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**reclaiming winnipeg's history : it begins at the  
forks  
a design proposal**

**kathryn brown**

A Master's Degree Project submitted to the Faculty of Environmental Design in  
partial fulfillment of the requirements for the degree Master of Environmental  
Design (Planning).

Calgary, Alberta

September 09, 1999

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**Canada**

**kathryn brown**  
**reclaiming winnipeg's history : it begins at**  
**the forks**  
**a design proposal**

**key words :** urban context, urban design, urban intervention, linkage, public space, historic precedence, harbourfront, rail lands and marketplace

## **abstract**

The junction of the Assiniboine River and the Red River was the cornerstone to Winnipeg's emergence and settlement patterns. The significance of the junction was forgotten during the modern development of the City's land patterns. As a result, the Forks became rail land and eventually an urban storage lot. After one hundred years the City of Winnipeg has an opportunity to recapture the significance of the Forks through redesign and redevelopment initiatives. The Forks North Portage Partnership recognizes the importance of an overall urban design strategy as a requirement for future development. Such a strategy should integrate with Winnipeg's downtown and bring back history, community and a place for enjoyment. The proposed design intervention introduces a reconsidered definition of the rail berm, one which removes the earth barrier and elevates it above a service street and public spaces, incorporating a higher density mixed use district immediately around it so as to create a new built edge. By virtue of its density and physical form, this edge allows for a vibrant new streetfront for Broadway Avenue and on the other side, an open space which continues to the waterfront. As a means of transition between the built edge and the natural waterfront, green spaces of a more formal nature are introduced.

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## **purpose and intent**

With the return of The Forks lands to the Province of Manitoba, the City of Winnipeg, and The Forks North Portage Partnership the future of the site is dependent upon an overall urban design strategy for new development. This MDP is a conceptual design proposal that suggests a governance for the programmatic usages and placements of this development.

The Forks is 56 acres of historically significant land. This proposal looks at the opportunities of introducing sustainable concepts that add new uses to the existing environment in such a manner that allows the opportunity to work, live and play in one place. My recommendations are based on scholastic planning experience and my familiarity with the site.

Development at the Forks occurs on a project by project basis. As a result there are some problems posed by each new situation making it difficult to accommodate future proposals. It seems logical that an overall scheme would help eliminate some of these problems. My objectives are simply: to introduce a more sustainable concept through mixed uses, add opportunities for more effective use of the environment and thirdly to link the site to the rest of the downtown. Presently the site is hidden from major landmarks that surround the site and has the potential of placing The Forks more firmly within the larger urban context. All three objectives require an extensive look at various design elements, such as mixed uses, public space, outdoor activity space, and indoor places, as well as an efficient movement and circulation systems.

## **method**

This MDP was developed primarily as a conceptual representation that attempts to solve broader problems that exist at the Forks site. Chapters One, Two and Three



include a synopsis of Winnipeg's history, the Forks site, and the managing body known as The Forks North Portage Partnership. It involves an analysis of the historical context, the guiding policies for future development and an assessment of users needs as expressed in articles, news paper editorials and observations made by The Forks North Portage Partnership.

Chapter Four documents a graphic analysis of the site. This analysis is important for understanding issues such as existing built form, linkages, circulation and view corridors. This analysis offers an evaluation based on opportunities and constraints of the site. This evaluation will provide a basis for placement of a design intervention which will capitalize on opportunities and overcome those factors identified as constraints.

Chapter Five briefly outlines the programme for new development identifying the issues in terms of objectives, principles and phases for development.

Chapter Six involves a precedent study for the understanding of similar environments and design solutions. This chapter outlines the architectural typology for the building mass as well as introducing the design concept. The design concept looks at the relationship between the existing Forks Market, the natural space, the water and the existing downtown.

Chapter Seven explores the design principles and what is required in the form of an intervention to meet the objectives outlined in Chapter five. Through examination of design elements including an architectural prototype, the existing market and the placement of the proposal as it relates to historical integrity, the design solution in Chapter Eight is logically derived from these principles.

The design solution rethinks the Forks site by using lands that have not been considered as part of Forks development. Such a solution would not only provide a framework for future development but would also introduce a case

study for the broader discussion of Canadian City cores divided by rail lands.  
The rethinking of the rail infrastructure attempts to reclaim the junction of the  
rivers and the origin of settlement in Winnipeg.

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## **chapter 1**

### **introduction to the mdp**

#### **1.1 background of winnipeg (context)**

The convergence of the Assiniboine and Red Rivers was a natural meeting and trading place that eventually supported settlement patterns that evolved to establish Winnipeg as it exists today.

see figure 1

According to the Forks Heritage Interpretive Plan, land use patterns have been categorized in terms of discrete historic periods that shaped and developed the Forks and Central Winnipeg:

#### ***Land patterns of the Native Precontact and early European-Canadian Exploration Eras :***

The land pattern of the Native Precontact and Early European Canadian Exploration Era emerged as a result of the junction of the two rivers. The junction, a transportation corridor, was an important element for determining the physical placement of activity. Settlement occurred on either side of this “water highway”.

see figure 2,3

#### ***The red river colony settlement pattern:***

This second land pattern occurred prior to officially legislated land formation. The lands on either side of the river were divided into long, narrow river lots. This formation of lots provided the impetus for road formation and actually influenced the road development pattern of downtown Winnipeg as exemplified by Portage Avenue and Main Street. At this time the Forks remained undeveloped and its boundaries were determined by the new surrounding road pattern formation.





fig. 1 aerial photo



fig. 2 the convergence

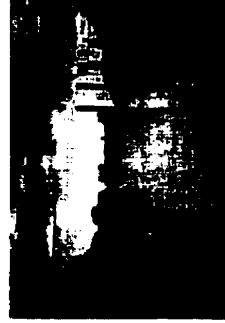


fig. 3 the red river

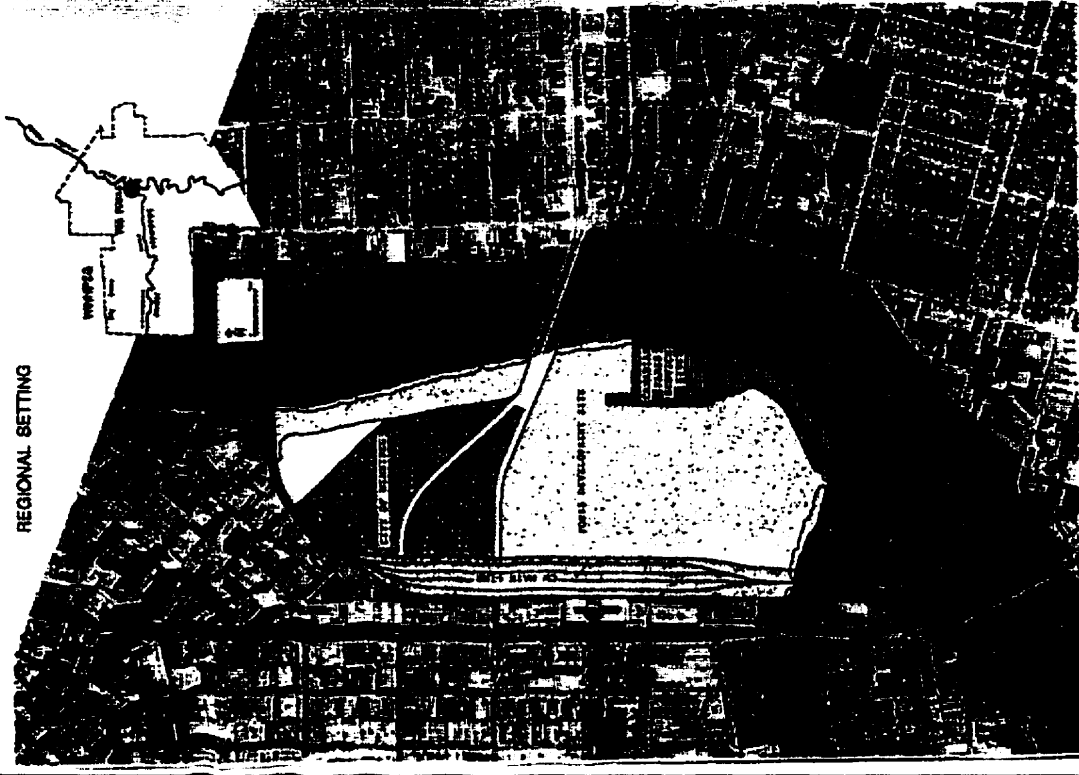


fig. 4 aerial photo

### ***The City of Winnipeg land survey and street patterns:***

The grid network was derived as an expansion of the previous land organization. The grid network marks the formal patterns of Winnipeg's configuration of streets in the downtown area. The street system of today relates directly back to the river pattern, the roads and the grid. However, the Forks remained unaffected by this pattern leaving it open for otherwise undifferentiated forms of development, such as that of the railway.

see figure 4

### ***The Railway development pattern:***

In 1874 rail facilities emerged and the Forks site became an urban industrial site. The railway development pattern was based on layouts for efficient industrial use. The introduction of the railway development pattern divided downtown Winnipeg from the Forks and significantly reduced the importance of the river junction.<sup>1</sup>

### **Current Development**

Winnipeg's recent growth patterns continued to expand outwards in all directions from the City Centre. The emphasis of Winnipeg's downtown is focused on the intersection of Portage and Main.

The most significant landmarks located within Downtown Winnipeg include: the Fort Garry Hotel, The Legislative Building, Union Station, the Exchange District, the intersection of Portage Avenue and Main Street and the St. Boniface Cathedral across the river.

## **1.2 background to the forks**

From the land patterns of the Native Precontact era to Current Development patterns, one observes a lack of recognizing the historical significance of the Forks through its adhoc development. However, the expansion of the CNR in 1905 likely has the most profound impact. When the rail berm was constructed it closed all visual linkage to the Forks site and created a definitive edge. As a result, the Forks 'meeting place' and active waterfront were cutoff from the rest of downtown Winnipeg. Even though the CNR began moving its operations out it was not until 1988 that this pattern of use changed when the lands were converted from private to public ownership.

In spite of the opportunity this presented, the lands met with many unsuccessful attempts at redevelopment of the area. "However, in 1987 the Federal and Provincial Governments and the City of Winnipeg approved a development mandate for the Forks Renewal Corporation. The Forks Renewal Corporation (FRC) then produced the phase one concept and financial plan, a 20 year plan which directed the first 5 years of the Forks development."<sup>2</sup> The FRC, now The Forks North Portage Partnership, now has a front seat in the future development of Winnipeg's most historic junction.

Concurrently, Parks Canada was able to develop a 9 acre greenway along the waterfront in order to maintain the rivers' edge.

**see figure 5**

The Centre for Environmental Design Research and Outreach believes that The Forks site has the potential of being "the front porch of Winnipeg.... a jewel in the crown of riverfront and open space..<sup>3</sup> The site has the potential for creating its own pattern for future development. For too long has the site been isolated from the activity of downtown.

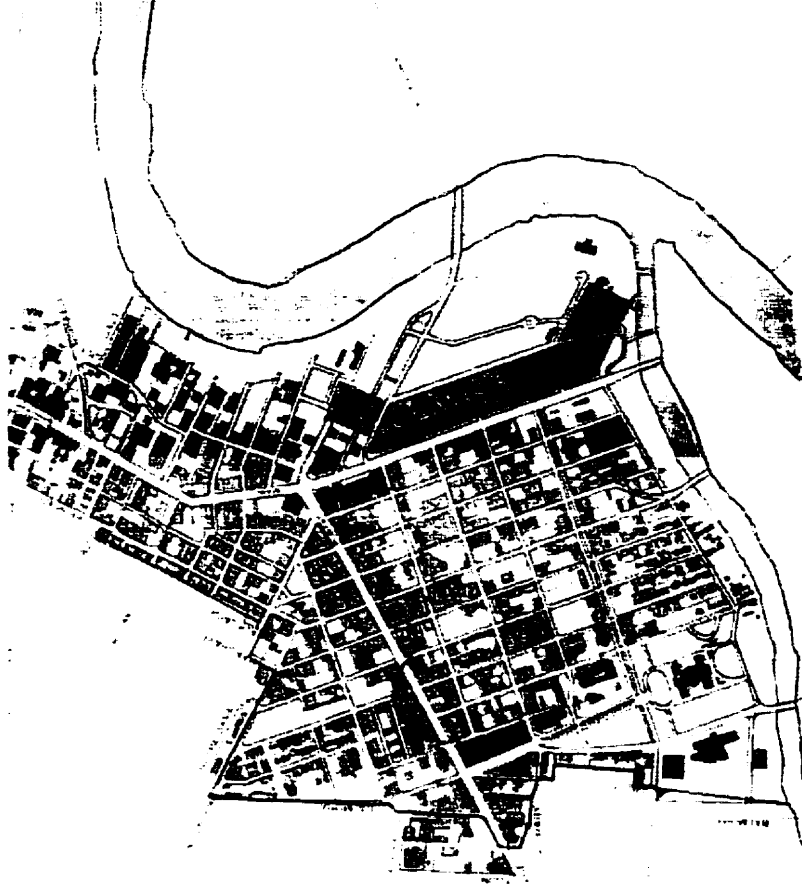


fig. 5 downtown winnipeg and the forks site

Today, more than 5 million visitors visit the Forks each year.<sup>4</sup> The site has the potential of bringing back history, community and a sense of place to Winnipeg's downtown.

fig. 6

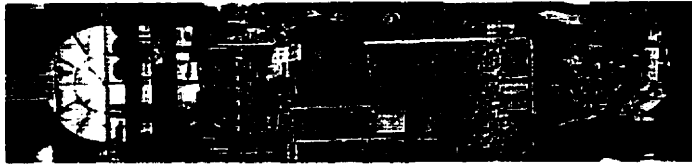


fig. 7



fig. 8



fig. 9



fig. 10



the existing environment

## **chapter 2**

### **the forks north portage partnership**

As a mandate from the Federal Government, Provincial Government and The City of Winnipeg, The Forks North Portage Partnership has been assigned the responsibility of managing future developments that will occur at the Forks.

According to the Forks North Portage Partnership Brochure, the following summarizes the Partnership's goals:

The Forks Renewal Corporation and the North Portage Corporation were merged in 1994 to enforce a combined effort at managing and enhancing Winnipeg's downtown. The Forks North Portage Partnership is responsible for managing future development on behalf of its shareholders: Canada, The Province of Manitoba and The City of Winnipeg.

The goals of the Forks North Portage Partnership are to create a meeting place. "... the Forks shall be developed as a 'meeting place', a special and distinct all season gathering and recreational place at the junction of the Red and Assiniboine rivers through a mixed use approach including recreational, historical and cultural, residential and institutional and supportive commercial uses....."<sup>5</sup>

see figures 6-10

see figure 11-14

Similarly, The Centre for Environmental Design Research and Outreach summarizes the Forks North Portage Partnership goals as:

.....to have a strong relationship between what is private and public. The downtown is in need of unique places that will enhance the downtown enabling it to become a vibrant place to visit and revisit. The Forks site can be a meeting place for historical purposes, for diverse groups of people and as a place that one can



Fig. 11



Fig. 12



Fig. 13

Fig. 14

by Kent Smith and  
Andrew Wallace

What makes a public space great? Perhaps the richness of design that creates multiple uses and functions in the same area. A great public space is one that is not just a place but a living organism that grows and changes with the needs of the community.

People have been meeting at the public space for many years, and it is a place that has become a part of the community's identity. The public space is a place where people can meet, talk, and share their experiences. It is a place where people can find a sense of belonging and community.

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# FORKS COMMERCE AND RECREATION



Fig. 14

The public space is a place where people can find a sense of belonging and community. It is a place where people can meet, talk, and share their experiences. It is a place where people can find a sense of belonging and community.

Fig. 15

Fig. 16



meet, work and play in at different times during the year.<sup>6</sup>

The Forks North Portage Partnership is also responsible to the 'people'. The Forks North Portage Partnership has been granted the privilege of revitalizing the area for the benefit of all users. Continued use of the site is achieved through a diverse range of mixed uses with a variety of attractions available all year round. Innovation will evoke surprise and satisfaction for continued success.

The site itself is unique and the Forks North Portage Partnership must answer a variety of questions that will set the criteria by which success is evaluated.

"How can the Forks strengthen the entire downtown?

How should the Forks be a special and unique place?

How can we recognize and celebrate the historical nature of the site?

What can be done to provide for public use on a year round basis?

What relative priority should each development component receive?

What other components should be considered?"<sup>7</sup>

## **2.1 the forks north portage partnerships planning strategies and guidelines**

The Forks North Portage Partnership has devised Planning and Development Guidelines for all future development at the Forks. These guidelines clarify and specify the requirements needed for each new proposal. They also enable both the applicants and the Forks North Portage Partnership to review and evaluate each proposal using standard criteria. This policy includes Planning Principles, Guiding Policies, Site Planning Framework and Themes for Future Development.

"Projects can evolve through a process of proposal submission and review with The Partnership. The partnership will also ensure that the site planning framework is adapted as the site evolves."<sup>8</sup>

The following sections are summarized from The Forks North Portage Partnerships Planning and Development Guidelines:

### **2.1.1 the forks north portage partnerships planning principles**

**connect to the past:** avoid replication, Interpretation should be creative, contemporary, and allow a sense of history.

**connect to the future:** promote innovation and excellence in design.

**connect to the city:** integrate The Forks with the surrounding environments.

**connect to the site:** provide an attractive environment for pedestrians and range of users.

**connect to the community:** offer project variety and create responsive ways of changing site conditions and user needs.

## **2.1.2 the forks north portage partnerships guiding policies**

### **Highlight heritage**

Implement projects with consideration of the Forks Heritage Interpretive Plan. Each site has specific opportunities for heritage interpretation.

### **Promote innovation and excellence**

Promote innovation and excellence through a design review process. All proposals should promote the highest level of design excellence, promote a balance between man made and natural environments, enhance existing development patterns, build for site and climate, and promote unique design.

### **Ease of access**

Road linkages to downtown are a priority, emphasizing the improvement of transit conditions, gateways, and the strengthening of recreational movement through out the Forks.

### **Rich pedestrian environments**

Integration of pedestrian environments between all scales of development.

### **Diversity of use**

Diversity can be achieved through mixed uses that are available in all seasons and at all hours of a day.

### **2.1.3 the forks north portage partnerships site planning framework**

The site planning framework applies to all lands within the Forks mandate area. Planning proposals will integrate road connections, pedestrian and bicycle routes, and gateways to the site.

### **2.2 the forks north portage partnerships themes for future development**

The Forks North Portage Partnership has outlined Themes for Future Development of the site. These are summarized from their brochure “making connections”.

#### **2.2.1 making connections**

Connections can be achieved through improvements to the pedestrian pathway system, roadway improvements, special gateways, extension of the riverside walk, river oriented recreation and offerings of alternative transportation routes.

#### **2.2.2 preserving historical significance**

Development should support the Heritage Interpretive Plan and seek school-based programs that would reestablish the historical significance of the Forks.

#### **2.2.3 maintain a balance and blending of mixed uses**

New developments should maintain a blend of uses, such as recreational facilities, a marina and special needs housing for seniors.

#### **2.2.4 awareness of the natural environment**

Awareness could be achieved through landscaping and a market garden.

### **2.2.5 commitment to design excellence**

Design excellence achieved through special lighting techniques, parking gardens and child friendly environments.

