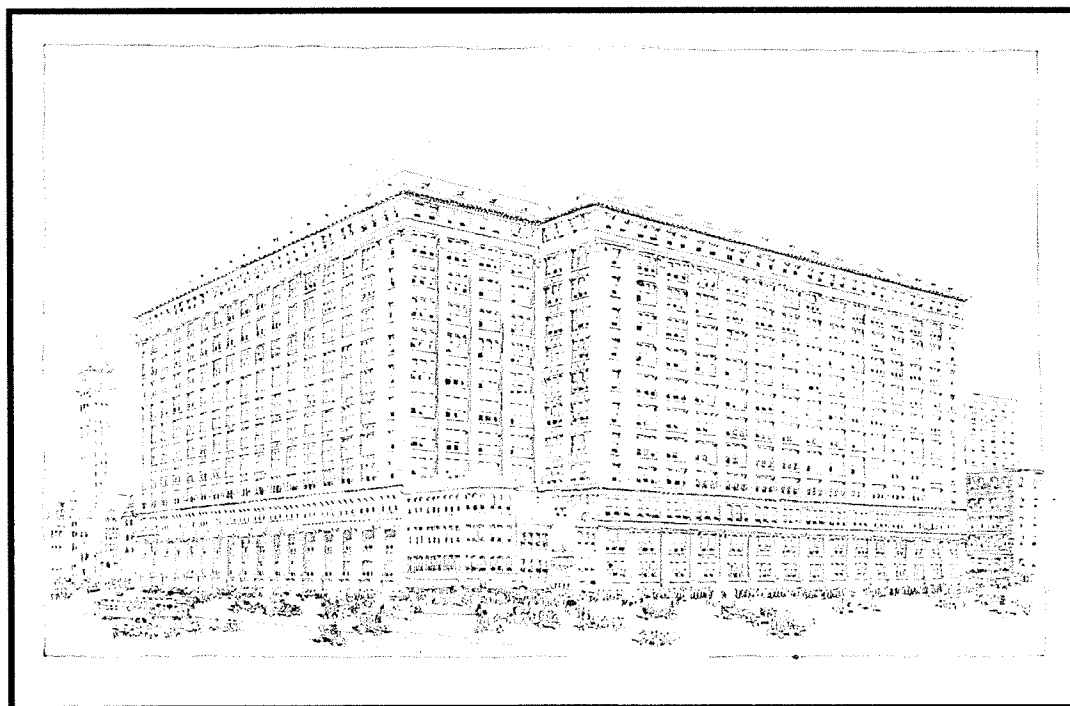
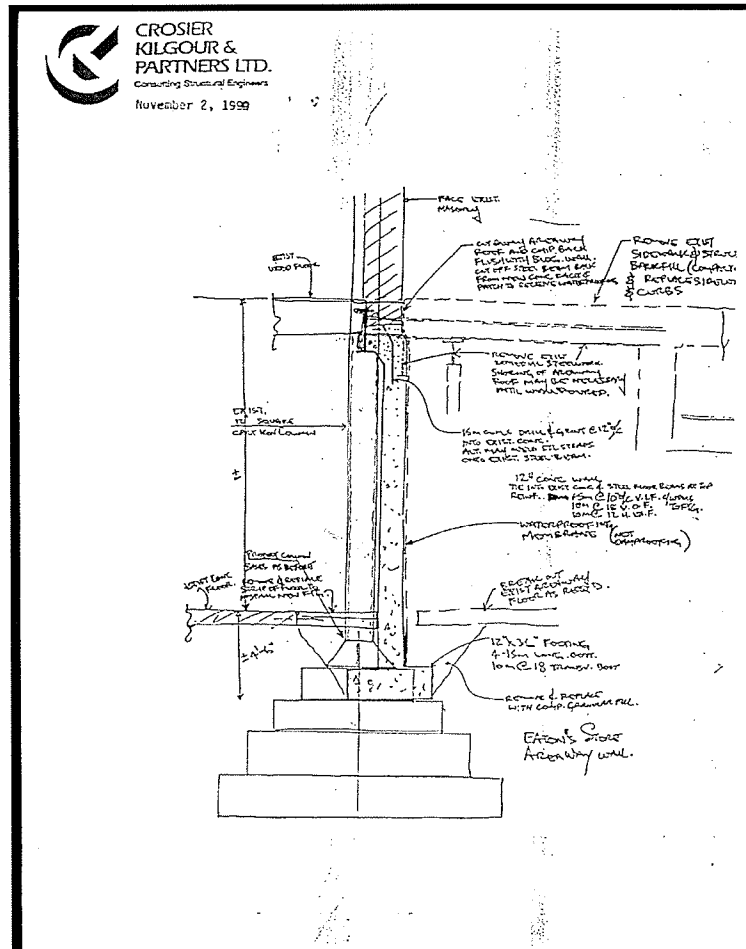


Photo No. A4, proposed expansion original drawing Eaton Archives, Province of Ontario with permission From Sears Canada Corporation. 1946 (not dated). F-229-500-2-60 AO S409

Stepped foundation Eaton Building and proposed changes and upgrades for development purposes.