## **2.3 Projected Development**

The Forks North Portage Partnership is committed to acknowledging current proposals for the site. At present there are suggestions for a cinema complex, eco-village, docking facilities and a restaurant pub.<sup>11</sup>

The Forks North Portage Partnership has also outlined a schematic for 'development character', as seen in figure 15. Area One should be characterized as a higher density mixed use buffer, while Area Two is general mixed use. Area Three should be maintained as a permanent festival site and green space, while Area Four is kept for riverside park with the addition of river uses such as a marina, amphitheatre and boat basin. The Eco-Village (a sustainable residential housing complex) would be placed near the water and the cinema complex in Area One next to the higher density uses. Other proposed uses include a seniors complex in Area Two next to the Festival Park.

see figure 15,16

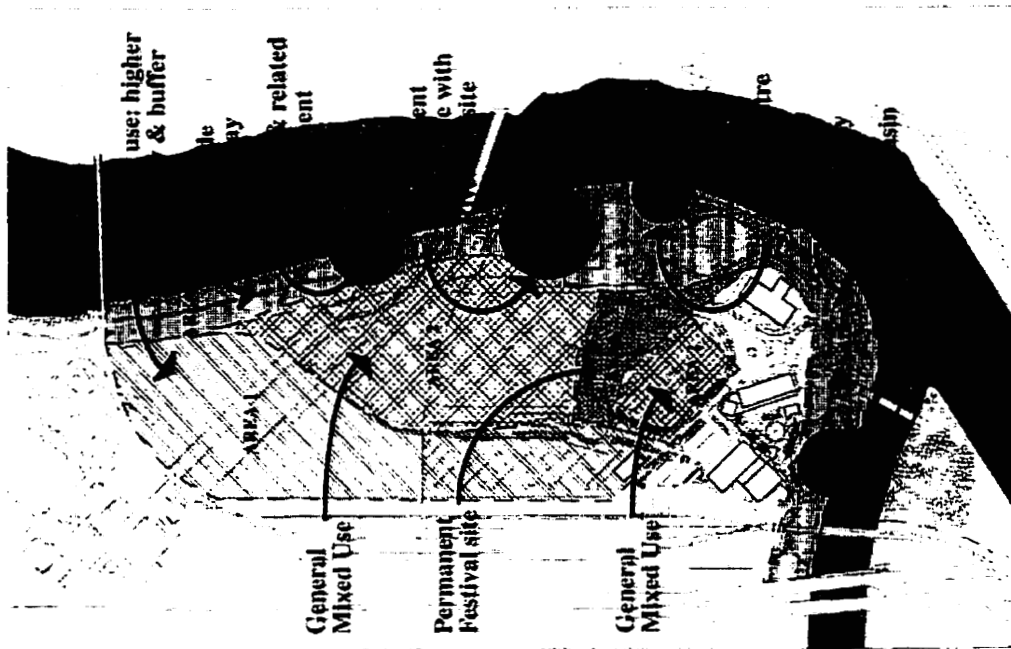


fig. 15 the forks north portage projected development character

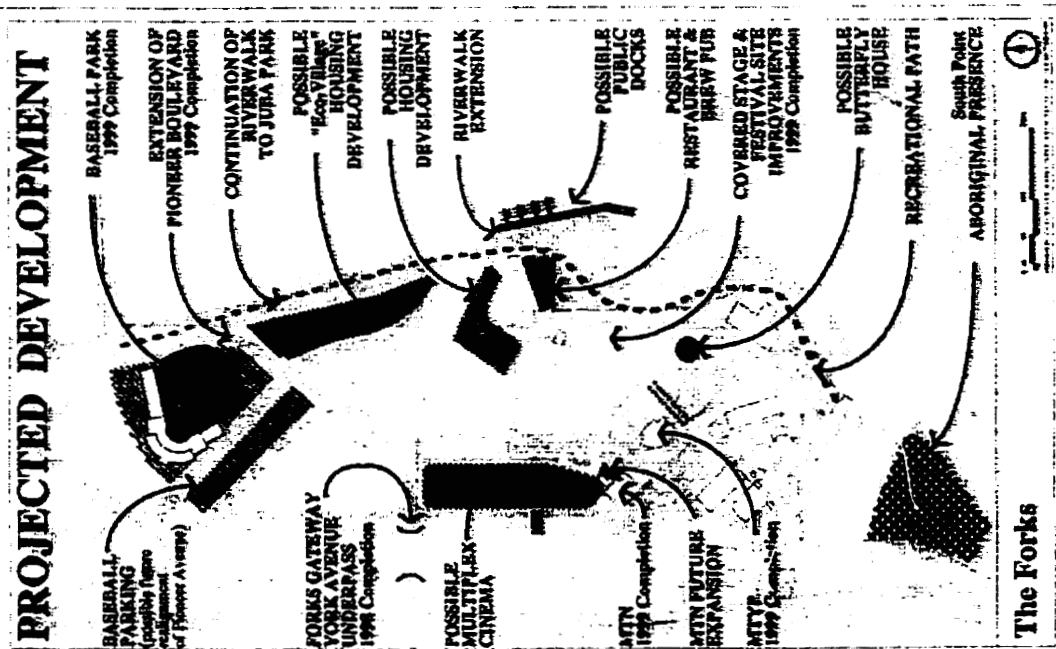


fig. 16 the forks north portage partnerships projected development

### **chapter 3**

## **the forks heritage interpretive plan**

The Forks Heritage Interpretive Plan was created for the purpose of maintaining the historical integrity which exists or existed at the Forks as well as educating the public. "The function of the plan will be to integrate heritage planning and programming elements at the Forks in order to enhance public use and appreciation of the site." <sup>12</sup>

The following is a summation of the Forks Heritage Interpretive Plan:

Historical artifacts are important for linkage to the past. All new developments at the Forks should be historically and culturally interpreted and maintain the historical integrity existing at the Forks. The Forks Heritage Interpretive Plans goals are to: "Identify, preserve and protect heritage resources at the Forks. Heritage resources are by their nature, finite and non-renewable, once they are lost or destroyed, they are gone forever. Accordingly, they must be preserved, protected and conserved if there is to be any chance of their being interpreted and enjoyed by future generations." <sup>13</sup>

Guiding themes have been established for the site. The site has the potential for vast interpretation, and developments need not be permanent but create a variety of uses as well as interpretations.

Heritage interpretation should emphasize themes that are not present anywhere else, or duplicated. If themes exist elsewhere, in The City of Winnipeg or in the Province of Manitoba, then the Forks should perform as a directory for these other sites but not duplicate their content.

### **3.1 the importance of maintaining heritage**

Heritage interpretation is critical to the establishment of design criteria. "Materials, three dimensional forms, spatial patterns and imagery from previous eras can all be evoked as part of the physical design of public spaces." <sup>14</sup>

This does not mean that new design or reconstruction of existing buildings should merely replicate old building styles and products. Instead it should have visible understanding that it was designed for active urban life in a contemporary context which merely supercedes more nostalgia to find its place in a larger historical context. Land patterns surrounding the site could be used as an impetus for new spaces or the site could evolve to express its own formation.

The Heritage Interpretive Plan has established some main principles:

1. Attract visitors to a meeting place.
2. Provide meaningful substance to the Corporation's objectives.
3. Advancing the corporations Site Planning Principles.
4. Educating the public on the site's historic nature.
5. Creating a sense of pride and place for Manitobans and Winnipeggers.
6. Spinning off benefits to other interpretive ventures.
7. Presenting a perspective of the history of Western Canada.
8. Providing the participant with a sense of continuity and depth of the 'flow' of time.
9. Emphasizing to the visitor the concept of Winnipeg as the gateway of the West.<sup>15</sup>

The Forks Heritage Interpretive Plan is an integral part of the design criteria for all future developments at the Forks. Proposal submissions will be evaluated to determine if their objectives have been met.



## **Chapter 4**

### **setting the scene**

The 56 acre Forks site is surrounded to the north and the west with Winnipeg's Downtown. Graphically, the Forks is in the heart of the city and located across the river from Winnipeg's historic French District. The site is currently used as a public market, offices, a children's museum, restaurants, docking facilities, interpretive facilities, outdoor theaters, historic rail cars and a river walk. It will soon house the Manitoba Theater for Young People, the Manitoba Television Network, a Festival Park and a baseball diamond.

see figure 17

"The popularity of the area has surpassed all expectations. There are now opportunities to walk along the river, dock small boats at the historic port and explore the market. The site also became a hub for programmed activities in the city." <sup>16</sup> The site receives up to 5 million visitors per year.<sup>17</sup>

The site has the potential for attracting additional visitors and serving a variety of local residents all year round. It has the potential of becoming an active part of the greater downtown. New development must be careful not to hinder or take away existing uses in other parts of downtown.

#### **4.1 the existing environment**

The Forks combines both man made and natural elements. A large portion of the site is currently being used for surface parking. This is obviously serving a functional purpose, however it does so at the expense of an active urban space. The Forks is south of the intersection known as Portage Avenue and Main Street, west of St. Boniface Cathedral, and east of the Fort Garry Hotel. All three of these landmarks are visible from the site.

see figures 19-24

fig. 17 existing environment

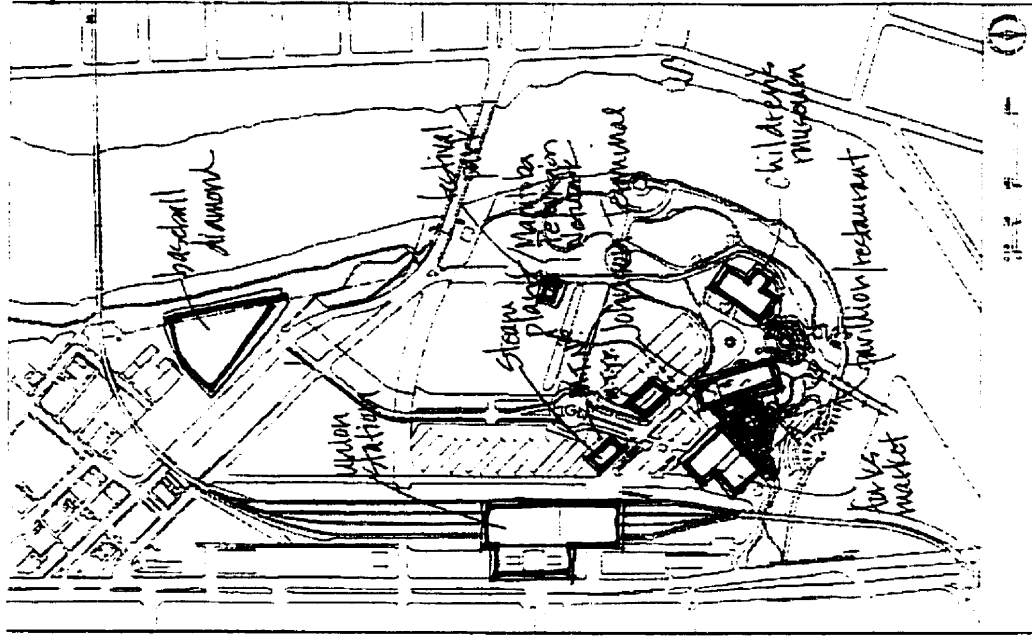


fig. 18 existing zoning

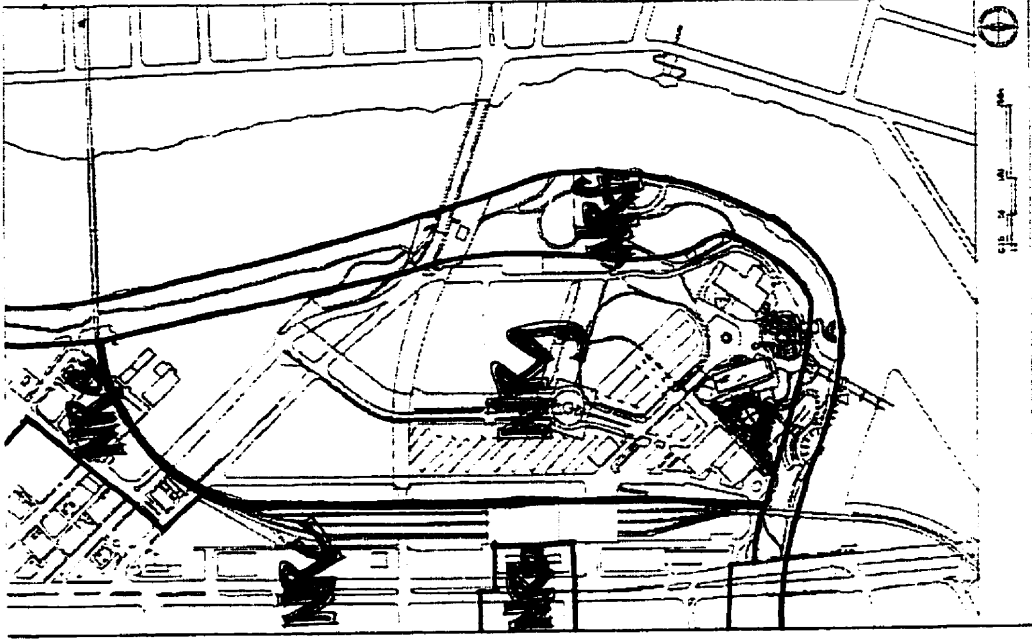


fig. 19 the forks from st. boniface



fig. 22 the provencher bridge



fig. 20 the legislative building



fig. 23 st. boniface cathedral

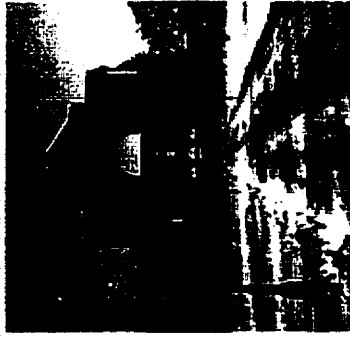


fig. 21 the fort garry hotel

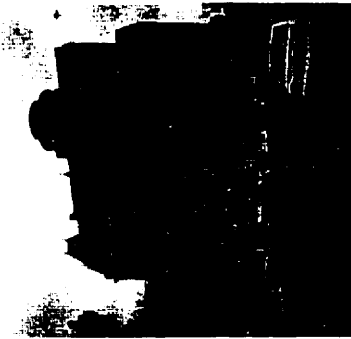


fig. 24 portage avenue and main street



The Forks site is accessible from all directions with no defined 'main entrance'. The site is somewhat impermeable from Main Street due to the build up berm which houses rail tracks. The berm runs north to south along the western perimeter of the site.

Redevelopment exists almost entirely at the southernmost portion of the site, which is directly north of the river junction. This area also contains the Forks Market, Johnson's Terminal, the children's museum, Union Station and the Steam Plant, which are original buildings from the railway era.

There is potential for an enhanced connection of the Forks to the Exchange District through the northern portion of the site. This linkage would also provide connection of the Forks with other areas of the Downtown.

The railway is an active influence at the Forks. The tracks are being used for both freight and passenger services. This influence will have a significant impact upon future design strategies for the site.

The Forks has two distinct land-use zones (as noted from the Downtown Winnipeg Zoning Bylaw): NRF (Non-Residential F) and NRG (Non-Residential G).

Section III-15 NRF (Non-Residential F)

325 (1): where a lot is designated NRF the following uses are permitted principle uses;

a) park

The site permits the use of a park with accessory uses such as loading facilities, parking facilities, recreation facility, storage facilities and signage.

see figure 18

Section III-16 NRG (Non-Residential G)  
326 (1) where a lot is designated NRG the following uses are permitted principal uses;  
personal service, retail, wholesale, bank, cabaret, church, commercial, educational, furniture, hotel, manufacturing, medical, offices, park, private club, publishing, restaurant, storage, studio and theatre.<sup>1a</sup>

The site has many permitted and discretionary (conditional) uses as well as accessory uses available. At present residential uses in Winnipeg's downtown are discretionary uses. Residential components can be added through review and approval by City Council. This issue of discretionary residential use is being currently discussed to reflect residential demands in Winnipeg's Downtown.

All proposals for downtown development in Winnipeg must adhere to the Downtown Design Review, Riverbank Design Review, and Pedestrian- level Design Review. These are the City's requirements for the area. However, the Forks represents a special site with unique opportunities, hence redevelopment proposals need to follow the Forks North Portage Partnerships Planning and Development Guidelines.

## **4.2 site analysis**

An analysis of the Forks site is necessary for possible redevelopment opportunities. Analysis should include an understanding of land uses, landmarks, views, gateways, vegetation, grid systems, spaces, historical context, figure ground (built form), and circulation.

Site feasibility and direction for redevelopment could be determined from this analysis.

see figures 25-30

fig.26 existing circulation

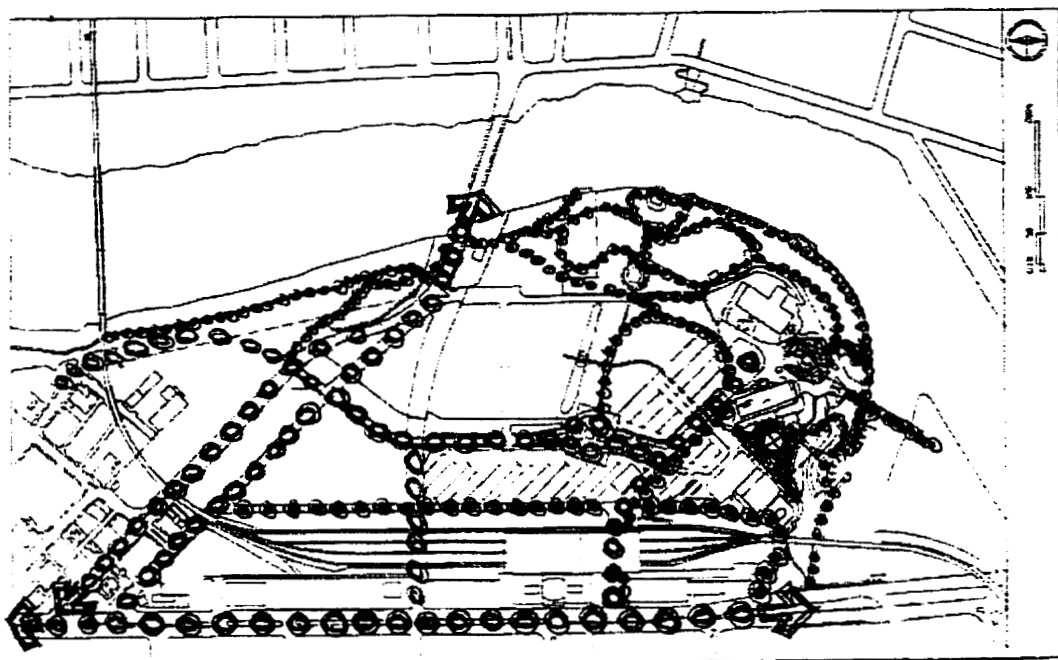


fig.25 figure ground - February 1988 (built form)

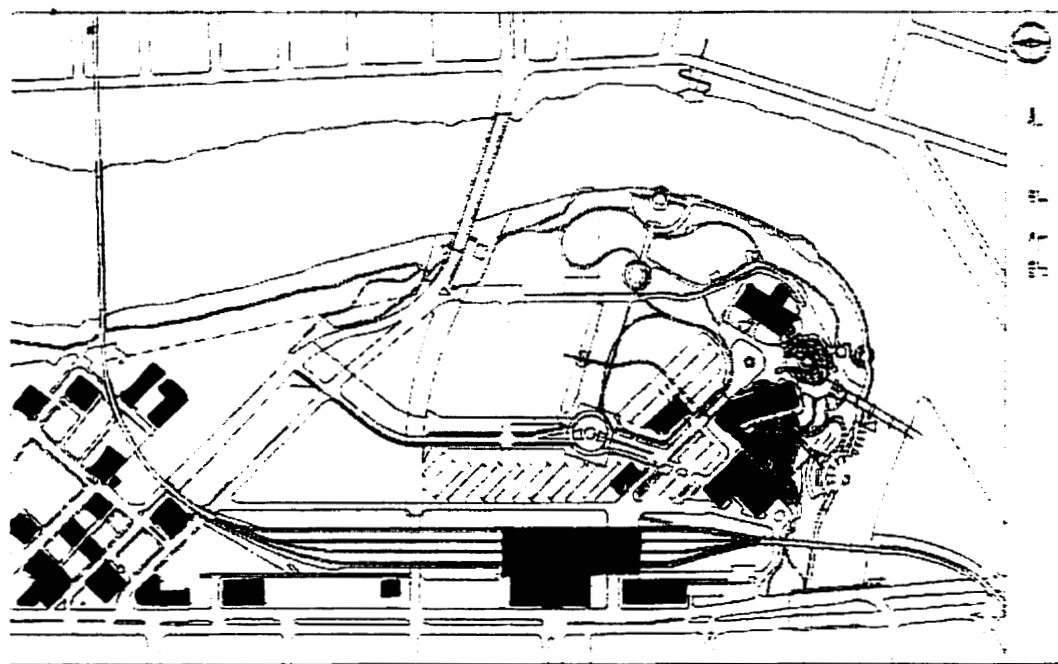




fig.30 existing vegetation

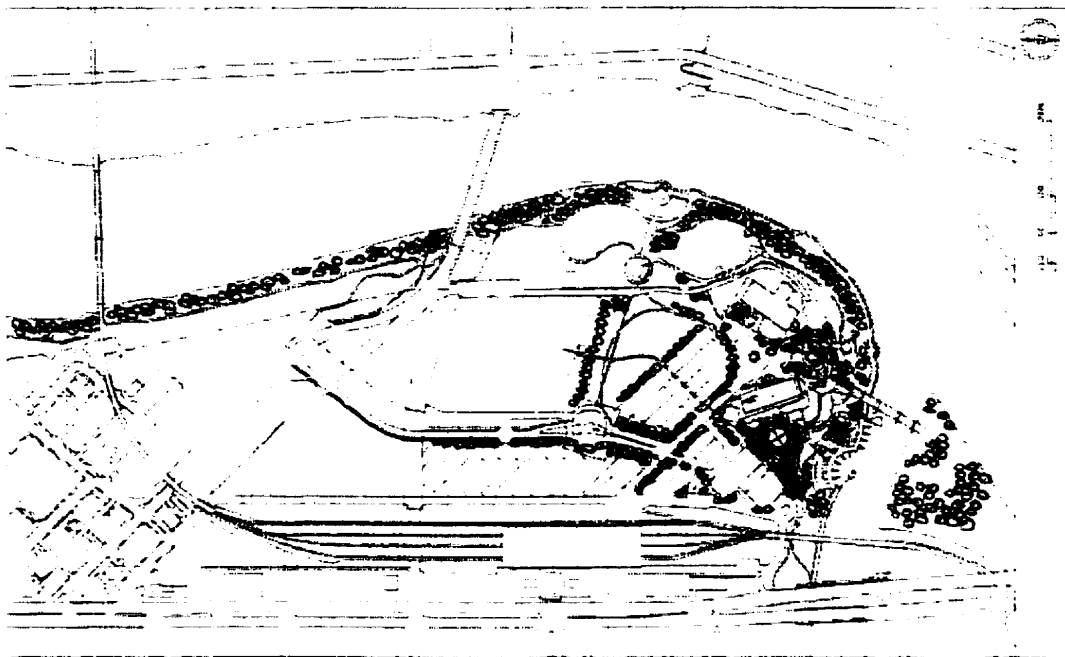
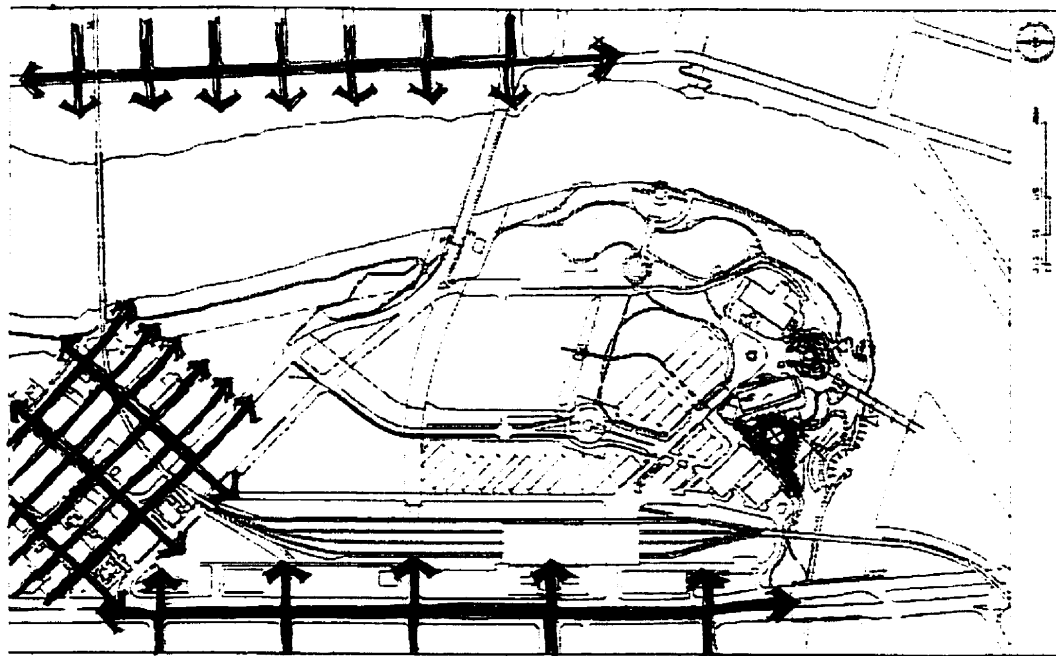


fig.29 existing grids





### **4.3 site opportunities**

An inventory of site opportunities can be used to establish a framework for redevelopment expansion. It enables the designer to establish the criteria for opportunities for a vast number of design scenarios, where the designers experience and perception of the site tends to influence the type and concentration of development.

The Fork's site has many opportunities. The primary opportunity is its location at the convergence of the Red and Assiniboine rivers. Secondly, it has a strong historical and cultural presence. Thirdly, only one quarter of the site is currently developed. The site's location near landmarks also brings a fourth opportunity into the redevelopment scheme..

see figure 31

### **4.4 site constraints**

Identifying site constraints also establishes a framework for redevelopment expansion. Constraints can be either interpreted as an advantage or a hindrance. The designer might find that the constraints become the criteria for problem solving. Certain areas are not developed because the constraints are too difficult to overcome.

see figure 32

The Fork's constraints include such things as the rail berm barrier, site exposure to seasonal conditions such as cold winters and hot summers, the adhoc basis of proposed development, and the physical connection between the site and the rest of the downtown.

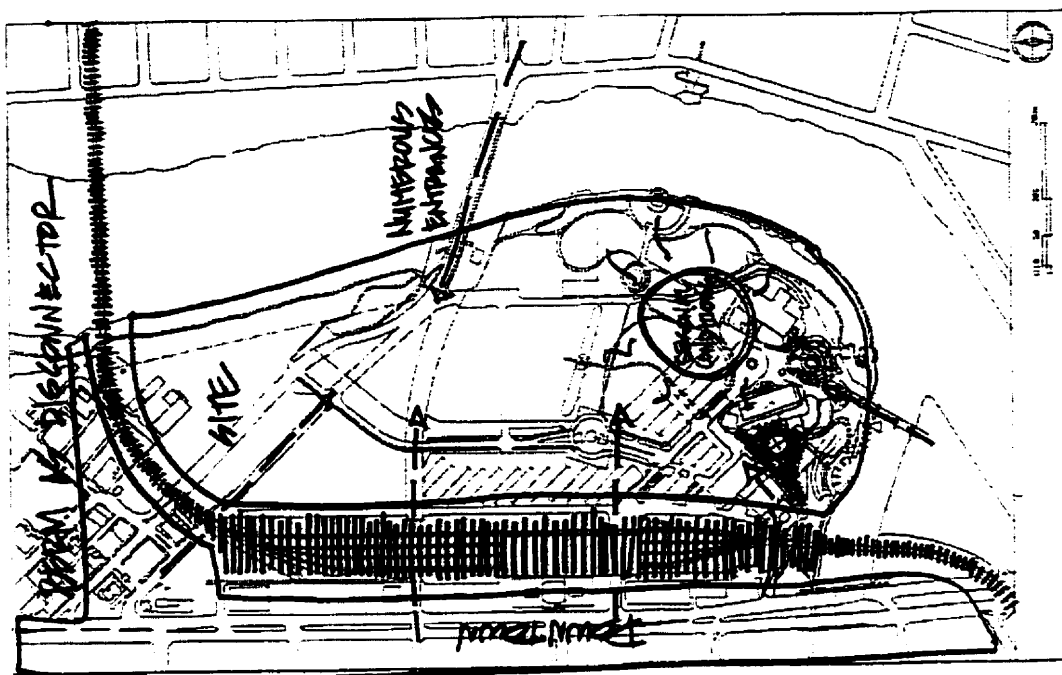


fig.32 site constraints

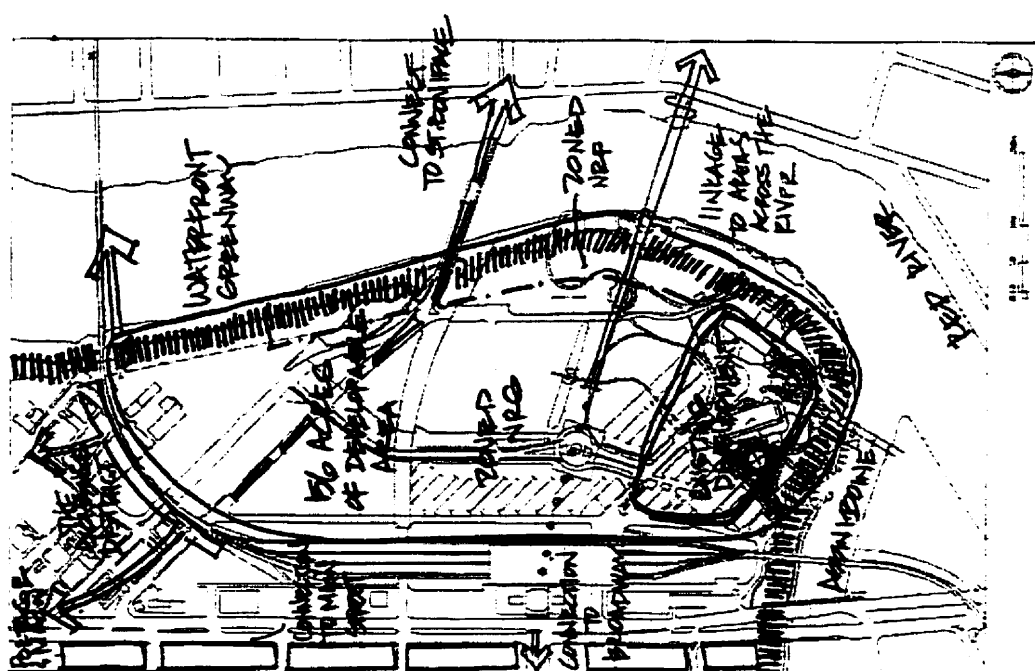


fig.31 site opportunities

#### **4.5 determining the process**

The design process should begin only after following a thorough evaluation of the sites' opportunities and constraints have been identified. The Forks North Portage Partnership's Guiding Policies and their Planning and Development Guidelines as well as the principles set forth by the Heritage Interpretive Plan and the concept plan should also be considered.

## **Chapter 5**

### **urban programme**

The programme builds on the intent of the Forks Heritage Interpretive Plan, The Forks North Portage Partnerships goals and a more sustainable approach to community design. The principles, which have been based on the above objectives, outline the elements required for a master plan. The phasing of development considers the most effective methods of implementing the design such that it supports the principles and objectives.

A programme for new development in the context of this project includes a consideration of the objectives, design principles and phasing for future development.

**establishing objectives** for development based on the Heritage Interpretive Plan, the Forks North Portage Partnership and Sustainable Community design requirements.

**establishing principles** for overall site development.

**establishing phases** for development.

## **5.1 objectives**

### **Improved mixed use design and diversification for site success**

A mixed land use design could potentially create a more efficient and appropriate land consumption pattern. Uses should include places for a person to shop, work, live and play. Diversity of use is important. Density of use would increase the likelihood of sustainability according to Donald Appleyard and Allan Jacobs " ...a critical mass of people are required, and they must spend a lot of their time in reasonably close proximity to each other including their homes, if there is to be an urban life."<sup>19</sup>

see figure 33,34

Ultimately, some residents of Winnipeg would like to maintain the expansive green space.<sup>20</sup> However, the cost of maintaining the park and anticipating a self sufficient marketplace seems unrealistic without additional mixed use redevelopment. The Forks requires a blend of new uses that would take sole emphasis off the Forks Market and Johnson's Terminal as the defining factors of the sites success.

### **Linkage to downtown**

The placement of additional uses will alter the sites relationship with the rest of downtown. It is important to establish and maintain both visual and accessible linkages to, from, and around the site.

see figure 35

Mixed use design and diversification for site success must act harmoniously with improving the sites linkage to downtown. Each becomes a major factor on measuring the success of the Forks.

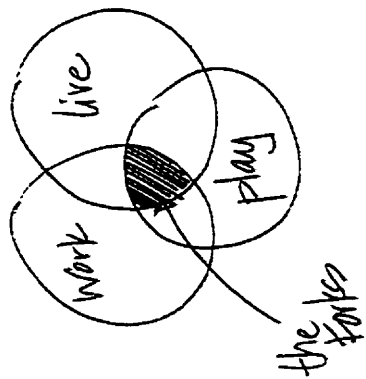


fig. 33 mixed use design

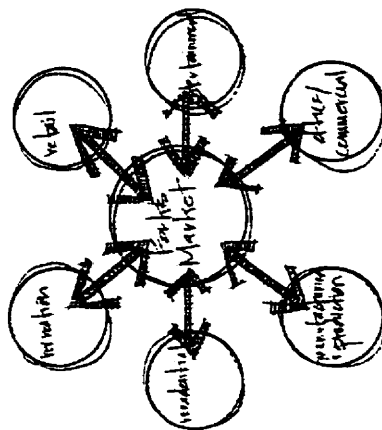


fig. 34 diversification of use

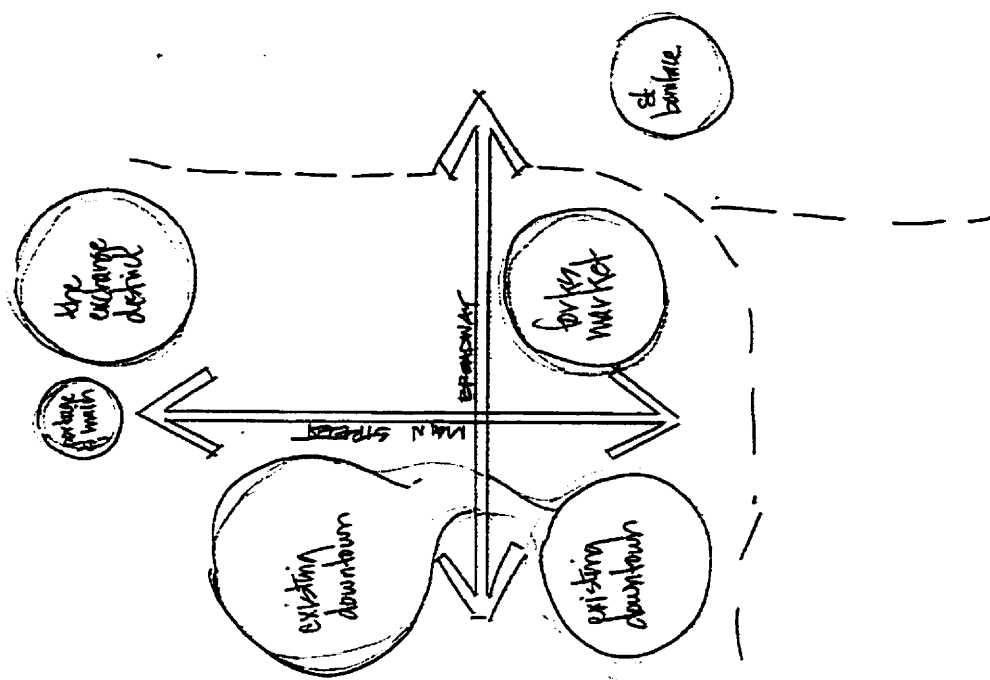


fig. 35 linkage to downtown

## 5.2 design principles

The design concept will combine the following principles, apparent in the precedence studies. The following principles are vital to achieve the goals of The Forks North Portage Partnership.

**rethinking the existing environment** through examination of areas for redevelopment, specifically integrating the rail berm.

**mixed use design** through the creation of places for working, living and playing. Utilizing the modified warehouse typology.

**visual connections and physical linkages** recognizing both the existing environment, the surrounding downtown, and landmarks.

**nodes** between new development and the existing market place, ball diamond, and Union Station.

**public space** system offering variety and alternative forms of access to various points on the site.

**entrances** and the importance of defining both arrival and departure.

**circulation** of vehicles, rail, buses and the pedestrian.

**3-d environment** expressing activities' occurring either inside or outside, at ground level, levels above and below. The opportunity of courtyards and light wells.

**A sense of place** and reinforcing importance of belonging for people living there, visiting and for local users of Winnipeg.

**structured green space** through integration of activity, use and outdoor quality,

### **5.3 phases for development**

Redevelopment could follow a phasing plan if necessary. Ultimately complete development of the design scheme would enable the immediate provision of a functional mixed use community. However, development will most likely take place over time. Therefore a phasing plan is required for the feasibility of the development. One could observe a phasing plan to unfold as follow:

1. Restructuring of the rail berm as a two track tunnel above ground.
2. Structured green space introducing structured sports activities.
3. A live/work environment (residences and studio production spaces).
4. Commercial and retail uses.

A structured green space would bring more people to the site specifically for the purposes of recreation. This in turn becomes an amenity for residential and live/work environments. Once these two elements are established the need for commercial and retail uses will follow.

see figure 36



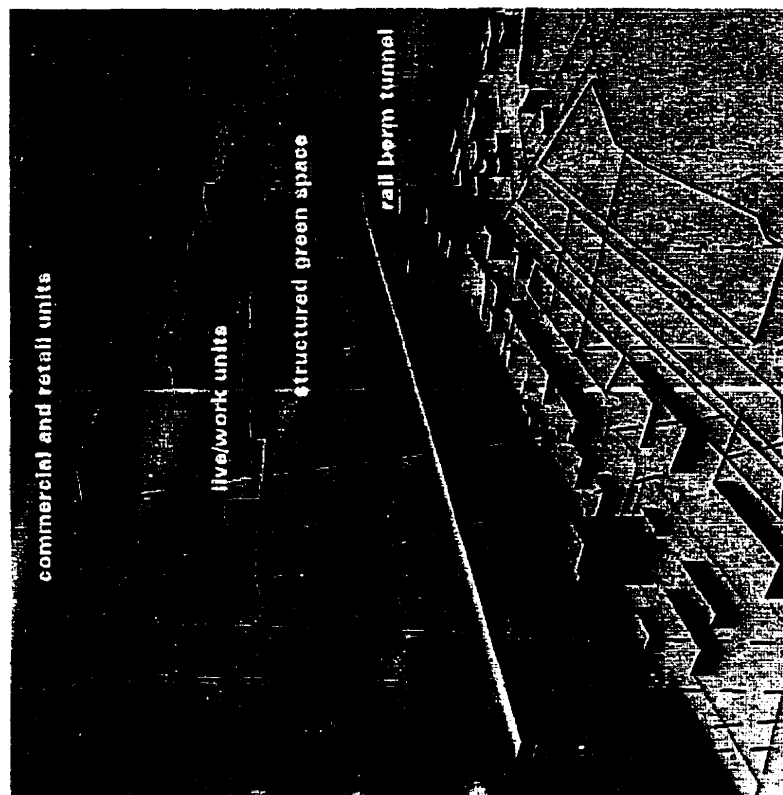


fig. 36 phases for development

## **chapter 6**

### **urban space and architectural typologies**

#### **6.1 sources and precedents**

##### **revitalizing Canadian harbourfronts**

The redevelopment of urban harbourfronts has proven successful for many Canadian cities. Areas once industrial have been released back to the cities for redevelopment, preservation, and re-creation of historical elements. Some examples include North Vancouver's Lonsdale Quay, the Harbourfronts in Toronto and California towns, as well as Michigan Avenue in Chicago. All sites existed previously as rail lands and shipyards and have been involved in rethinking and re-defining processes to offer historical places for its residents and visitors.