Compliments of No. Ten Architects in a proposal to Osmington Development Corporation, 1998.

APPENDIX II

COMMON NAME	BOTANICAL NAME	SOIL MIX										LIGHT	WATER	TEMPERATURE		HUMIDITY	PROPAGATION
		1	2	3	4	5	6	7	8	9	10			11	12		
Acalypha	Acalypha	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Cuttings in fall
Achimenes	Achimenes	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Pinzame division, seed, short cuttings
Acorus	Acorus	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Division in spring or fall
African hemp	Sporanthes africana	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Cuttings
African violet	Sanpaulia	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seeds, leaf cuttings, division
Agapanthus	Agapanthus	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Division in early spring
Allamanda	Allamanda	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Cuttings of half-ripened stems in spring
Amaryllis	Hipecastrum	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Remove offsets at potting time, see spring seed
Anemone	Anemone	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed or offsets
Angelanthus	Angelanthus	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed or root division
Anthurium	Anthurium	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Cuttings or offsets
Asclepi plant	Neomenna gracilis	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Division of rhizomes

COMMON NAME	BOTANICAL NAME	SOIL MIX										LIGHT	WATER	TEMPERATURE		HUMIDITY	PROPAGATION
		1	2	3	4	5	6	7	8	9	10			11	12		
Aralia	Dryopteris elegantissima, also see Polycyzus and Falsia	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Cuttings
Ardisia	Ardisia	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed or cuttings
Asparagus fern	Asparagus	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed or clump division
Aspidistra	Aspidistra	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Division of roots in late winter or spring
Aucuba	Aucuba japonica	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed or cuttings
Atropa	Atropa	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Stem cuttings
Baby's tears	Heliconia	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Division of clumps or cuttings
Bambusa	Bambusa	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Division of large clumps
Batwing tree	Frythia rostrata	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed
Begonia	Begonia rex, Begonia semperflorens, Rhizomatous species, Fibrous rooted, cane species, Tuberous rooted species, and Fibrous-rooted species	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Cuttings or seed
Bird of Paradise	Strelitzia	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Division of rhizomes, remove suckers in spring
Bougainvillea	Bougainvillea	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed in spring or cuttings of half-ripe wood
Bromeliad	Bromelia	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Remove offsets
Pinapple	Ananas	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Root top of fruit
Burpee's	Burpee's	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Detach suckers
Earth stars	Cryptanthus	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Remove offsets
Living vase or Flaming sword	Neoregelia	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Detach suckers
	Vriesea	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Remove suckers or plantlets
Brassia (Schiffneria)	Brassia	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Cuttings of half-ripened stems
Cactus	Aporocactus, Astrophytum, Cephalocereus, Chamaecereus, Cleistocactus, Echinocactus, Echinocereus, Echinopsis, Gymnocalycium, Lodia, Mammillaria, Neolacoccus	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Offsets or cuttings

COMMON NAME	BOTANICAL NAME	SOIL MIX										LIGHT		WATER		TEMPER.		HUMIDITY		PROPAGATION
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
	Opuntia; Pereskia; Rebutia																			
	Ephiphyllum; Hylocereus; Selenicereus	*										*	*	*	*	*	*	*	*	Cuttings in summer
	Schlumbergera; and Zygocactus	*										*	*	*	*	*	*	*	*	Cuttings
Caladium	Caladium	*										*	*	*	*	*	*	*	*	Divide tubers, clumps in spring
Calceolaria	Calceolaria	*										*	*	*	*	*	*	*	*	Seed in April
Calla lily	Zantedeschia	*										*	*	*	*	*	*	*	*	Seed or offset
Camelia	Camellia japonica	*										*	*	*	*	*	*	*	*	Cuttings of current season's new
Chinese evergreen	Azalea	*										*	*	*	*	*	*	*	*	Root stems
Chlorophytum (Spider)	Chlorophytum	*										*	*	*	*	*	*	*	*	Remove aerial letts or division
Chrysanthemum	Chrysanthemum	*										*	*	*	*	*	*	*	*	Cuttings
Cineraria	Senecio cruentus	*										*	*	*	*	*	*	*	*	Seed in summer
Citrus	Citrus	*										*	*	*	*	*	*	*	*	Cuttings of half ripened wood in spring
Clematis	Clematis	*										*	*	*	*	*	*	*	*	Seed, layering, division, cuttings, grafting
Clerodendrum	Clerodendrum	*										*	*	*	*	*	*	*	*	Cuttings of half ripened wood or remove suckers
Climo	Climo	*										*	*	*	*	*	*	*	*	Division
Cobra plant	Darlingtonia californica	*										*	*	*	*	*	*	*	*	Seed or shoot in summer
Coccoloba (Sourgrape)	Coccoloba	*										*	*	*	*	*	*	*	*	Seed, layering, cuttings
Coffee	Coffea	*										*	*	*	*	*	*	*	*	Seed or wood cuttings
Coler	Coler blumer	*										*	*	*	*	*	*	*	*	Seed or stem cuttings
Columnea	Columnea	*										*	*	*	*	*	*	*	*	Tip cuttings or
Creeping Charlie	Pilea nummularifolia (also see Plectranthus)	*										*	*	*	*	*	*	*	*	Cuttings

COMMON NAME	BOTANICAL NAME	SOIL MIX										LIGHT		WATER		TEMPER.		HUMIDITY		PROPAGATION
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Creeping fig	Ficus pinnata or Fraxinosa	*										*	*	*	*	*	*	*	*	Cuttings
Crossandra	Crossandra	*										*	*	*	*	*	*	*	*	Seed or tip cuttings
Croton	Codiaeum	*										*	*	*	*	*	*	*	*	Cuttings
Cup-and-saucer vine	Cobaea scandens	*										*	*	*	*	*	*	*	*	Seed
Cyclamen	Cyclamen	*										*	*	*	*	*	*	*	*	Seed
Cyperus	Cyperus	*										*	*	*	*	*	*	*	*	Division
Cycas fern or palm	Cycas	*										*	*	*	*	*	*	*	*	Seed or dormant suckers
Daffodil	Daffodil	*										*	*	*	*	*	*	*	*	Stem cuttings or layering
Diplazenia	Diplazenia splendens	*										*	*	*	*	*	*	*	*	Stem cuttings or seed
Dracaena	Dracaena	*										*	*	*	*	*	*	*	*	Stem cuttings, layering, root division
	Picramnia	*										*	*	*	*	*	*	*	*	Stem cuttings, layering, root division
Easter lily	Lilium longitaurum	*										*	*	*	*	*	*	*	*	Plant bulbs
Euonymus	Euonymus	*										*	*	*	*	*	*	*	*	Cuttings of half ripened wood in fall or winter
Elaeagnus	Elaeagnus	*										*	*	*	*	*	*	*	*	Cuttings in spring
Fatsioidora	Fatsioidora latifolia	*										*	*	*	*	*	*	*	*	Cuttings
Fatsia	Fatsia japonica	*										*	*	*	*	*	*	*	*	Cuttings of branches
Ferns: Bird's nest	Asplenium	*										*	*	*	*	*	*	*	*	Remove offsets or root plantlets
Boston or sword	Nephrolepis	*										*	*	*	*	*	*	*	*	Division of clumps
Bear's paw	Polygodium	*										*	*	*	*	*	*	*	*	Division of clumps
Holly	Cytisium	*										*	*	*	*	*	*	*	*	Rhizome division
Maidenhair	Adiantum	*										*	*	*	*	*	*	*	*	Division of clumps
Miniature	Polystichum	*										*	*	*	*	*	*	*	*	Division
Rabbit's-foot	Davallia	*										*	*	*	*	*	*	*	*	Rhizome division
Staghorn	Platycodon	*										*	*	*	*	*	*	*	*	Remove offsets
Table or brake	Pteris	*										*	*	*	*	*	*	*	*	Division
Ficus or fig	Ficus	*										*	*	*	*	*	*	*	*	Air layering
Fittonia	Fittonia	*										*	*	*	*	*	*	*	*	Tip cuttings
Flame violet	Episcia	*										*	*	*	*	*	*	*	*	Root stolons