##### **north vancouver - lonsdale quay**

The Lonsdale Quay Market in North Vancouver was a revitalization plan for the North Vancouver waterfront. "The development includes offices, housing, educational institutions and a transportation terminus serving local buses and ferries." "Architecturally the concrete structure infilled with metal and glass cladding has the honest appearance of an engineered building compatible with the work sheds of the neighboring shipyards." The key to the success of the site is the feeling that is evoked by the neighboring tugboat company whose tugs reinforce the

see figure 37

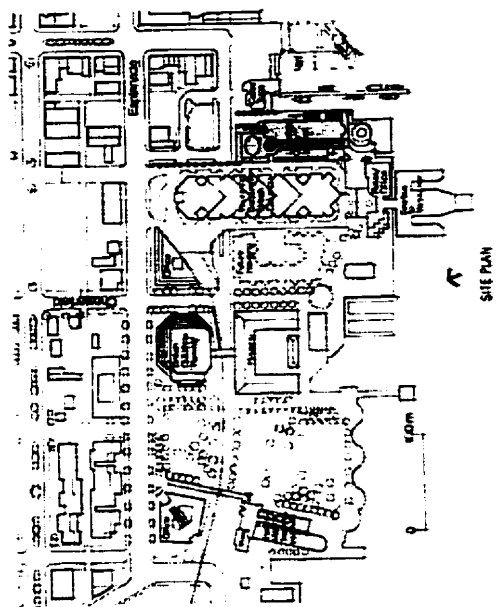


fig. 37 Ionsdale quay in north vancouver

### **toronto's harbourfront**

The development of Toronto's harbourfront introduced a 90 acre redevelopment scheme, including 40 acres of park and public open space.<sup>22</sup> New uses of the site incorporate housing, office space, industrial warehouse structures and shops.

The Toronto Harbourfront is divided from the existing downtown by both the rail lands and the Gardiner Expressway. The harbourfront is able to maintain pedestrian and transit links to downtown as well as provide special view corridors.

This redevelopment scheme will successfully push the City and Metro Toronto to develop the rail lands. The former Harbourfront Corporation expected the land to be developed by the private sector thus contributing further to the self-sufficiency of the site.<sup>23</sup>

Should harbourfront redevelopment emphasize park space or mixed use development? A park space system inevitably means the introduction of outdoor winter activities as well as summer sports. Canadian climates usually require a blend of indoor and outdoor activities for continued use.

"A vibrant waterfront requires people all year long and to achieve this a mix of residential, retail, commercial and recreational uses should be developed."<sup>24</sup> Active mixed use places have the potential for attracting a wide range of people (see fig. 33)

see figure 38.39



### **california - san francisco's marina village**

Marina Village was formerly an old shipyard that underwent a redevelopment scheme to combine residential and office space with a boat marina. The project maintained historical consistency with the existing environment. The personality of the site was expressed through its detail including interlocking pavers, light fixtures and balustrades, all reflecting the historic era of the shipyard.<sup>25</sup>

The design reinforced pedestrian movement. Trees defined space, sculptures punctuated the pedestrian spine and structures evoked a sense of place. The quality of this place as realized through urban design is the main selling factor.

see figure 40

### **california - mountain view revitalization**

The City of Mountain View decided to revitalize their downtown and recreate a pedestrian environment. "People all over the place, outdoor dining, office buildings and public institutions would provide a place that would feel like the center of their community."<sup>26</sup>

The key factor in this mix included a streetscaping program. The streets became flexible, with places to promenade and experience the rows of cherry trees that expressed the city's historic orchard tradition.

see figure 41

### **california - santa monica's third street promenade**

Reinventing a 1960's pedestrian mall and creating a pedestrian friendly environment was the purpose of this design scheme. Through re-thinking the existing street and pedestrian environment the city arrived at a 'new' design scheme for active living and interaction. "If you reclaim the street as a real space, in one act you have had more to say about the nature of community than anything else you can do."<sup>27</sup>

see figure 42

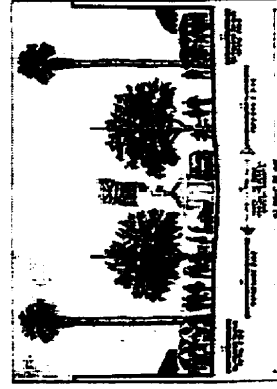
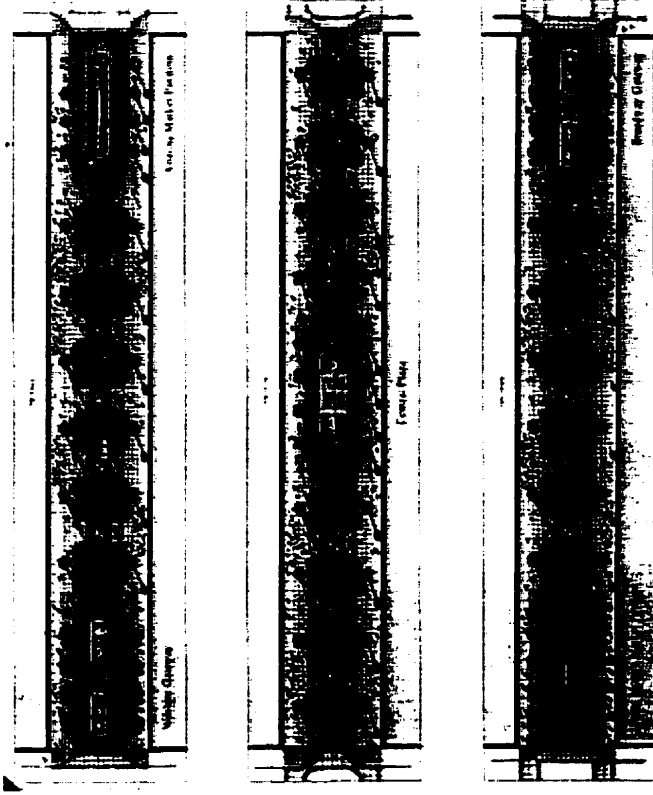
fig. 40 marina village



fig. 41 mountain view



fig. 42 third street promenade



### **chicago - michigan avenue and grant park**

Grant Park in Chicago represents an interesting transition between Michigan Avenue and Lake Michigan. The lands, adjacent to the water, were designated in 1836 as public grounds and would forever remain vacant of any buildings.<sup>28</sup> The public open space has been formally developed as structured park. Michigan Avenue has been developed as a mixed use street that creates a "wall" of built form against Grant Park. The wall is a facade of buildings that create a dramatic edge and transition to the formal green space.

**see figure 43,44**

### **winnipeg - the forks**

The site conditions at the Forks have the potential to combine a number of the qualities presented in the previous design scenarios. All examples provide a framework for historical re-discovery, the re-development of existing areas for increased activity and enjoyment, as well as the design of areas vacant of present use.

The Forks site demands a self-sufficient design scheme. Toronto and North Vancouver achieve this by providing mixed uses and an availability of amenities within close proximity. The site's historical connection to the rail lands remains prevalent since the tracks are still in use, as are the Lonsdale Quay tugboats. The site also requires a pedestrian environment with interactive vehicular movement such as the Santa Monica example. The placement of built form and a natural park space requires a transition space that benefits the sites objectives, as in the example of Grant Park.





fig. 43 grant park in chicago

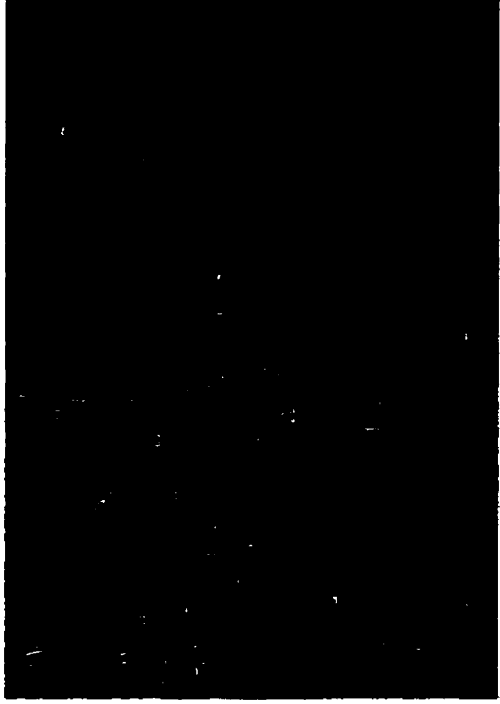


fig. 44 grant park in chicago

## **6.2 architectural typologies**

Historically Winnipeg's Downtown is predominantly described architecturally in terms of the warehouse, as evidenced by the development of The Exchange District. This typology could be further modified for flexibility, light and movement to meet new conditions for today. The warehouse style could also provide for linkage to our past.

Flexibility could be achieved through large volumes (both vertical and horizontal) that could be customized dependent on use. One could work, manufacture, perform specialty services, occupy office space or even live out of such a unit. Spaces could be accommodated for multiple living, recreation, entertainment or other activities.

see figure 45

Light could be introduced through the addition of courtyards, light wells or through terracing of the building form. "The courtyard is a traditional urban type and is the natural consequence of buildings that follow the street and need natural lighting." <sup>38</sup>

A building type that provides flexible movement inside and outside the building will enhance a three dimensional environment. A three dimensional environment is one that offers building movement beyond the horizontal level and introduces activity at all vertical floors.

The warehouse building form has the potential for all of these qualities as well as providing a framework for historical interpretation through adaptation.

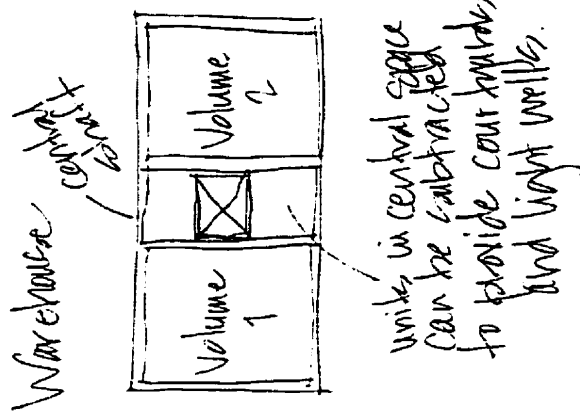


fig. 46 warehouse type

### **6.3 design concepts**

The design concept evolves from the inevitable relationship between built form and the natural environment. The site is special and the design concept must recognize the importance of both the water and the significance of the surrounding downtown. The concept responds to the idea of a grand natural space that is maintained against a dense city edge. The Forks site is unique because it is further influenced by the rail corridor. These tracks are historic, they protect the site but they also cut it off from the surrounding downtown. Therefore, the design concept must integrate an existing rail berm with a 56 acre green site. The scheme introduces the significance of transitional spaces, between built form, structured green space, and finally natural parkland.

**see figures 46-48**

fig. 46 Impact of railberm on urban fabric

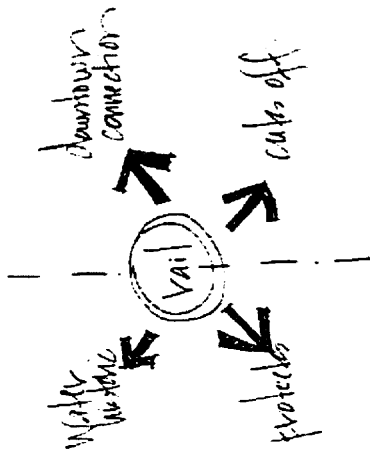


fig. 47 design transitions

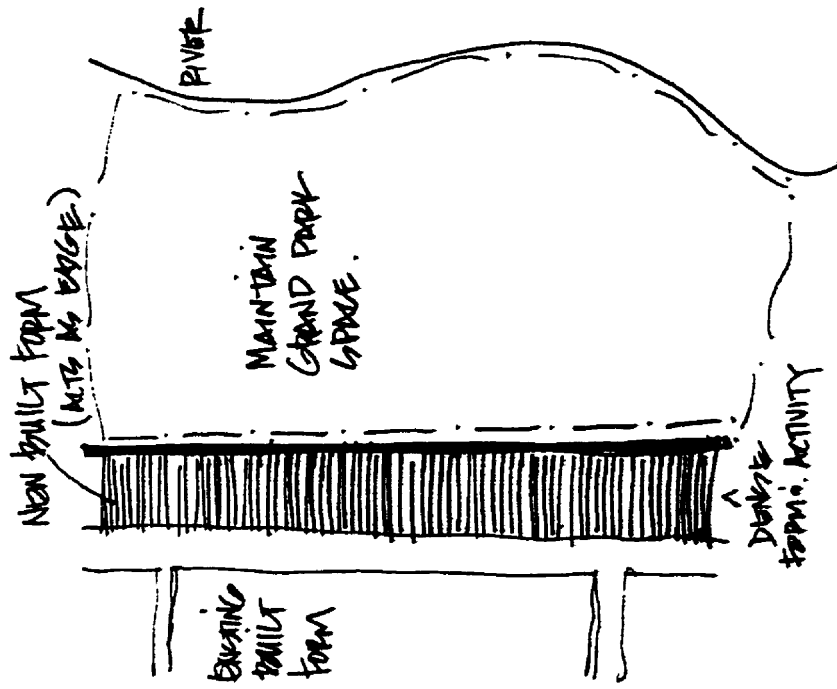
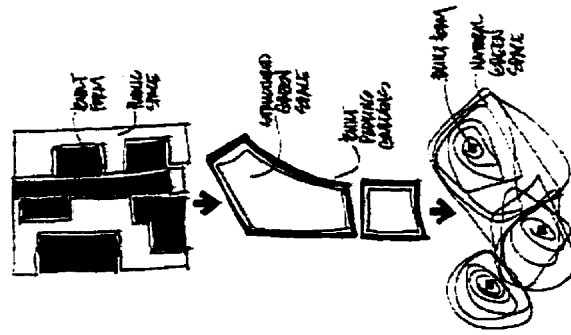


fig. 48 the design concept

## **Chapter 7**

### **the plan proposal**

### **the design principles**

#### **7.1 rethinking the existing environment**

Placement of development within a 56 acre site is critical. The question of a fully or partially developed site lends itself to a design solution which seeks a natural balance between environment and built form. Maintaining the historical integrity of the site is an interesting challenge that all developments should consider.

##### **profitability**

If development was permitted to the waters' edge it would eliminate valuable green space. Developing closer to the berm seems logical but is least desirable for developers because of personal desirability to the increased marketability of spaces which overlook the river instead of the site.

Locating development based entirely on developers profitability will result in adhoc development. An overall scheme for redevelopment eliminates projects that would benefit the developers without considerations for the site as a whole. The site is historically significant and proposed development should offer ways to preserve the waterfront and connect to the rest of the downtown.

fig.49 location of the rail berm

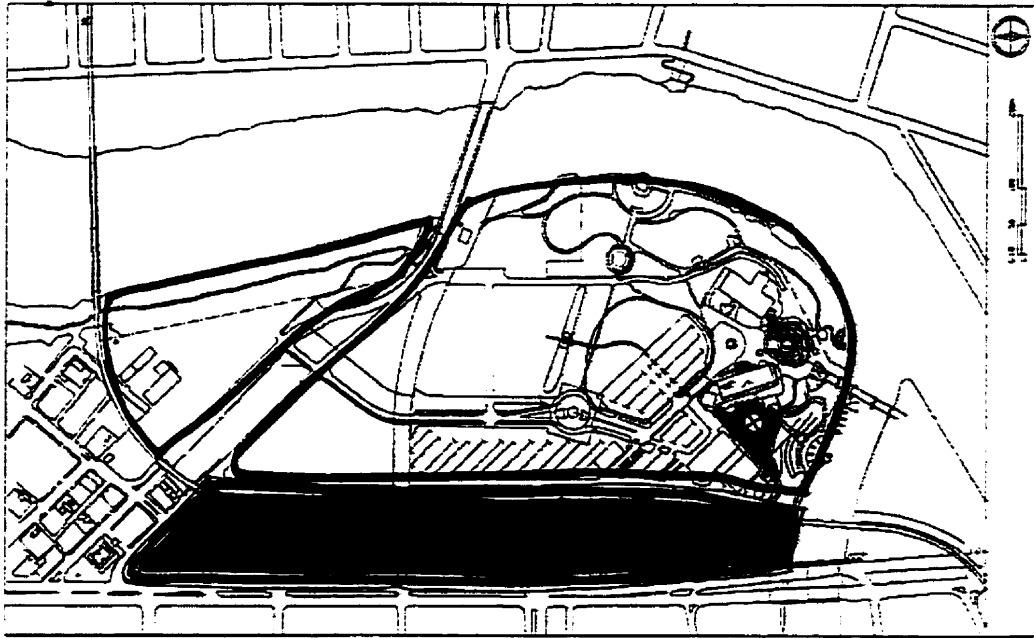
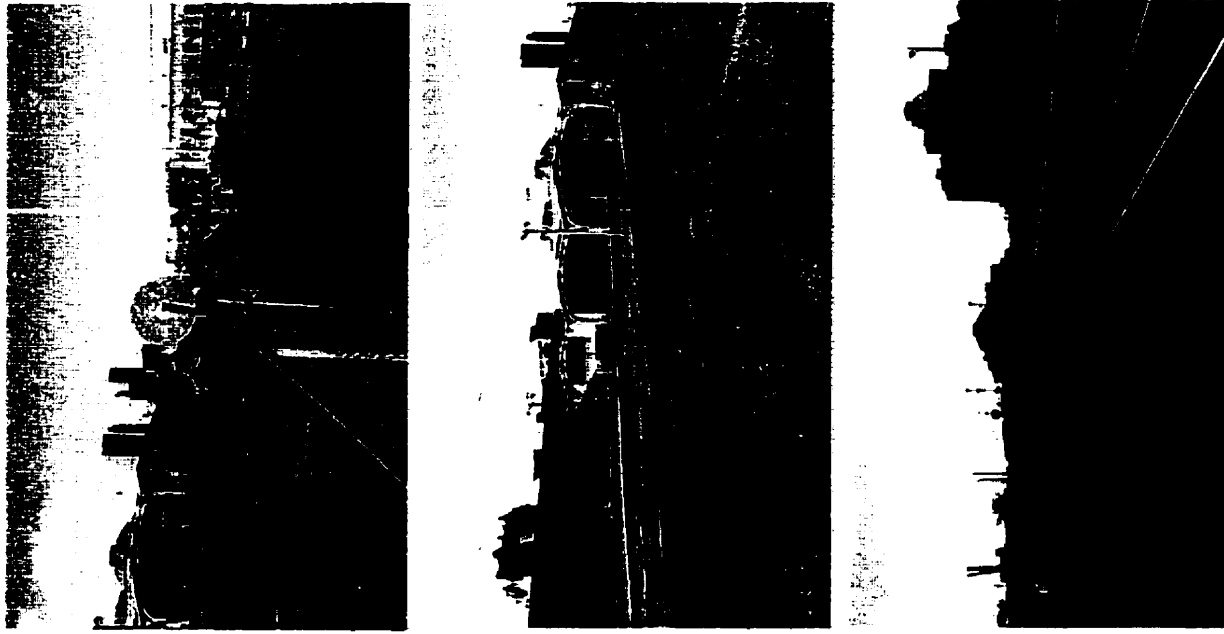


fig. 50 the rail berm (photographs)



### the rail berm

Another central issue involves a discussion of the rail berm itself. Rail lands have dominated and divided Canadian Cities since their introduction. What will become of these places if rail ceases to exist? Does this berm remain as a historical barrier? The Forks berm is significant in and of itself, as a reminder of Winnipeg's historic role as the premier gateway to the expansion of the Canadian West. When the rail lands were released back to the City, Winnipeg was able to reclaim its most historical junction. However, the site remains dislocated and divided from the downtown activity.

see figure 49,50

A potential solution involves the rethinking of the berm and what it represents and affects. If the choice was to make the berm less like a barrier, the existing structure could be removed and new tracks built at the same height as they exist today. This would not only enable development to occur around and above the tracks but most importantly it opens up access to the Forks site at street level. We have seen this solution occur in many European cities due to density and transportation colliding. For example The City of Berlin has a housing development which is built directly over a freeway.

see figures 51-53

With the size of the Forks, the berm offers not only an opportunity for densification but also provides a meaningful component of a larger concept. Instead of protecting the site from downtown and cutting downtown off from the site, a reconsideration of the berm can provide a means for the integration of historic and contemporary contexts. The berm is dependent on the continuing use of the railway itself which could be accommodated through the elevated tunnel concept.