COMMON NAME	BOTANICAL NAME	CULTURE										PROPAGATION
		SOIL MIX	LIGHT	WATER	TEMPERATURE	HUMIDITY	PROPAGATION	PROPAGATION	PROPAGATION	PROPAGATION	PROPAGATION	
Flowering maple	<i>Abutilon</i>	•	•	•	•	•	•	•	•	•	•	Stem cuttings
Flowering tobacco	<i>Nicotiana</i>	•	•	•	•	•	•	•	•	•	•	Seed
Fragrant gladiolus	<i>Acidanthera</i>	•	•	•	•	•	•	•	•	•	•	New combs in spring
Freesia	<i>Freesia</i>	•	•	•	•	•	•	•	•	•	•	Seed or offsets
Fuchsia	<i>Fuchsia</i>	•	•	•	•	•	•	•	•	•	•	Cuttings in spring
Gardenia	<i>Gardenia</i>	•	•	•	•	•	•	•	•	•	•	Cuttings of half ripened wood
Gerbera	<i>Gerbera</i>	•	•	•	•	•	•	•	•	•	•	Cuttings
Geranium	<i>Pelargonium</i>	•	•	•	•	•	•	•	•	•	•	Cuttings
Ginger	<i>Alomum</i>	•	•	•	•	•	•	•	•	•	•	Clump division
Spiral	<i>Oxalis</i>	•	•	•	•	•	•	•	•	•	•	Clump division in spring
	<i>Curcuma</i>	•	•	•	•	•	•	•	•	•	•	Division of tubers in spring
Ginger lilies	<i>Hedychium</i>	•	•	•	•	•	•	•	•	•	•	Division of tubers at rest time
Peacock plant	<i>Kaempferia</i>	•	•	•	•	•	•	•	•	•	•	Seed or clump division
Commercial ginger root	<i>Zingiber</i>	•	•	•	•	•	•	•	•	•	•	Division of rhizomes in spring
Gloxinia	<i>Gloxinia</i>	•	•	•	•	•	•	•	•	•	•	Seed or tuber division
Gloxinia	<i>Sinningia</i>	•	•	•	•	•	•	•	•	•	•	Seed, leaf or stem cuttings, tuber division
Gynura	<i>Gynura</i>	•	•	•	•	•	•	•	•	•	•	Cuttings
Haemanthus	<i>Haemanthus</i>	•	•	•	•	•	•	•	•	•	•	Remove offsets when repotting
Hawaiian ti	<i>Cardinalis terminalis</i>	•	•	•	•	•	•	•	•	•	•	Stem cutting, layering, root division
Hibiscus	<i>Hibiscus</i>	•	•	•	•	•	•	•	•	•	•	Stem cuttings
Homalomena	<i>Homalomena</i>	•	•	•	•	•	•	•	•	•	•	Stem cuttings
Hydrangea	<i>Hydrangea</i>	•	•	•	•	•	•	•	•	•	•	Stem cuttings
Hypoestes	<i>Hypoestes</i>	•	•	•	•	•	•	•	•	•	•	Seed or cuttings
Impatiens	<i>Impatiens</i>	•	•	•	•	•	•	•	•	•	•	Cuttings
Ilex	<i>Ilex</i>	•	•	•	•	•	•	•	•	•	•	Cuttings
Ivy, English	<i>Hedera helix</i>	•	•	•	•	•	•	•	•	•	•	Cuttings
Ixia	<i>Ixia</i>	•	•	•	•	•	•	•	•	•	•	Bulb offsets

COMMON NAME	BOTANICAL NAME	CULTURE										PROPAGATION
		SOIL MIX	LIGHT	WATER	TEMPERATURE	HUMIDITY	PROPAGATION	PROPAGATION	PROPAGATION	PROPAGATION	PROPAGATION	
Ixora	<i>Ixora</i>	•	•	•	•	•	•	•	•	•	•	Strong cuttings
Jatropha	<i>Jatropha</i>	•	•	•	•	•	•	•	•	•	•	Seed or cuttings
Jerusalem cherry	<i>Solanum</i>	•	•	•	•	•	•	•	•	•	•	Seed
Jessamine, night-blooming	<i>Cestrum nocturnum</i>	•	•	•	•	•	•	•	•	•	•	Cuttings
Joseph's coat	<i>Alternanthera</i>	•	•	•	•	•	•	•	•	•	•	Cuttings
King's crown	<i>Jacobina carnea</i>	•	•	•	•	•	•	•	•	•	•	Cuttings
Leopard plant	<i>Ligularia lusitana</i>	•	•	•	•	•	•	•	•	•	•	Dividing plants with more than one crown
Limpopos or city lily	<i>Guthriea</i>	•	•	•	•	•	•	•	•	•	•	Division
Lupatock vine	<i>Aschynanthus</i>	•	•	•	•	•	•	•	•	•	•	Stem or tip cuttings
Miniature rose	<i>Rosa</i>	•	•	•	•	•	•	•	•	•	•	Seed or cuttings
Mentibella	<i>Oreocarya</i>	•	•	•	•	•	•	•	•	•	•	Seed or offsets
Myrtle	<i>Myrtus communis</i>	•	•	•	•	•	•	•	•	•	•	Cuttings of ripened wood
Nandina	<i>Nandina</i>	•	•	•	•	•	•	•	•	•	•	Stem cuttings
Norfolk island pine	<i>Araucaria excelsa</i>	•	•	•	•	•	•	•	•	•	•	Seed or root tips of old plants
Oleander	<i>Nerium oleander</i>	•	•	•	•	•	•	•	•	•	•	Cuttings of firm tip growth in spring or summer
Orchid	<i>Breissavella</i>	•	•	•	•	•	•	•	•	•	•	Division in late winter
	<i>Cattleya</i>	•	•	•	•	•	•	•	•	•	•	Division in late winter
Swan	<i>Cynoches</i>	•	•	•	•	•	•	•	•	•	•	Division in spring or summer
	<i>Epidendrum</i>	•	•	•	•	•	•	•	•	•	•	Air layering or division in spring
Tiger	<i>Odontoglossum</i>	•	•	•	•	•	•	•	•	•	•	Division in spring or summer
Butterfly	<i>Oncidium</i>	•	•	•	•	•	•	•	•	•	•	Division in spring
Lady slipper	<i>Paphiopedilum</i>	•	•	•	•	•	•	•	•	•	•	Division in spring
Dogwood or moth	<i>Phalaenopsis</i>	•	•	•	•	•	•	•	•	•	•	Division in spring
Oxalis	<i>Oxalis</i>	•	•	•	•	•	•	•	•	•	•	Offsets or division
Palms, Bamboo	<i>Chamaedorea</i>	•	•	•	•	•	•	•	•	•	•	Seed or remove suckers
Butterfly	<i>Chrysanthemum</i>	•	•	•	•	•	•	•	•	•	•	Seed or clump division in spring

COMMON NAME	BOTANICAL NAME	SOIL MIX										LIGHT	WATER	TEMPERATURE	HUMIDITY	PROPAGATION
		1	2	3	4	5	6	7	8	9	10					
Date	Phoenix	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed or remove suckers
Fan	Chamaerops	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed or suckers
	Licuala	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed or suckers
	Livistona	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed or suckers
	Itaphis	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed or suckers
Finchall	Caryota	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed in March
Pandanus	Pandanus	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Remove suckers
Passion flower	Passiflora	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed or cuttings
Heliconia	Heliconia	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Cuttings
Peperomia	Peperomia	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Stem or leaf cuttings
Philodendron	Philodendron	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Stem cuttings or offsets
Pilea (Aitilly, Aluminum, Moon Valley)	Pilea	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Cuttings
Pittosporum	Pittosporum	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Cuttings of half-ripened wood
Plectranthus (Swedish Ivy)	Plectranthus	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed or stem cuttings
Podocarpus	Podocarpus	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed or ripened wood cuttings
Polyscias	Polyscias	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Cuttings
Prayer plant	Marantha	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Division
Pregnant onion	Ornithogalum caudatum	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Remove offsets
Primula	Primula	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed
Privet	Ligustrum	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Stem cuttings
Pyracantha	Pyracantha	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Soft wood cuttings in early summer
Radar plant	Desmodium gyrans	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed in February
Ranunculus	Ranunculus	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed in March - roots in autumn
Redwood burl	Sequoia sempervirens	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Plantlets can be rooted
Resurrection plant	Selaginella lepidophylla	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Purchase in dried form

COMMON NAME	BOTANICAL NAME	SOIL MIX										LIGHT	WATER	TEMPERATURE	HUMIDITY	PROPAGATION
		1	2	3	4	5	6	7	8	9	10					
Rhododendron	Rhododendron	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Stem cuttings
Rhodo (Mosses in the Cradle)	Rhodo	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Remove offset or transplant seedlings from parent
Rosary vine	Ceropegia woodii	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Cuttings or plant bulb-lets along stems
Sansevieria	Sansevieria	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Division of rootstock or leaf cuttings
Saxifraga	Saxifraga	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Remove young plants
Scindapsus	Scindapsus aureus	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Cuttings
Selaginella	Selaginella	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Cuttings
Sensitive plant	Mimosa pudica	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed or transplants
Shoofly plant	Nicandra physalodes	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed
Shower plant	Cassia	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed
Shrimp plant	Beloperone guttata	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Cuttings
Spathiphyllum	Spathiphyllum	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Division of rootstock
Stephanotis	Stephanotis floribunda	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Cuttings of half mature stems in spring
Succulents	Agave	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Remove offsets
Century plant	Aloe	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed or offsets
Ice plant	Aptenia	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Stem cuttings
Pony tail	Beaucarnea	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Remove offset
	Burkea	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Remove offsets
Properia, rattlesnake, scarlet paintbrush, etc.	Crassula	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed or cuttings
	Fischeria	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Offsets or stem cuttings
Poinsettia, Crown of thorns, etc.	Euphorbia	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Cuttings
Tiger jaws	Faucaria	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed or cuttings
Baby toes	Froststrano	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed or cuttings
Ch. tongue	Gasteria	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Seed or offsets