With current considerations of combining CPR and CNR tracks, the existing cargo service would be re-directed and only passenger services would reach Union Station. This would rationally justify a minimization of the rail tracks from four to two.



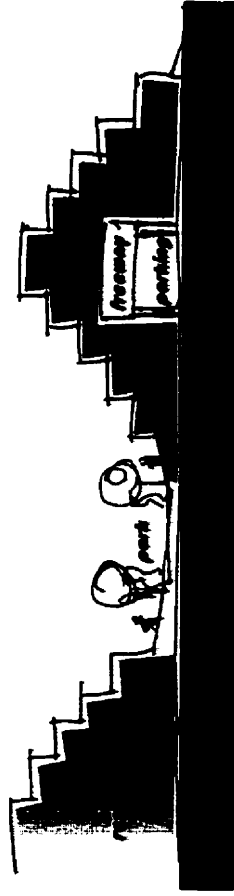


fig. 51 residential design in berlin



fig. 52 berlin



fig. 53 berlin

#### uses for the berm

"Most cities were located for commerce first on bodies of water, later at rail-heads."<sup>29</sup> The Forks site began as a junction for water movement and was then transformed into rail lands. This combination of the two make the site an important historical place. A place for re-discovery of the past and a new place for commerce.

The site requires a certain degree of self-sufficiency and the ability to be integrated more closely with the urban fabric of Winnipeg. Combining uses, pedestrian streets and transit would allow the site to become an active component of the city instead of being a tourist-oriented venue. "The old pattern of the city, with its mixed use, active pedestrian streets, public transit systems and public spaces had a human dimension born of technical and environmental necessity."<sup>30</sup>

The suburbs have displaced development from city centers and have reduced the significance of activity in downtown areas. "The growth of the suburbs first drained the residential population away from its employment center and dislocated the market of the downtown mall."<sup>31</sup> The struggle has begun for a reclamation of those spaces. However, using spaces means we must be active in them. "Inner city redevelopment tends to destroy mixed use areas, substituting freeways, parking structures, office complexes and shopping malls for the fine grain of the old city pattern."<sup>32</sup>

It is important not to forget that old city pattern. Re-inventing the existing environment requires a serious re-thinking of the divider we know as the berm.

## **7.2 mixed use design**

The site combines a variety of uses which include retail market space, offices, a children's museum, a theater for young people, docking facilities and outdoor festival space. These uses combined with entertainment and recreation facilities completes a unique place for 'use and enjoyment', however, it is not a 24 hour site. The existing mix relies on visitors and locals looking for a place to visit, buy unique merchandise and explore a unique waterfront.

Self-sustainability requires a place where one can work, play and live. Some missing elements at the Fork's include residences, light production facilities, recreation and entertainment facilities, temporary accommodations, and a transit node (a bus station).

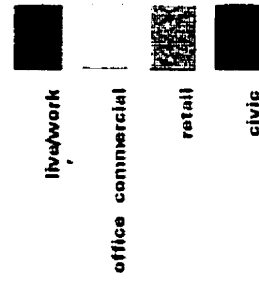
"A good urban environment requires 5 goals and they all must be present. They include: livable streets and neighborhoods, an integration of activities, man-made environments of particularly buildings that define public space, a minimum density of residential developments as well as intensity of land use, and many distinct buildings with complex arrangements and relationships."<sup>33</sup>

The site can benefit greatly from transit alternatives, residential components and retail uses that compliment the existing uses at the Forks Market.

"The good urban environment is one that somehow balances, allowing individual and group identity while maintaining responsibility, open to outsiders while sustaining a strong sense of localism."<sup>34</sup>

The integration of mixed uses is intended to promote movement amongst all buildings and levels. Therefore, no individual building should be limited to one specific use or purpose. The public spaces that exist between the buildings should reinforce continuity.

fig. 54 proposed landuse



Human interaction is usually achieved through chance. The mixed physical environment should evoke surprise and intrigue for further interaction between and amongst all levels of the development.

see figure 54

The relationship between buildings and spaces relies heavily on the scale of the built form. The use of a "low rise building tends to be more compatible in a mixed neighborhood, to have a more human scale on the street, avoiding large shadows and is more walkable than its high rise counterparts."<sup>35</sup> Therefore low rise buildings in the spirit of the warehouse should be the preferred architectural type.

### **7.3 visual connections and physical linkages**

Portage and Main is significant because it harbors Winnipeg's highest concentration of office towers. The Exchange District is important because it accommodates Winnipeg's historic Warehouses. Broadway is historically significant as it contains Winnipeg's Legislative Building, the Fort Garry Hotel and Union Station, as well as being one of the most significant tree-lined boulevards in the city. However, how do these places relate to the Forks? Visual linkage is achieved when making observations from the site but lacks a connection when looking from the outside in.

see figure 55, 56

The Forks is partially visible from Main Street but hidden on Broadway. It is far off in the background in St. Boniface and still blocks away from the Exchange District. Visual connections of the Forks from other significant parts of the downtown is clearly difficult.

When viewing the Forks from downtown, users typically acknowledge the foreground first, Union Station, and then the background, The Forks Market. The

lack of site  
connection  
when ob-  
serving the  
forks from  
downtown

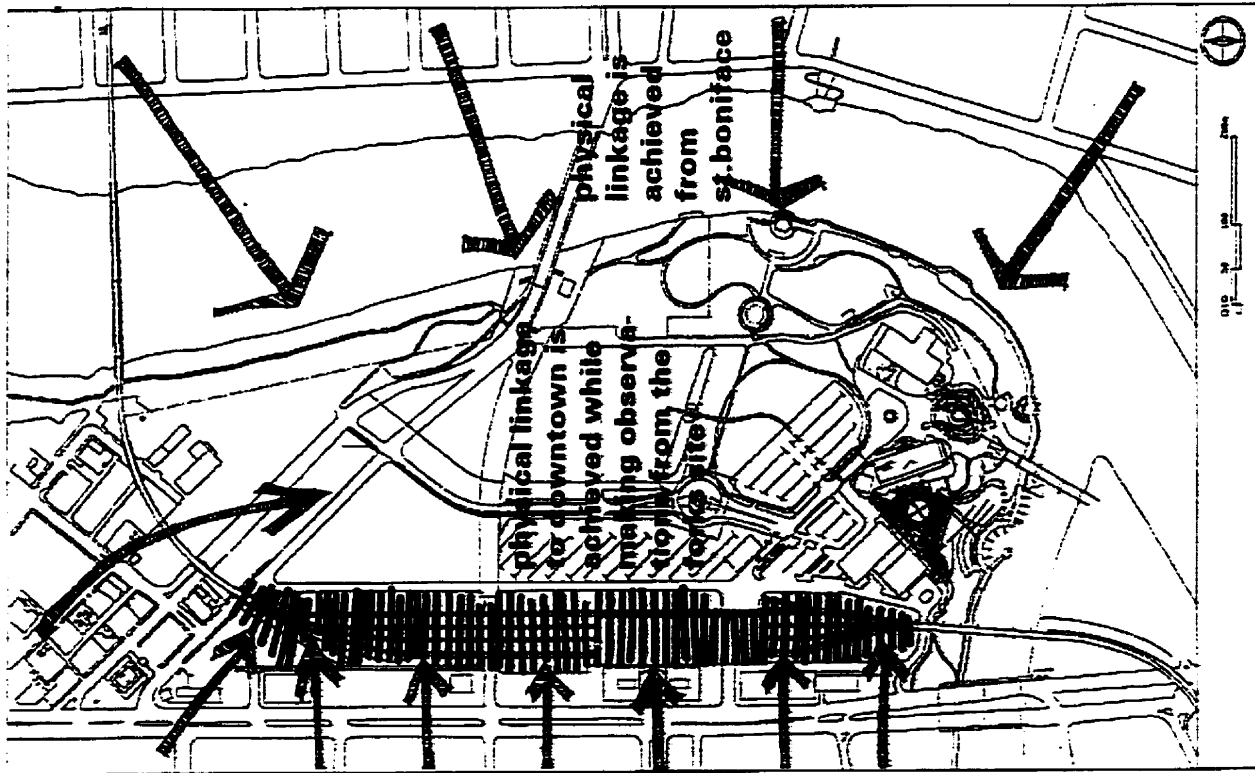


fig. 55 existing physical connections and linkage



fig. 56 proposed physical connections and linkage

sacred middle ground is hidden by the rail berm even though there is an active railway track above. Furthermore, the waterfront is not evident from the other side of the berm. Elevating the rail berm and removing the existing soil would open up street level views and potentially create a stronger linkage from the downtown to the waterfront.

## **7.4 nodes**

A new design scheme would require a detailed analysis of all existing edges and nodes. Based on this analysis one must develop an integrated distinct edge next to the existing Forks environment. A Node is defined as a special place. A place for gathering and drawing users into environments adjacent a node. They are distinct links or transition places that interact and reinforce gathering.

Three specific nodes are created along the berm. One node is located where the berm meets the northern portion of the site, another at the intersection at the south end before the rail tracks cross the river, and a third node occurs at Union Station where both the station and the public space direct users into the festival park. These nodes become edges as well as transition spaces for both the Forks Market and Pioneer Avenue as well as Broadway Avenue.

The south node must compliment the Forks Market by providing a blend of uses that attract people into the market place. The north node must be designed to reinforce movement towards the ball park, the Exchange District or the park space. Union Station is an important node for both the interactions that occur inside and outside the building. The historic station is being used for office space and has the potential for bringing back its use as a gathering place. This node will attract users inside the building and then funnel people into the rail berm redevelopment or into the existing Forks festival park.

see figures 57-60

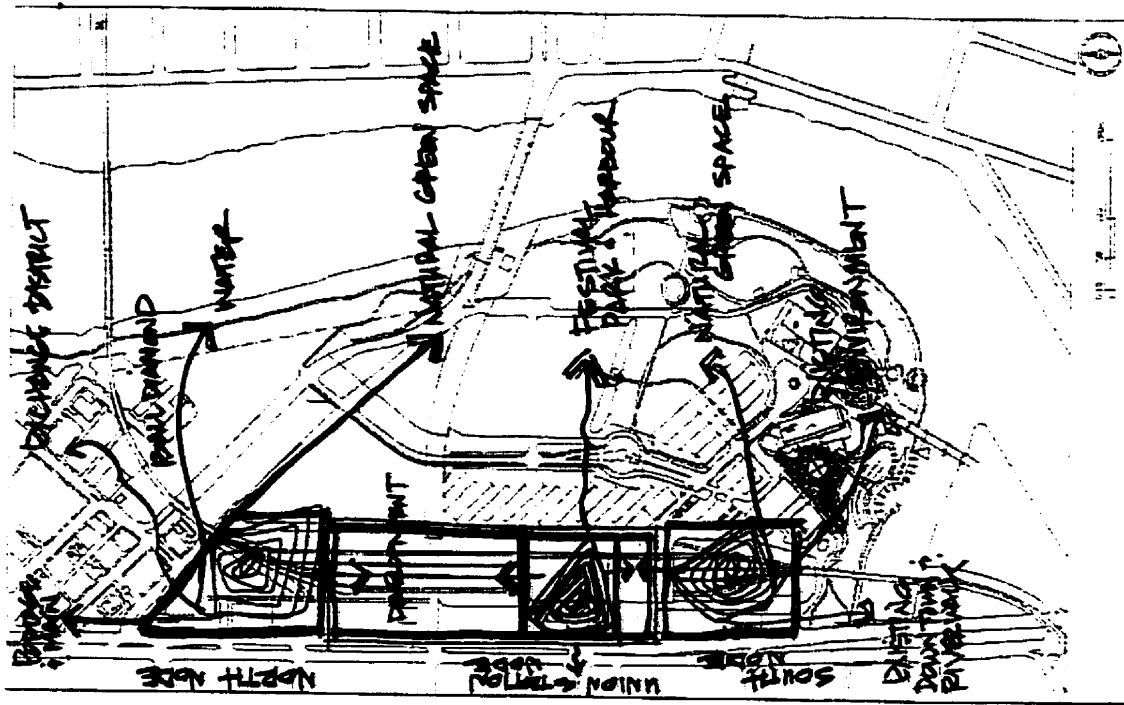


fig. 57 location of nodes



fig. 58 northern node



fig. 59 union station node

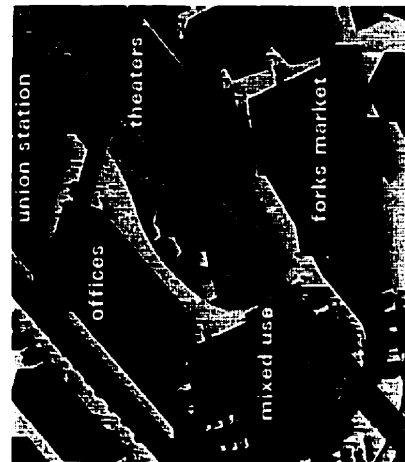


fig. 60 southern node



These nodes are anchors for the redevelopment of the rail berm. They could filter activity from various places like Portage Avenue, Main Street, and Broadway Avenue.

Mixed uses for the south node have an emphasis on retail, entertainment, recreation and restaurant space. The north node, on the other hand, is more suited as a transit focused area, office space environment and a place for temporary accommodations.

The nodes are also instrumental in the redevelopment of the rail berm.

## **7.5 public space**

Redevelopment of the rail berm and creating an environment that is pedestrian friendly requires more than the addition of land uses. Public places are not assembled from the leftovers of built form, instead spaces should be designed first and buildings second or in unison, for example Grant Park in Chicago. "Buildings (and other objects that people place in the environment) should be arranged in such a way as to define (and even enclose) public space, rather than sit in space."<sup>36</sup>

"Spaces surrounded by buildings are more likely to bring people together and thereby promote public interaction."<sup>37</sup> Public spaces enhance gathering, socializing and activity. A person can promenade, saunter, jog or skate through them.

Public space is a place for observation. Children laughing by the water, women having tea, men out to lunch and performers playing in the plaza. One way which the area for public space can be increased is to create additional space at different levels. These levels of public space would reinforce the built environment and the relationship with ground level. Indoor public space also helps when cities face a varying degree of seasonal conditions.

see figure 61,62

fig. 61 the proposed pedestrian environment

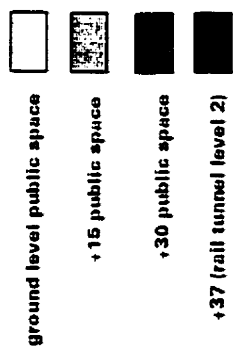
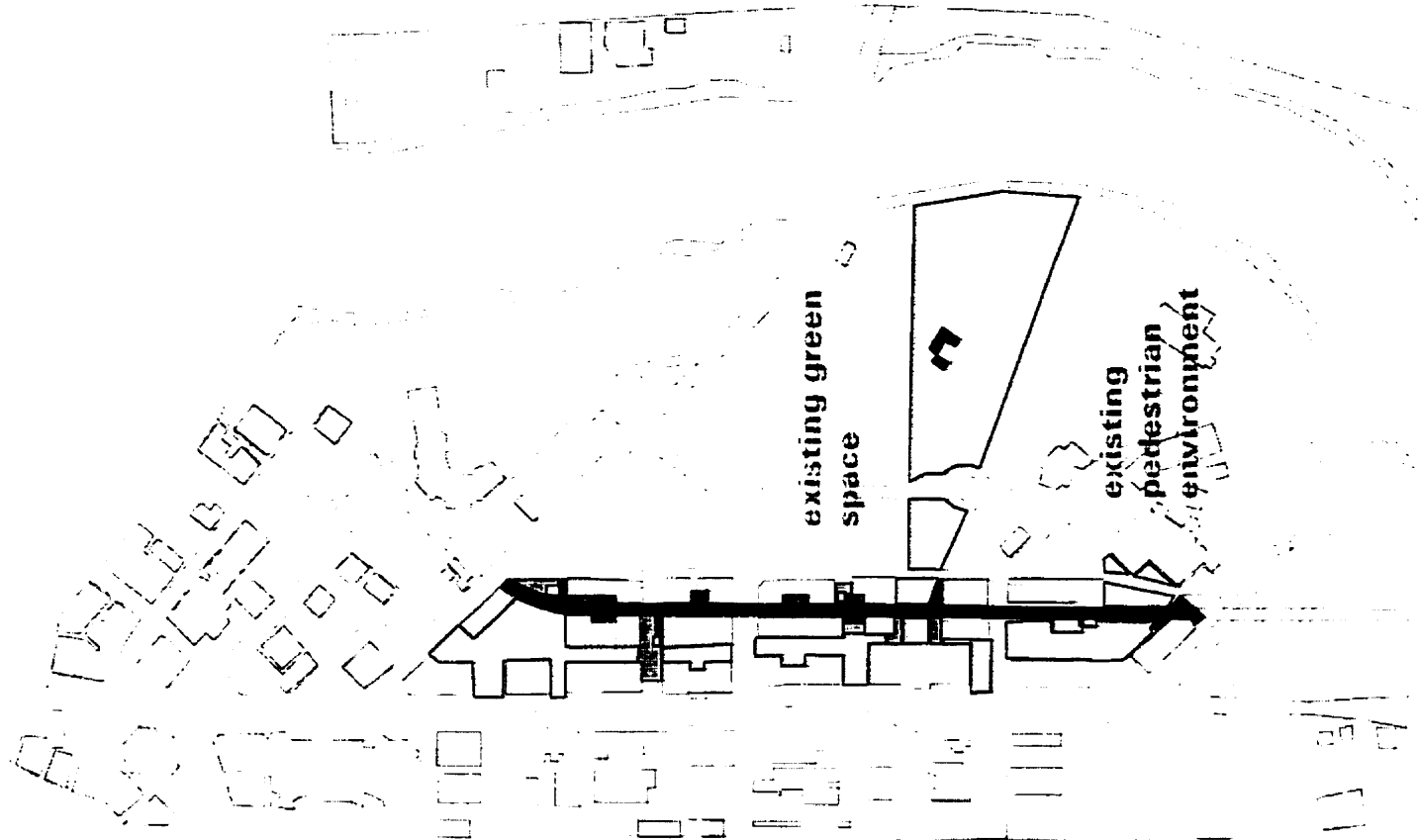


fig. 62 proposed open space

ground level public space

above ground public space

structured green space

natural green space



Without defining space there is limited sense of place, of belonging, of self-gratification. Spaces are designed to be dynamic and carry you through, above, around and below. The experience of place is the result of colour, texture, scale and forms. A good urban space is achieved through a thoughtful master plan and by adding a variety of activity.