COMMON NAME	BOTANICAL NAME	SOIL MIX										LIGHT	WATER	TEMPER		HUMIDITY		PROPAGATION
		1	2	3	4	5	6	7	8	9	10			Average	Range	Low	High	
Zebra or wart	<i>Haworthia</i>	*										*	*	*	*	*	*	Seed or offsets
	<i>Kalanchoe</i>	*										*	*	*	*	*	*	Putting plantlets, send, or tip cuttings
Living stones, stone face	<i>Lithops</i>		*	*								*	*	*	*	*	*	Seed in spring
	<i>Pachyveria</i>	*										*	*	*	*	*	*	Offsets or stem cuttings
Devil's backbone	<i>Pedilanthus</i>	*										*	*	*	*	*	*	Cuttings in spring
Mistletoe cactus	<i>Rhipsalis</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Cuttings
	<i>Sesuv</i>	*										*	*	*	*	*	*	Offsets in autumn
Donkey's tail, coral beads, etc.	<i>Sedum</i>	*										*	*	*	*	*	*	Seed, cuttings or this soil
Starfish flower	<i>Stapelia</i>	*										*	*	*	*	*	*	Division or cuttings in late spring or summer
Sinno of pearls	<i>Sesuv rowleyanus</i>	*										*	*	*	*	*	*	
Sweet olive	<i>Osmanthus fragrans</i>	*										*	*	*	*	*	*	Cuttings of half-ripened wood in summer
Tibouchina	<i>Tibouchina</i>	*										*	*	*	*	*	*	Cuttings
Tolmie (Piggy back)	<i>Tolmie</i>	*										*	*	*	*	*	*	Pin baby plants into damp soil
Tulbaghia	<i>Tulbaghia</i>	*										*	*	*	*	*	*	Offsets in spring or fall
Voodoo plant	<i>Hydrosme rivieri</i>	*										*	*	*	*	*	*	Remove offsets from tuber
Walking iris	<i>Neomarica northiana</i>	*										*	*	*	*	*	*	From small plants formed by flowers
Wandering Jew	<i>Gibasis</i>	*										*	*	*	*	*	*	Cuttings anytime
	<i>Setcreasea</i>	*										*	*	*	*	*	*	Cuttings anytime
	<i>Tradescantia</i>	*										*	*	*	*	*	*	Cuttings anytime
	<i>Zebina</i>	*										*	*	*	*	*	*	Cuttings anytime
Yesterday, Today, and Tomorrow	<i>Burtelezia calycina</i>	*										*	*	*	*	*	*	Cuttings
Zebra plant	<i>Aphelandra</i>	*										*	*	*	*	*	*	Tip cuttings in spring

Source: House Plants: Indoors/Outdoors"; Ortho Books, Ortho Div of Chevron Chemical Co., San Francisco, 1974, quoted in Environmental Interiorscapes, Stuart Snyder.

IAO Commercial & Residential Risk Services

A Division of Insurers' Advisory Organization (1989) Inc.

September 27, 2001

Kathleen Bolton
Faculty of Architecture (student)
University of Manitoba
Winnipeg MB

Dear Kathleen:

RE: Use of IAO Fire Insurance Maps

Regarding your email of September 26th, I have the following comments on the above referenced subject being our Sheet #105 of our plans dated 1918, 1927 and 1955 for the City of Winnipeg.

We have no objection to you or your representatives using the maps for the purpose mentioned in your letter. This permission is granted on the understanding that use of the maps by you or your agents is for non-commercial purposes and that the following acknowledgement is made:

"Reproduced with the permission of Insurers' Advisory Organization Inc.
who are copyright holders of these plans."

Please feel free to give me a call if you have any questions or require further clarification of our position.

Yours truly,

Richard Adey
Winnipeg Customer Service Centre

CC: Kara Kwan, Manitoba Provincial Archives

RA:lg

Apt. 212, 2965 Pembina Hwy,
Winnipeg, Man. R3T 2H5
September 26, 2001.

Insurance Advisors Organization,
Room 303,
428 Portage Ave.,
Winnipeg, Manitoba.

ATTENTION: Mr. Richard Adey.

Dear Mr. Addie,

RE: Insurance Reports, Eaton Building, Thesis Material.

My name is Kathleen Bolton, and I am currently a student with the Faculty of Architecture, University of Manitoba. My thesis is the Eaton Building - I have been working on this since January of 2000 but only in earnest since March of 2001. I have been to the Eaton Archives in Toronto, Ontario and have accessed several thousand files of which will prove to be immense help in my research.

Currently I am in the process of making sure that I have not missed any information that may be relevant to my thesis, my reason for contacting you. Ms. Kara Kwan of the Provincial Archives of Manitoba has informed me that I require written permission to copy any insurance records for research purposes. The sheets that I am requesting are as follows: involving three series of time periods - Sheet 105, Vol 1., 1918, with Revisions Jan. 1927, and Dec. 1955.

Thank you for assistance in this matter. Kara has also advised me that you may fax the letter of authorization to her directly,
Should you require any further information from myself
you may contact me :

Sincerely

Kathleen Bolton



EXECUTIVE OFFICES

July 31, 2001

Ms. Kathleen Bolton
Apt 212-2965 Pembina Highway
Winnipeg, Manitoba
R3T 2H5

Dear Ms. Bolton:

RE: T. Eaton Records, Winnipeg Store

This will acknowledge receipt of your letter of June 29, 2001 addressed to Mr. Salvatore
Frisina of Sears Canada Inc.

This letter will provide you with permission to copy the drawings noted in your letter of
June 29, 2001 for research purposes.

We trust this is satisfactory.

Yours very truly,

SEARS CANADA INC.

Sharon M. Landry
Manager, Trade-marks
and Administrative Services
Legal Services - D/766
Phone: (416) 941-3481
Fax: (416) 941-2321

SML:nmb

June 29, 2001.

Mr. Salvatore Frisina,
Legal Counsel,
Sears Canada Inc.,
Department #766 Legal Services,
222 Jarvis Street,
Toronto, Ontario M5B 2B8

Dear Mr. Frisina,

RE: T. Eaton Records, Winnipeg Store, Portage Ave.

Please consider this my request for a letter of permission to copy the above-mentioned records for research purposes.

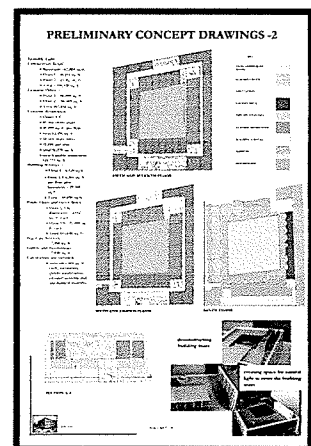
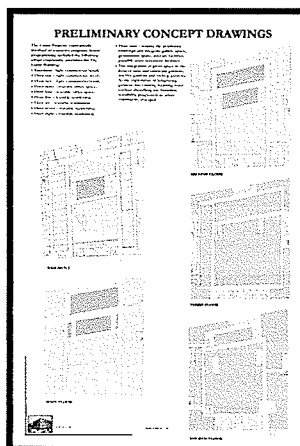
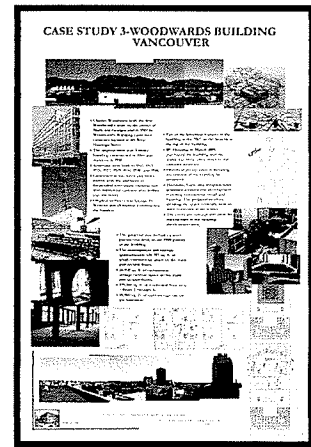
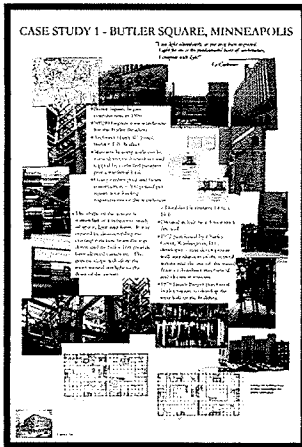
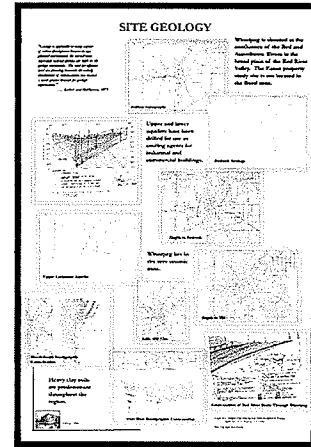
I am currently a graduate student with the Faculty of Architecture, University of Manitoba, Landscape. The Eaton Building, 320 Portage Avenue, Winnipeg, is my thesis project. The proposal represents a study in Urban Fabric to create a mixed use project to revitalize the downtown core of Winnipeg. Programming will include light commercial, entertainment, office space, housing and atria leading onto roof gardens. In order to complete my project it is of utmost importance that I acquire original drawings.