## **7.6 entrances**

Arrival and departure are the two most lasting impressions. Have you ever frequented a restaurant where you have been pleasantly welcomed and joyfully wished upon leaving to continue a fabulous evening? Did you return? The first and the last observation will win over your return visit.

The Fork's has a variety of entrances and exits. There are back doors, located along the water's edge, main entrances and places to arrive by water or by foot. The back doors should exhibit mystery, while the main doors, coming off of Main Street, should invite, introduce, reveal, offer clarity, promote discovery, interest and intrigue. Departure should involve a sense of return, re-evaluation, reflection and re-discovery of the site.

**see figures 63-70**

## **7.7 circulation**

Streets are typically designed for mutually exclusive uses such as the roadway for vehicle traffic while the sidewalk is limited to the pedestrian. Ones that combine transit modes prevent commonality and promote active vibrant places with children catching buses, people crossing avenues and cars circling for afternoon shopping. Chaos is good because it makes people stop and look at their surroundings.

**see figure 71**



fig. 63 entrance #4



fig. 64 entrance #3



fig. 65 entrance #2

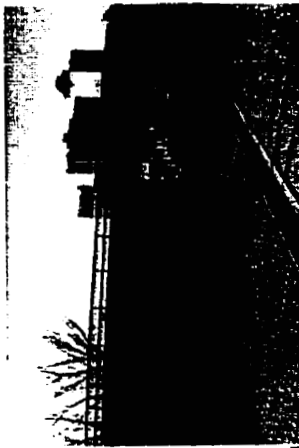


fig. 66 entrance #1

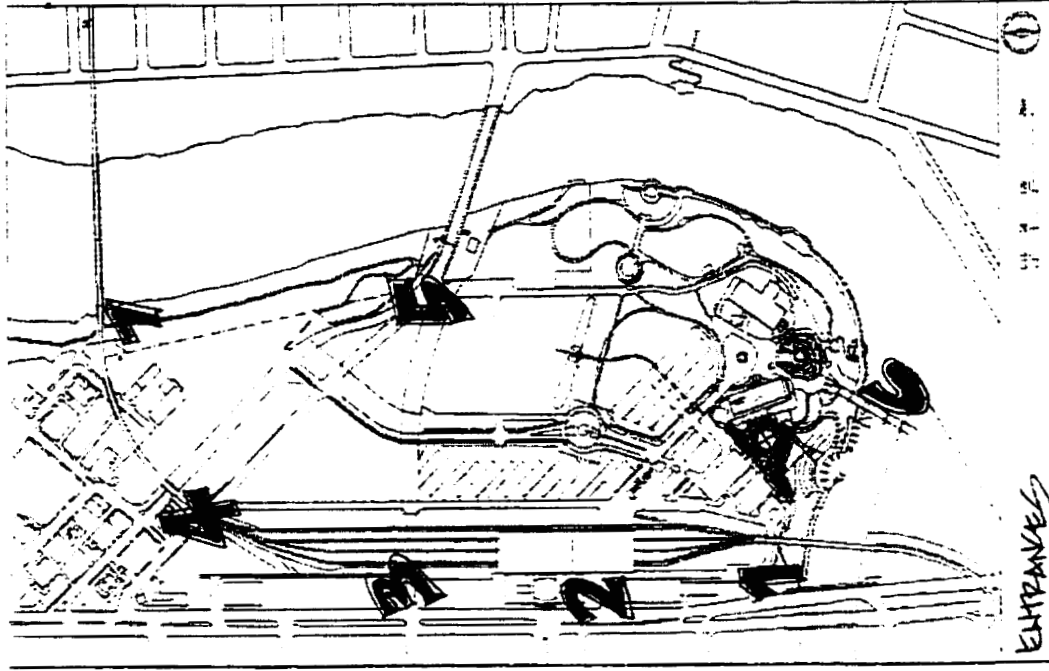


fig. 67 entrances at the forks



fig. 68 entrance #7

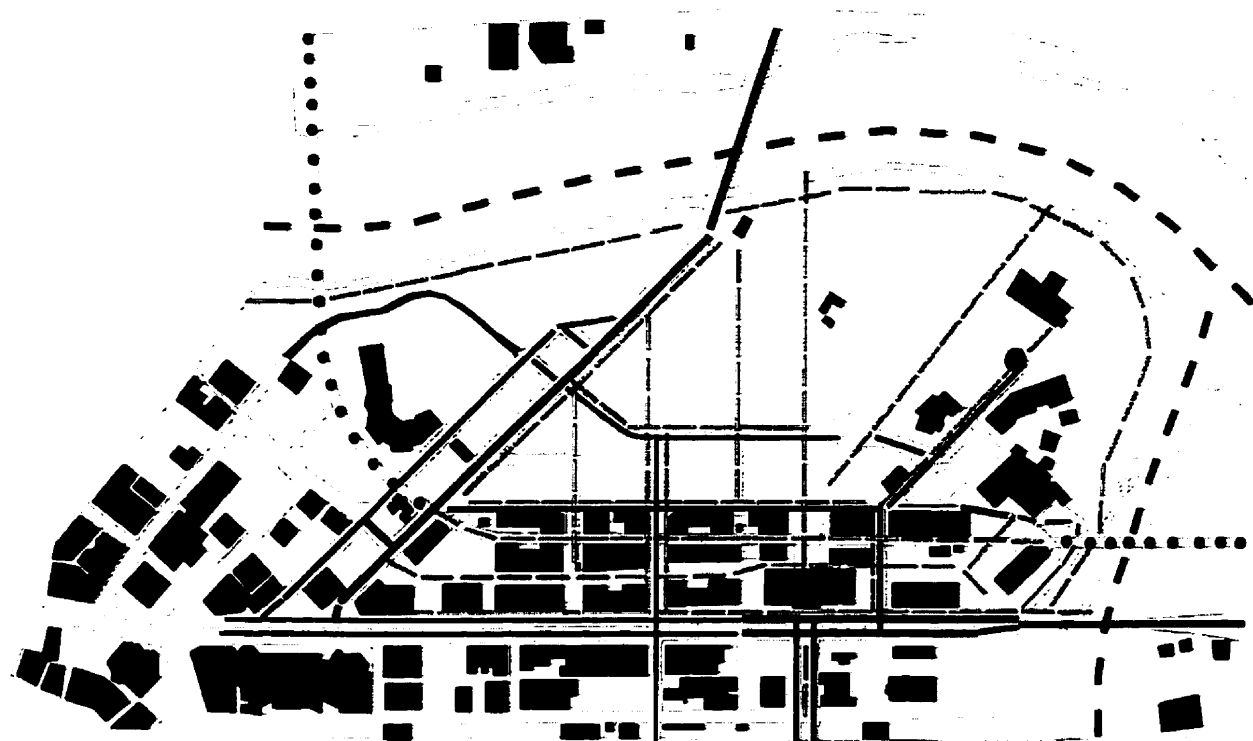


fig. 69 entrance #5



fig. 70 entrance #6

fig. 71 proposed circulation



pedestrian circulation ———  
vehicular circulation ———  
river circulation - - -  
railway circulation .....  
.....

Circulation above street level is an important safety and security consideration for people using the spaces. Circulation is vital for consistent site development and site variety. The surprise that can be evoked when you see an interesting space that requires thinking to reach. The advantage brought by berm development would be pathways along, above and below the berm, around building composition, and paths from Main Street and Pioneer Avenue.

"Public circulation systems should be seen as significant cultural settings where the cities finest products and artifacts can be displayed as in the piazzas of medieval and renaissance cities."<sup>39</sup>

## **7.8 3d environments**

A three dimensional environment is one where public space is extended to include places and uses which are above ground level. Careful design is required to maintain quality in the three dimensional environment that would enhance the livability and uniqueness of places for human interactions. Three dimensional environments create dramatic edges and special places which are created within them. Special places can exist around, underneath and inside the built form.

**see figures 72-82**

The built environment is enhanced when defined by landscape. Landscaping typically enhances the built environment and spaces become places when comprised of a variety of memorable levels and edges. Therefore, special attention must be given for all vertical spaces in the 3D environment. Ground level is just as important as what happens above. Successful three dimensional environments offer variety without sacrificing built form and levels of activity.



fig. 72 transition space for built form and structured green space



fig. 73 above ground pedestrian system



fig. 74 road section of main street



fig. 75 pedestrian street section

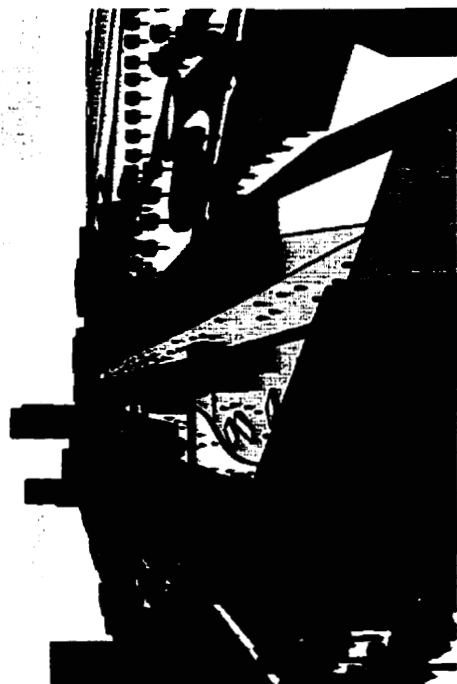


fig. 76 computer graphic of berm looking north



fig. 77 computer graphic of berm looking south



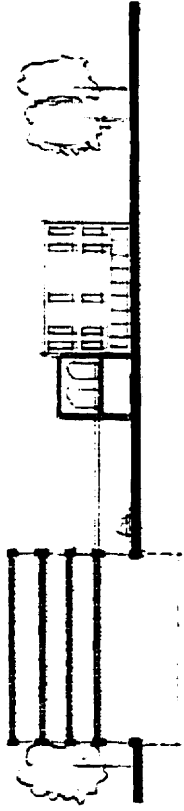


fig. 78 section A (see fig. 73 - site plan)

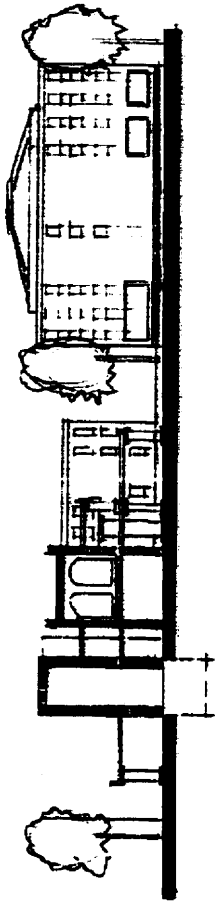


fig. 79 section B (see fig. 73 - site plan)

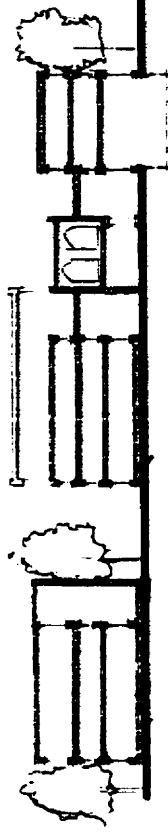


fig. 80 section C (see fig. 73 - site plan)

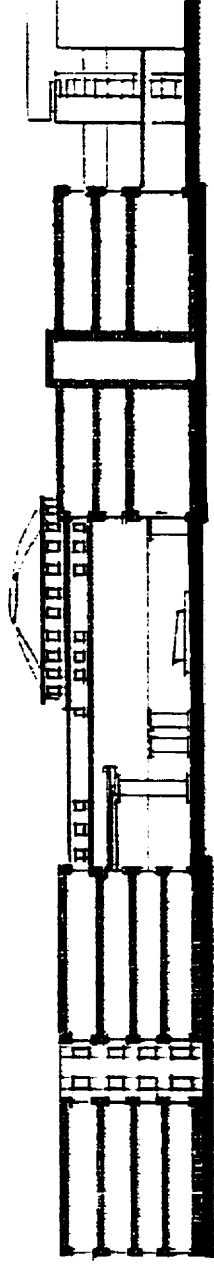


fig. 81 section D (see fig. 73 - site plan)

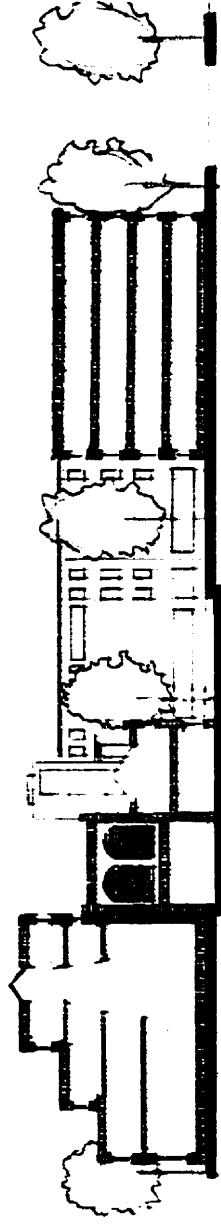


fig. 82 section E (see fig. 73 - site plan)

## 7.9 a sense of place

The Forks has a sense of place as a result of its prime location and historical significance. It is defined and expressed through Winnipeg's land patterns, built form, water's edge, and river junction. A place should have belonging, personal representation, personality, and pride. "It must have magic or should have, and it depends on hedonistic moods, on signs, on night lights, on fantasy, color and other imagery."<sup>40</sup>

Design as if people mattered.<sup>41</sup> If belonging is expressed through a sense of place then providing those conditions will produce well being for its users. The attributes that define a sense of place might not be physical but evoke and instill things required for happiness and well being.

see figures 83-86

## 7.10 structured green space

Boats whisking by, children playing frisbee, a game of soccer, playing hop-scotch or sitting next to a tree watching the flow of the river. Smells of fresh air, hot dogs, children skating and kites flying. This can be fulfilled in a busy downtown by providing structured activity space.

The Fork's site has an extensive greenway with park space. An overall design scheme could maintain vast green space integrated with new development.

Most cities attempt to combine built form and green space. However, the Fork's would require an even mixture of built and green space to make the site successful. But what happens at their interface? What does the green space turn into before it becomes buildings? The interface becomes a transition with two distinct edges - the built vs the natural park space.

see figure 87

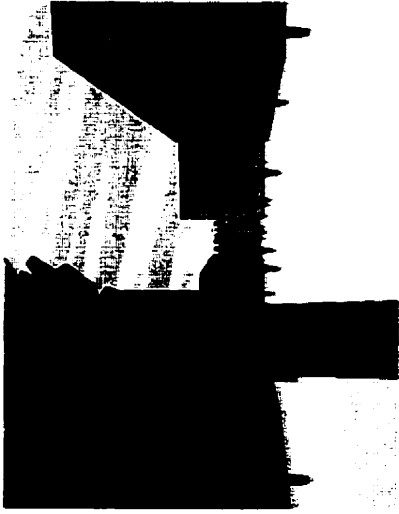


fig.83 pedestrian corridor - computer generated

fig. 84 union station public space - computer generated

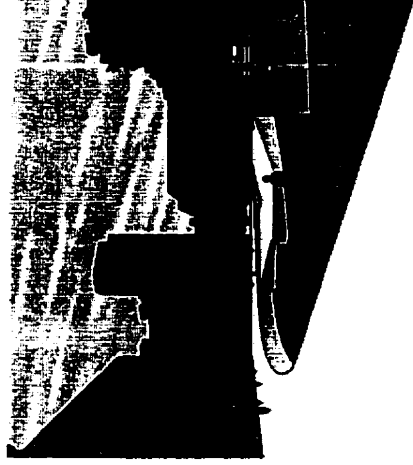
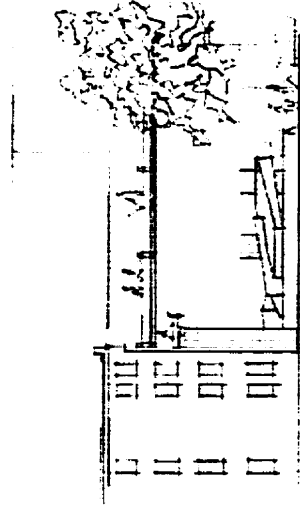


fig. 85 south public space - computer generated

fig. 86 north public space - computer generated



Michigan Avenue in Chicago has a similar kind of transition as the Forks site. It illustrates built form next to green space which transforms into water. As in the Fork's proposed scheme, not only would the structured green space introduce formalized activity space but would also offer a progression between the natural and the built environment and for surface parking.

Summer months would provide activity space with greened parking surfaces while winter months could introduce outdoor activities or places for full time parking.

The transition edge is critical. It must offer division, act as entrance, have spatial organization and be fun.

To develop the remainder of the Forks site, as a 56 acres green park, seems uneconomically feasible. However, concentrating development in one area and maintaining the existing green while providing a transition seems to use the lands productively. Maintaining the existing open space will also reinforce the social and historical importance of the site.