I would greatly appreciate your grant of permission to copy the required drawings from the Archives of Ontario. Included in the set are the following: Winnipeg Drawing Site Plan, Winnipeg Drawing Key Plan, Winnipeg Property Company Property Plan, Winnipeg Property Main Store Plan, Winnipeg Property Building Perspective Site Plan, (all 500 series), Winnipeg Property Building Perspective approx. Ca. 1918 (300 series), and from the textual records Winnipeg Building Construction Floor Plan, Winnipeg Building Construction Floor Plan (1935-1936), Winnipeg Building (appears to be 6th floor Plan), Winnipeg Building Basement Plan (1935-1936) which represent changes in the building.

Thank you for your anticipated cooperation in this matter and a speedy reply would be extremely appreciated.


Kathleen Bolton

PRESENTATION BOARDS



Power Point Presentation

PHOENIX RISING



Kathleen M. Polton
BS, M.A., C.F.A.

Masters of Landscape Architecture
December, 2002

This presentation is dedicated to
Professor Carl Nelson

"What did you do that for?"

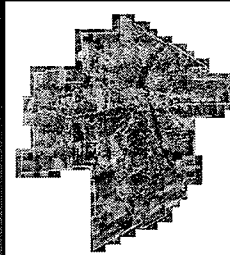
EATON GARDENS:
A Case Study of a Former Retail Property -
A Redesign to Provide a Prototype for
Revitalization of an Urban Core

"When a city's heart stagnates, the city as
a whole falters at producing something
greater, socially, culturally, and
economically, than the sum of its
separate parts."

Jane Jacobs

City of
Winnipeg

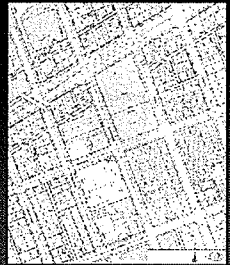
Aerial
Photo
Urban
Sprawl



- The downtown core is undergoing urban decline
- The Eaton Property was empty when the study began, is centralized and provides an opportunity for redevelopment
- A mixed use development would benefit the downtown core and provide a prototype for other North American Cities


- Building Recycling
- Effective Use of Resources
- Redesign of a green building

Site Plan
of the
immediate
area of
The
Eaton
Property


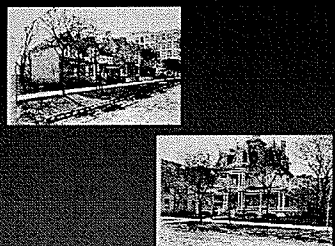


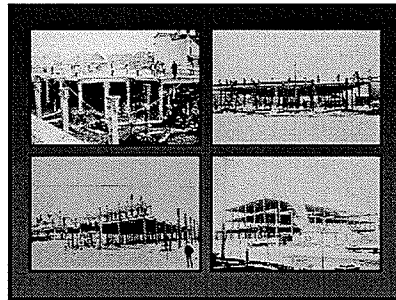
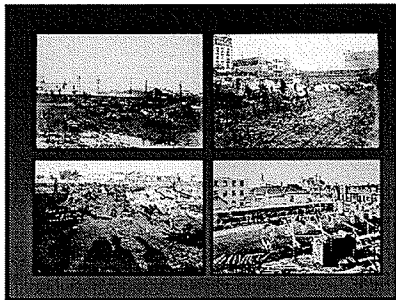
Case Studies

- Butler Square, Minneapolis, 1906
- Queens Quay, Toronto, 1926, 1927
- Woodward's building, Vancouver, 1908



**HISTORY OF THE
EATON PROPERTY**
320 PORTAGE AVENUE



Last Brick Placed
Five Floors July 1905 for
the opening on July 17.



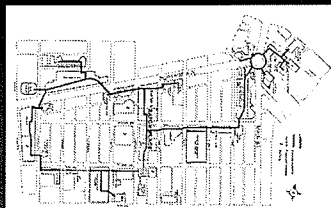
The Eaton Building 1906



The Eaton Property 1926



AREA MAP



PROPOSAL

The Proposal then began with an investigation from within the building and
outside without.

- Lower Level Commercial: Retail
- Main Floor Commercial: Retail
- Second Floor Commercial: Retail
- Third and Fourth Floor: Office
- Fifth Floor: Housing starts here
- Sixth, Seventh and Eighth: Housing
- Ninth: Rooftop Gardens

CONCLUSIONS

- The downtown core would benefit from a mixed-use development.
- The project is feasible within the constraints of the building envelope.
- Future planning incentives may rethink some of the downtown Heritage decisions.
- Development should include interior landscape gardens.
- The entire downtown area can benefit from an intricate green roof system, socially, culturally and environmentally.

THANK YOU

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