A structured green space is important for not only drawing more users to the site but would also provide recreational enjoyment for the sites residents. It offers variety and acts as an edge,

see figures 87-89

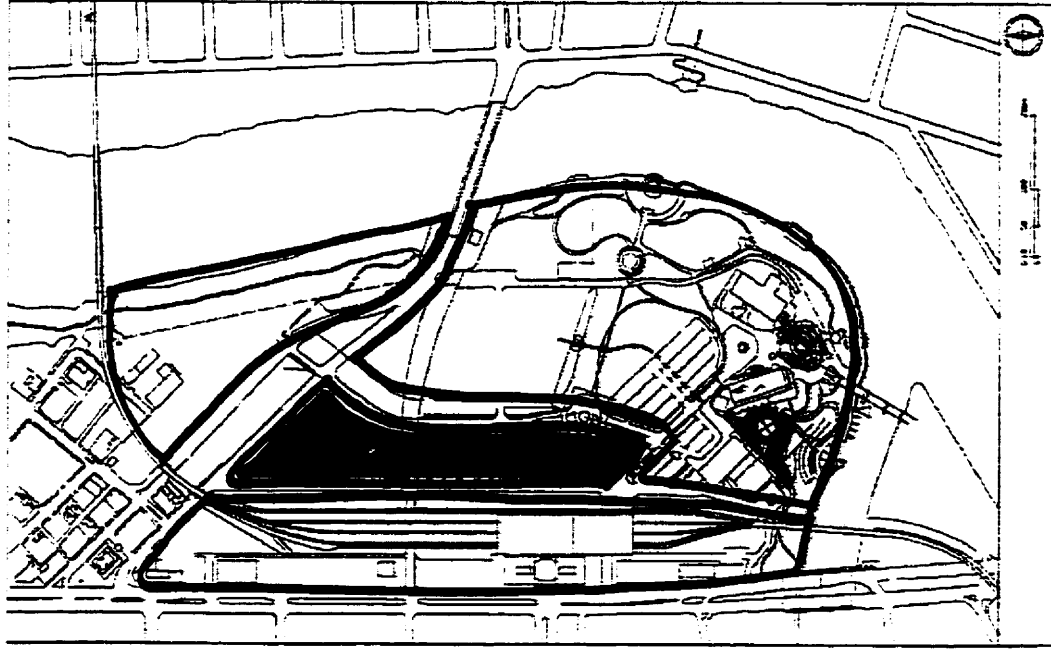


fig. 87 location of structured green space

fig. 88 proposed design scheme

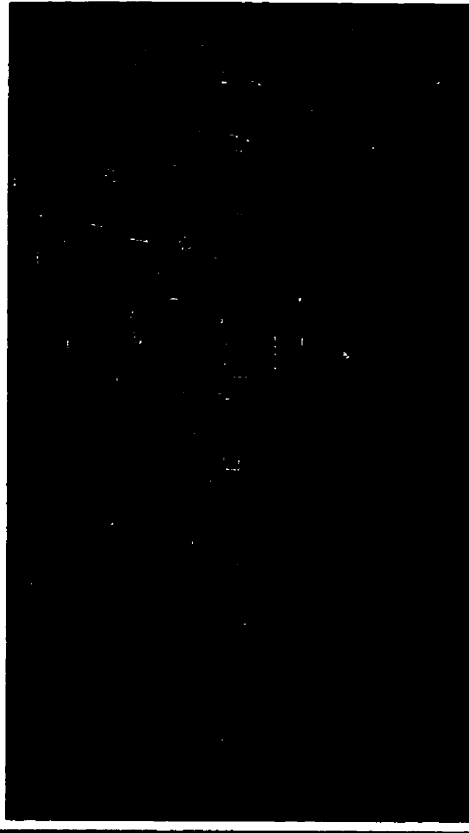
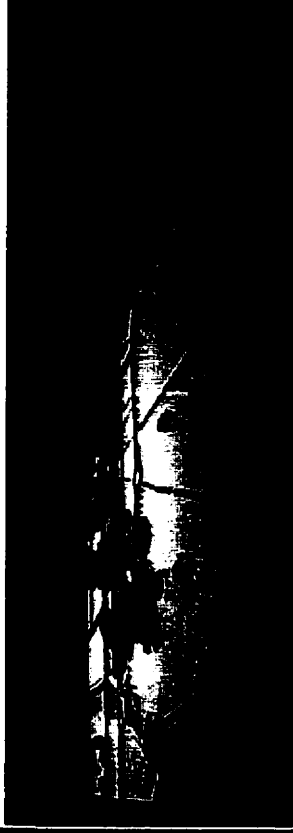


fig. 89 grant park in chicago

## **chapter 8**

### **the design proposal**

This proposal attempts to maintain the existing green space and focuses all development towards the rail tracks and away from the waters edge.

Winnipeg, like most Canadian cities, is faced with the problem of rail lands dividing downtowns. A new direction of site development could propose a comprehensive and dense design without taking away land in exchange. The rail berm design scheme could help strengthen the Fork's connection to Broadway, establishing edges and intensify the relationship between built form, structured green space and the natural park space that is existing.

This proposal works concurrently with the Forks North Portage Partnerships objectives and guidelines for the site as outlined in the design. The existing rail tracks would be reduced to two tracks and tunneled (at the same height as they exist today) to allow for development to occur around, above and below the tracks.

Proposed mixed uses for the site include theaters, residences, office space, production (manufacturing), a transit node and retail. A service road is located under the tracks to provide a 'back alley' to the mixed uses along the berm.

The concept of combining transit with development has occurred for years in Europe. European cities regularly face these problems because of density.

Special places can now exist at various levels (ground, +15, +30 and even +45) involving a variety of uses. Development at either end of the berm requires sensitivity and must not hinder the existing environment but act harmoniously with it. Broadway can now be extended through Union Station by maintaining a ground

see figure 90

see figure 91

see figures 92-95

level promenade that exists inside Union Station. A linear view plane continues towards the water and paths will provide direction to both the Forks Market and the vast green space.

The overall concept involves the integration of built form with public space, as well as the transition between built form and the natural environment, in an effort to maintain the history of the Forks without detracting visitors or development. The end result of the design is to be a dense urban edge to a grand park space, attracting both tenants and year-round visitors in the hope of promoting a vibrant community.

fig. 90 the proposed site plan







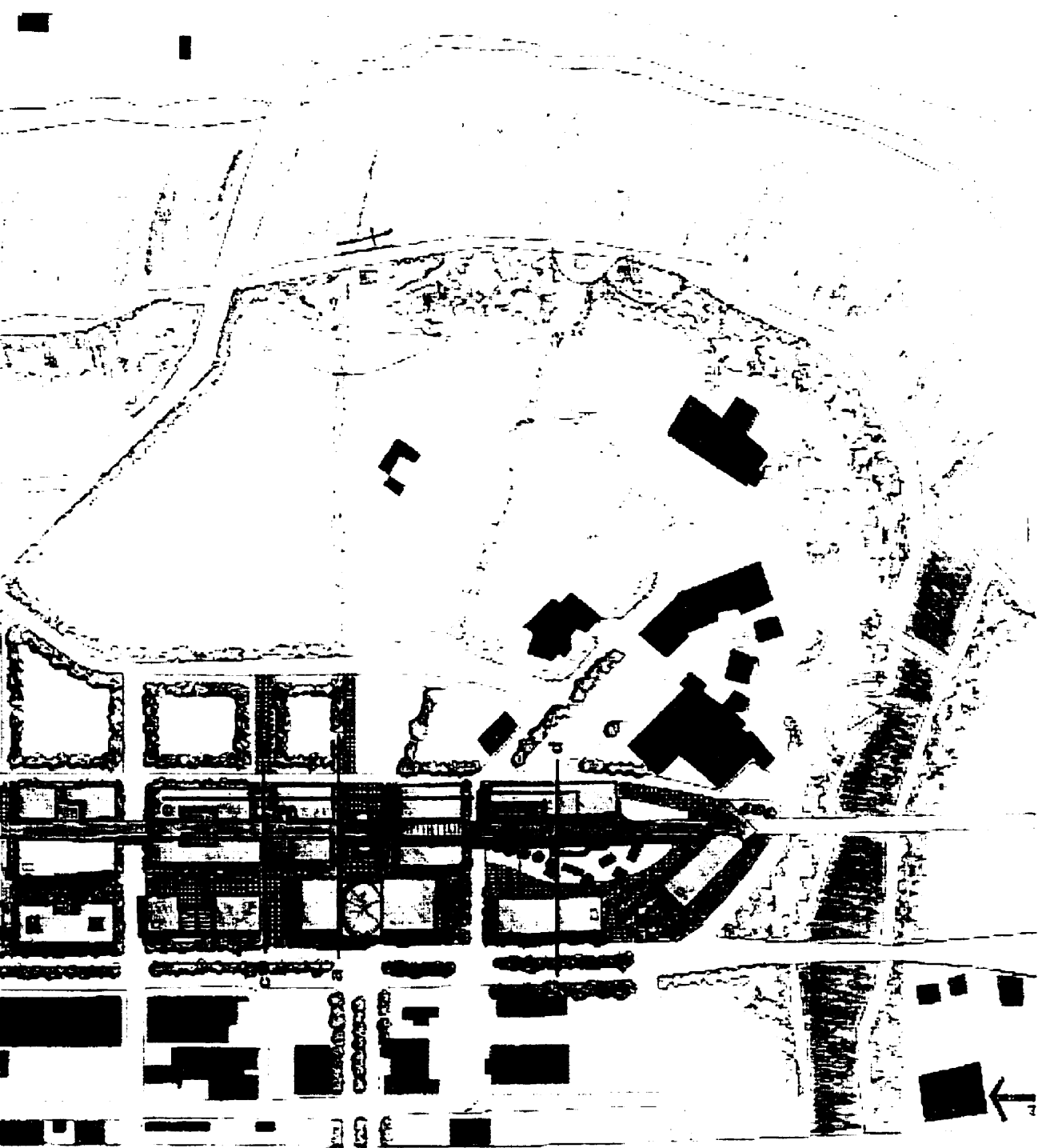
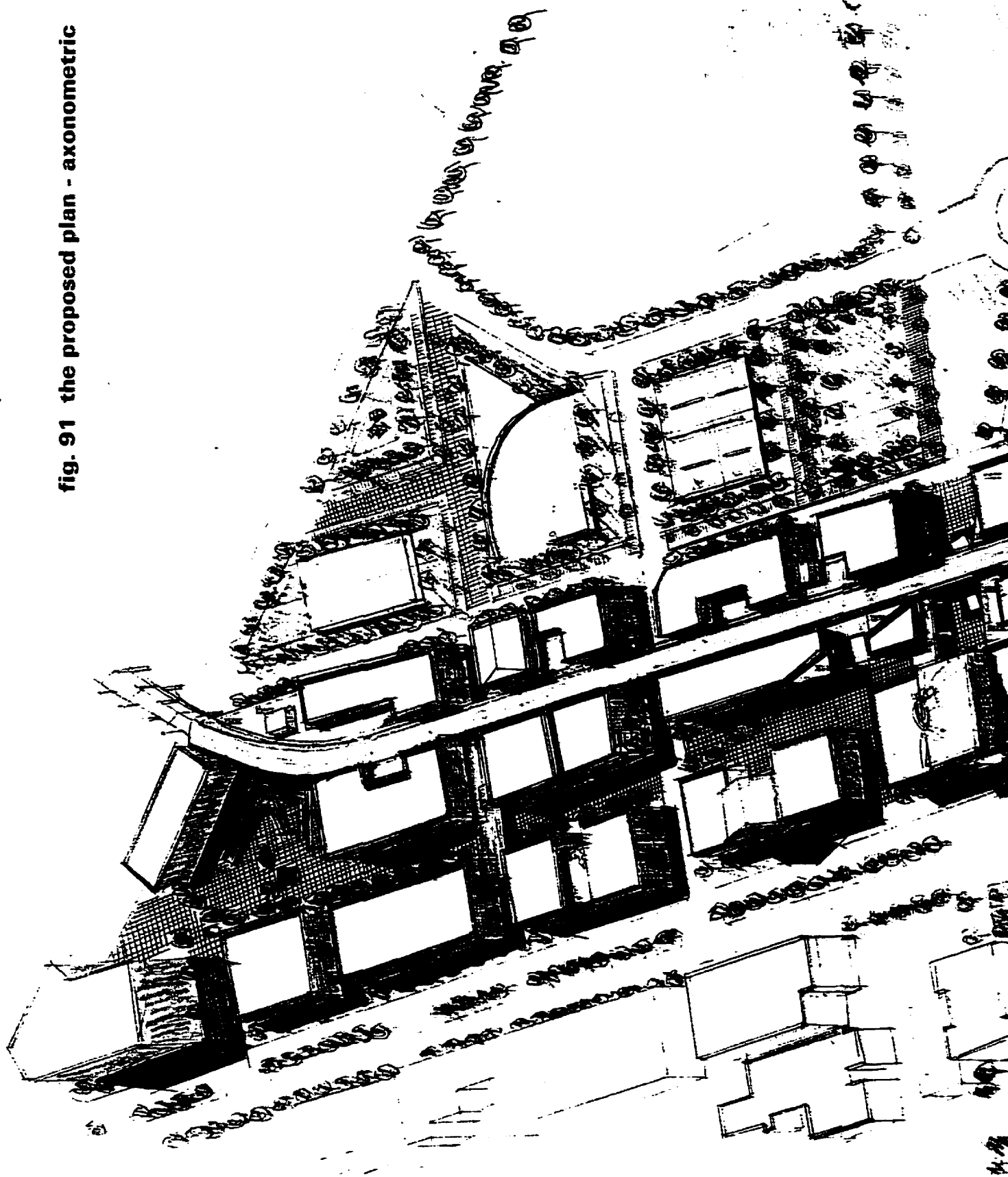




fig. 91 the proposed plan - axonometric





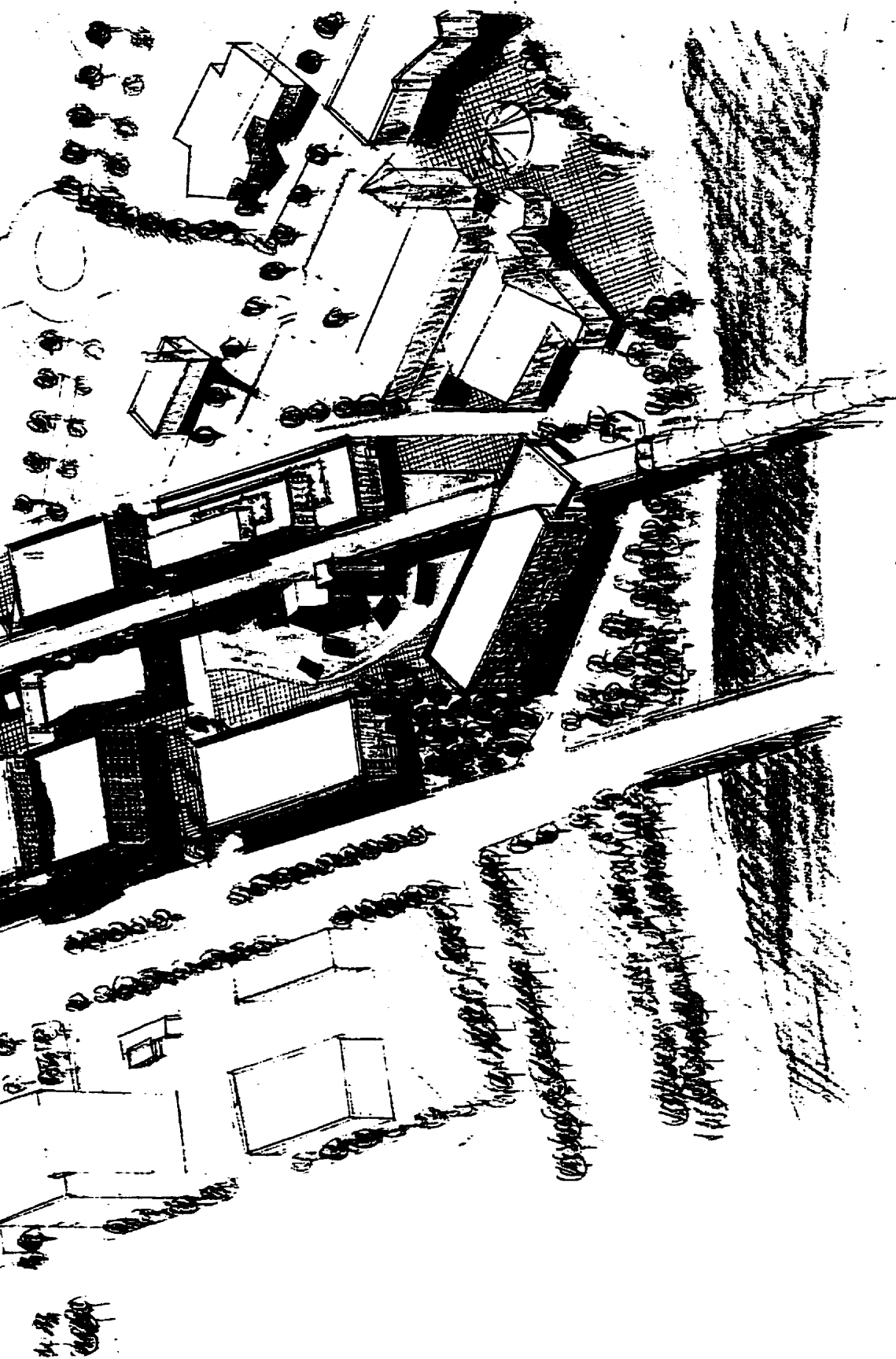




fig. 92 west elevation



fig. 93 3D computer axonometric

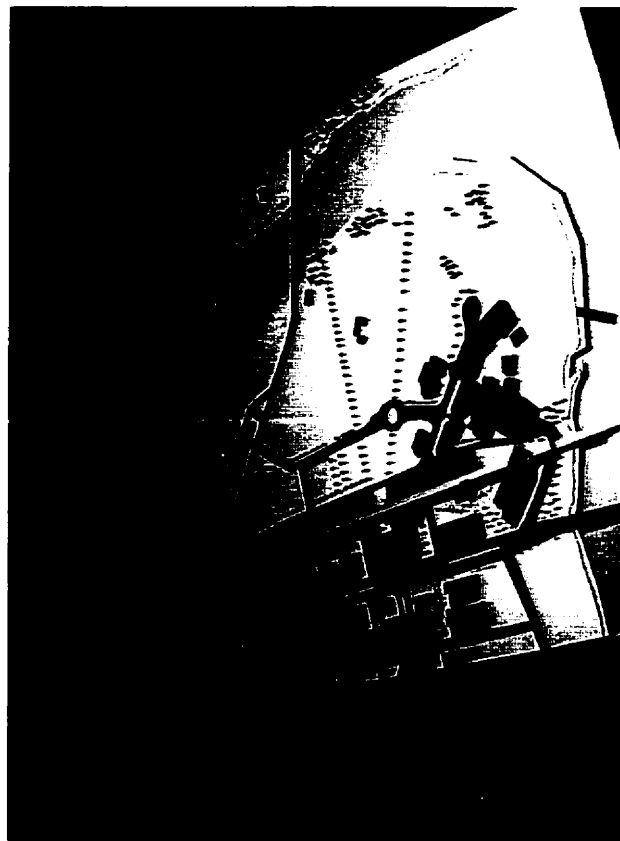


fig. 94 3D computer axonometric



fig.95 east elevation



## **chapter 9 conclusion**

Coordinated and planned development at the Forks has more potential to make it an even better place for Winnipeg residents. Although it is considerably disputed whether the site should be further developed or remain as natural green space, this proposal acknowledges the opportunities for providing both a development and natural green space. Ultimately the site requires more development for self-sufficiency.

The solution requires a re-thinking of the existing physical environment. The proposed scheme redefines the historic rail berm. This new area for development provides the opportunity for a dense mixed use design and offers a stronger connection to the rest of downtown.

The proposal would enhance the surroundings and add patronage to the existing Forks Market by offering a new residential environment in Downtown Winnipeg. Suburbs have attracted a large portion of the downtown activity and livability. The Forks scheme would add a stronger sense of place, provide flexible live work units and reduce commuting.

Mixed use communities offer opportunities above the standard suburban design. They foster healthy active interaction and promote variety of uses while maintaining a sense of belonging. Historically we have lived in places that offered amenities and convenience within walking distance. The typical suburban design reinforces car dependency. European cities maintain walkable distances to amenities which happen to be located 'just down the block'. The introduction of mixed use environments will satisfy human needs for a well balanced community.

see figure 96

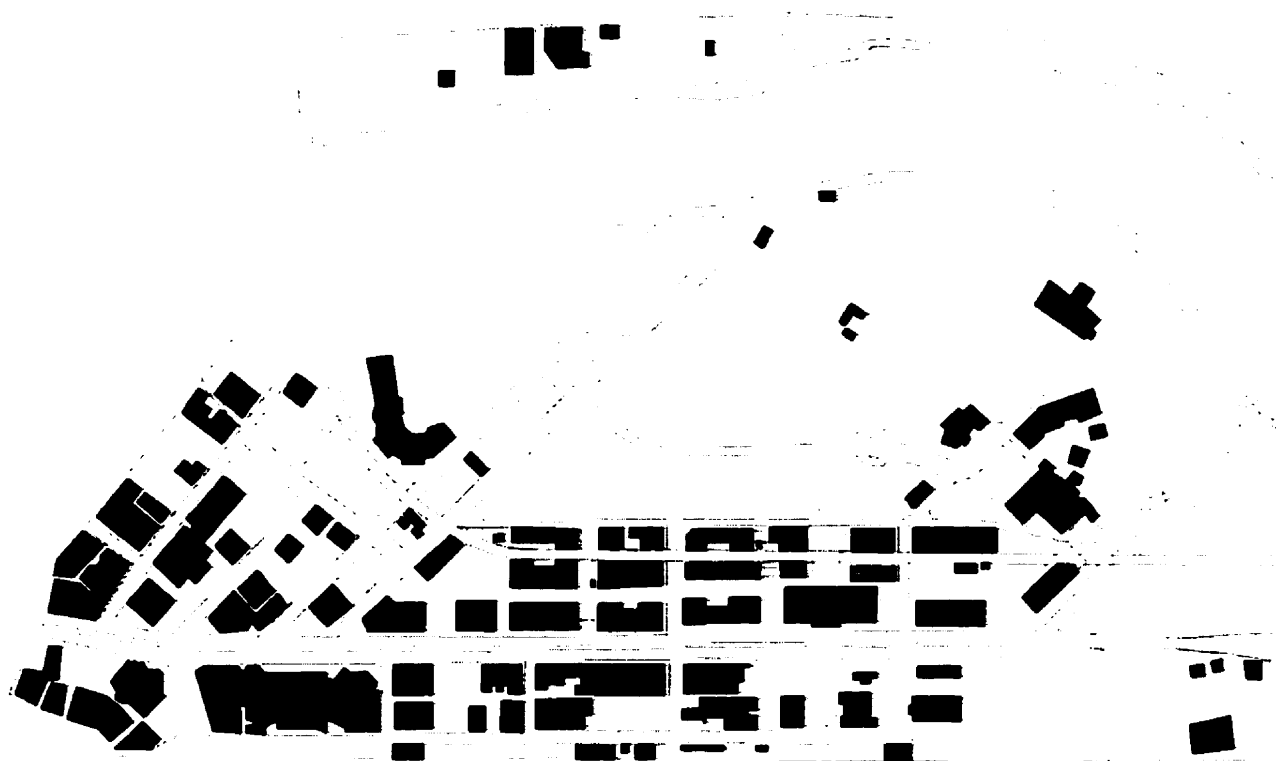


fig. 96 proposed figure ground

Ultimately people decide which environment suits them. This design proposal should not be used as a manual for downtown revitalization, instead, it offers a solution in accommodating development around a 19th century rail yard. Rail tracks have been dividing Canadian cities for years. There are opportunities that can be gained from these land dividers. It is time bring back history and make new history.



the existing harborfront



the existing harborfront



the convergence

the existing Forks Market and waterfront

The Forks site consists of 99 acres of land surrounded by the existing downtown fabric. The site is in the heart of the city and across the river from Winnipeg's historic French District. Currently the site contains a public market, offices, a children's museum, restaurants, docking facilities, interpretive facilities, outdoor theaters, historic rail cars and a river walk. It will soon house the Manitoba Theatre for Young People, the Manitoba Television Network, a festival park and a baseball diamond (see fig. 22).

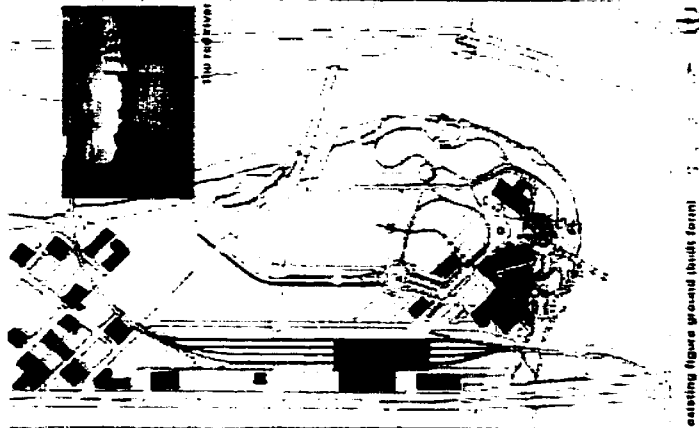
"The popularity of the area has surpassed all expectations. There are now opportunities to walk along the river, dock small boats at the historic port and explore the market. The site also became a hub for programmed activities in the city." "The site receives up to 5 million visitors per year."

The site has the potential for attracting visitors and local residents all year round. It has the potential of becoming a part of the greater downtown. However, it must be careful not to hinder or take existing activity from the downtown.

the existing cell beam



existing figure ground (built form)



## downtown schematic and site analysis



legislative building



portage avenue and main street



fort gerry hotel



st. boniface cathedral

The Forks site has many assets. It is located at the convergence of the Red and Assiniboine Rivers. It has a strong historical and cultural presence, only 1/4 of the site is currently developed and the site's location is near landmarks such as Main Street and Broadway Avenue.

The Forks's assets include such things as the cell beam barrier, the exposure to seasonal conditions, the active levels of current development, and the lack of connection between the site and the remainder of the downtown.

Source: J.C. MacGillivray, 1984





downtown winnipeg



legislative building



portage avenue and main street



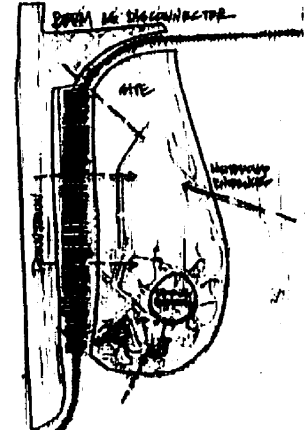
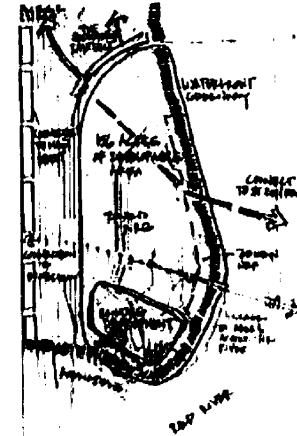
fort garry hotel



st. boniface cathedral

The Fork's site has many assets. It is located at the convergence of the Red and Assiniboine Rivers, it has a strong historical and cultural presence, only 1/4 of the site is currently developed and the site's location is near landmarks such as Main Street and Broadway Avenue.

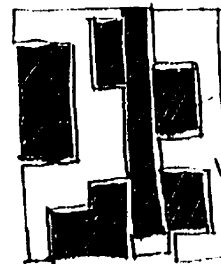
The Fork's constraints include such things as the tall barn barrier, site exposure to seasonal conditions, the office levels of current development, and the lack of connection between the site and the remainder of the downtown.



## design concept and architectural type

The design concept for The Forks draws from three precedents to evoke the relationship between built form and the natural environment. There becomes an apparent transition between new development and the existing environment. This transition incorporates built form with public space, built form with structured green space, and structured green space with the natural environment.

The main issue is transition and utilization of the barn

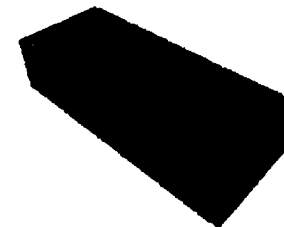


BUILT FORM  
PUBLIC SPACE



STRUCTURED GREEN SPACE

### the warehouse



Historically Winnipeg's downtown has been considered architecturally in terms of the warehouse, as evidenced by the development of The Exchange District. This typology is not one that should be replicated, however when used and modified to meet new conditions for today, this warehouse style could give respect to our past, yet could be further modified for flexibility, light and movement.

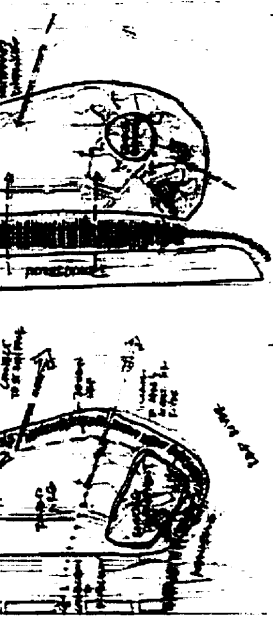
Flexibility could be achieved through large volumes (both vertical and horizontal) that could be personally customized dependent on use. One could work, manufacture, perform specialty services, occupy office space or even live out of a flexible unit. Spaces could be accommodated for multiple living, recreation, entertainment or for activities.

Light could be added through the addition of courtyards, light wells or through terracing of the





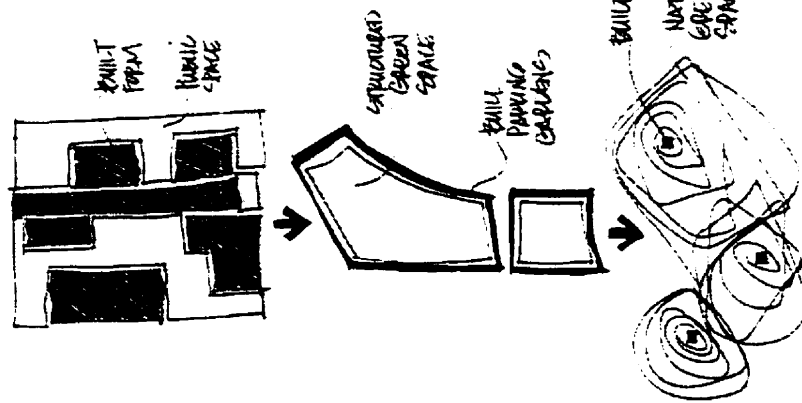
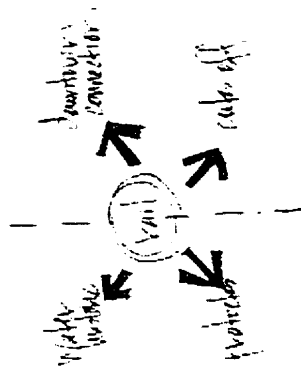
Government Winnipeg



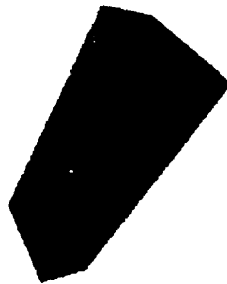
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The design concept for The Forks draws from these precedents to define the relationship between built form and the natural environment. There becomes an apparent transition between new development and the existing environment. This transition incorporates built form with public space, built form with structural green space, and structural green space with the natural environment.

The main issue is transition and utilization of the barn.



the warehouse



Historically Winnipeg's downtown has been considered architecturally in terms of the warehouse building, as evidenced by the development of The Exchange District. This typology is not one that should be replicated, however when used and modified to meet new conditions for today, this warehouse style could give respect to our past, yet add to the new architectural flexibility, light and movement.

Flexibility could be achieved through large volumes (both vertical and horizontal) that could be personally customized dependent on use. One could work, manufacture, perform specialty services, occupy office space or even live out of a studio unit. Spaces could be subdivided for multiple living, recreation, entertainment or for activities.

Light could be added through the addition of courtyards, light wells or through terracing of the building form.

Movement through 3D and ramps is not restricted merely to ground level. People are able to circulate, sit, and enjoy activities at all levels of the built design. This multiple level interaction should be carefully taken away from the ground level. The interior level movement is also the focus of particular attention.

Therefore, the warehouse building form has the potential for all the above mentioned qualities as well as providing a framework for historical interpretation.

reclaiming winnipeg's history: it begins at the forks. a design proposal





the Forks North Portage Partnership and sustainable community design principles.  
establishing stages for development

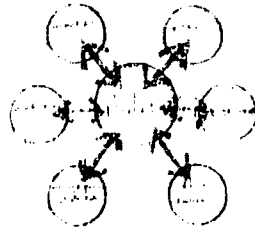
#### sustainable community design

A mixed use design could potentially create a self-sustaining community. Users should include places for a person to shop, work, live and play. Amenities are important. Density of use would increase the likelihood of sustainability according to Donald Appleyard and Allen Jacobs sustainability requires "... a critical mass of people, and they must spend a lot of their time in reasonably close proximity to each other including their homes. If there is to be an urban life



#### economics for self-sufficiency

Ultimately, residents of Winnipeg would like to maintain the expansive green space. However, the cost of maintaining the park and anticipating a self-sufficient marketplace seems unrealistic without additional sustainable development. The Forks requires a blend of new uses that would take sole emphasis off the Forks Market and Johnson's Terminal as the defining factors of the sites success



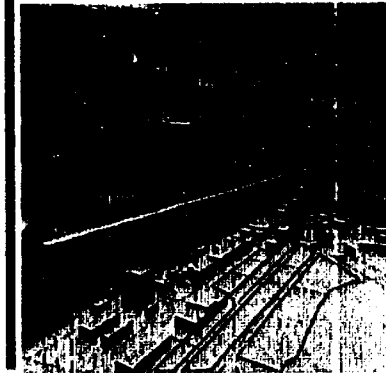
#### linkage to downtown

Linkage and placement of uses will alter the site's relationship with the rest of downtown. It is important to create both visual and accessible linkage to, from, and around the site.



Stages for development should proceed as the following stages are illustrated by the diagram (see below)

1. Structured green space
2. Live/work environment (residence and studio production spaces)
3. Commercial and retail uses.



A structured green space would bring more people to the site specifically for the purpose of recreation. This in turn becomes an amenity for residential and live/work environments. Once these two elements are established the need for commercial and retail uses will follow. Following the demand for these uses further development should proceed. However, complete development of the scheme at once could also provide all amenities required for sufficiency of the site.

## design principles and precedence

### design principles

The design concept will combine the following principles, apparent in the precedent studies and are important for achieving the goals of the Forks North Portage Partnership.

**rethinking the existing environment** through examination of areas for new development, specifically involving the rail form.

**mixed use design** through the creation of places for commerce, residence and pleasure. (Involving the typology of the warehouse)

**connections and physical linkages** involving both the existing environment and the surrounding downtown and landmarks.

**nodes** or places of transition between new development and the existing market place and ball diamond.

**public space system** offering variety and another form of access to various points on the site.

**entrances** and the importance for both arrival and departure.

**a sense of place** and reinforcing importance of belonging.

**3-d environment** expressing activities occurring either inside or outside, at ground level or levels above. The opportunity of courtyards and light wells.

**structured green space** through integration of activity, use and outdoor quality.

### sources and precedents

#### revitalizing Canadian harbours

The redevelopment of urban harbours has proven successful for many Canadian cities. Areas once industrial have been released back to the cities for re-development, preservation, and re-creation of historical elements. Some examples include North Vancouver's Lansdale Quay, the Harbours in Toronto and small towns in California, as well as Michigan Avenue in Chicago. All sites existed previously as rail lands and shipyards and have been involved in extensive re-invention to offer special historical places for its residents and visitors.

#### north vancouver - lansdale quay

The Lansdale Quay Market in North Vancouver was a revitalization plan for the North Vancouver waterfront. "The development includes offices, housing, educational institutions and a transportation terminal serving local buses and ferries." "Architecturally the concrete structure filled with metal and glass cladding has the honest appearance of an engineered building compatible with the work sheds of the neighboring shipyards." The key to the success of the site is the feeling that is evoked by the neighbouring tugboat company whose tug boats reinforce the sense of a working waterfront.



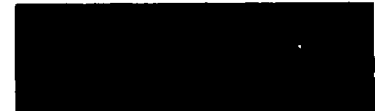
#### toronto's harbourfront

The development of Toronto's harbourfront introduced a 90 acre redevelopment scheme, including 40 acres of park and public open space. New uses of the site incorporate housing, office space, industrial warehouse structures and shops.

The Toronto Harbourfront is separated from the existing downtown by both the rail lands and the Gardiner expressway. The Harbourfront is able to maintain pedestrian and transit links to downtown as well as provide special view corridors.

#### chicago - michigan avenue and grant park

Michigan Avenue in Chicago is an interesting transition between an active built environment and park space through to the river. The lands adjacent the water were designated in 1838 as public grounds and would forever remain vacant of any buildings. "The public green space has remained open however formally developed as street





The design concept will combine the following principles, apparent in the precedent studies and are important for achieving the goals of the Furka North Portage Partnership.

**rethinking the existing environment** through examination of areas for new development, specifically involving the rail berm.

**mixed use design** through the creation of places for commerce, residence and pleasure. (Involving the typology of the warehouse)

**connections and physical linkages** involving both the existing environment and the surrounding downtown and landmarks.

**nodes** or places of transition between new development and the existing market place and built environment.

**public space system** affecting variety and another form of access to various points on the site.

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**a sense of place** and reinforcing importance of belonging.

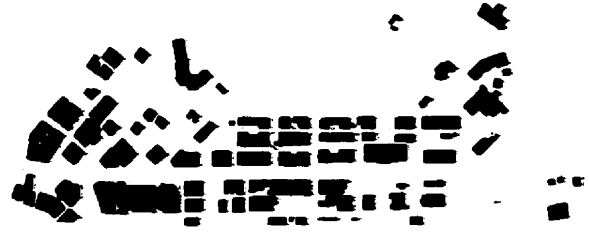
**3-d environment** expressing activities' occurring either inside or outside, at ground level or levels above. The opportunity of courtyards and light wells.

**structured green space** through integration of activity, use and outdoor quality.

**circulation** of vehicles, rail, buses and the pedestrian.

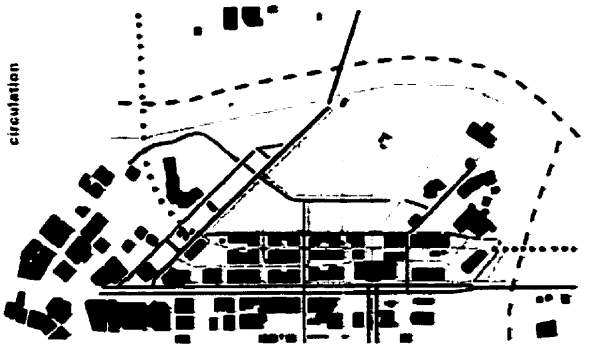
# urban systems

figure ground (built form)



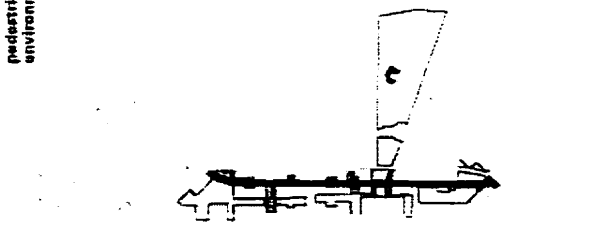
pedestrian streets  
vehicular streets  
bicycle paths  
utility corridors  
etc.

circulation



ground level public space  
- 10 public space  
- 50 public space  
- 0.7 road level level 2

pedestrian environment



## revitalizing Canadian harboursfronts

The redevelopment of urban harboursfronts has proven successful for many Canadian cities. Areas once (like) had been released back to the cities for re-development, preservation, and to creation of historical sites. Some examples include North Vancouver's Lonsdale Quay, the Harboursfronts in Toronto and small towns in California, as well as Michigan Avenue in Chicago. All sites established previously as rail lands and shipyards and have been involved in extensive re-invention to offer special historical places for its residents and visitors.

### north vancouver - lonsdale quay

The Lonsdale Quay Market in North Vancouver was a revitalization plan for the North Vancouver waterfront. The development includes offices, housing, educational institutions and a transportation terminal serving local buses and ferries. Architecturally the concrete structure is filled with metal and glass cladding has the honest appearance of an industrial building compatible with the work sheds of the neighboring shipyards. The key to the success of the site is the feeling that is evoked by the neighboring tugboat company whose tug boats force the sense of a working waterfront.

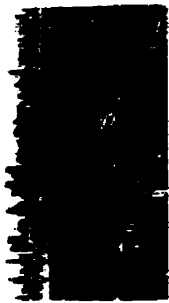
### toronto's harboursfront

The development of Toronto's harboursfront introduced a 80 acre redevelopment scheme, including 40 acres of park and public open space. New uses of the site incorporate housing, office space, industrial warehouse structure and shops.

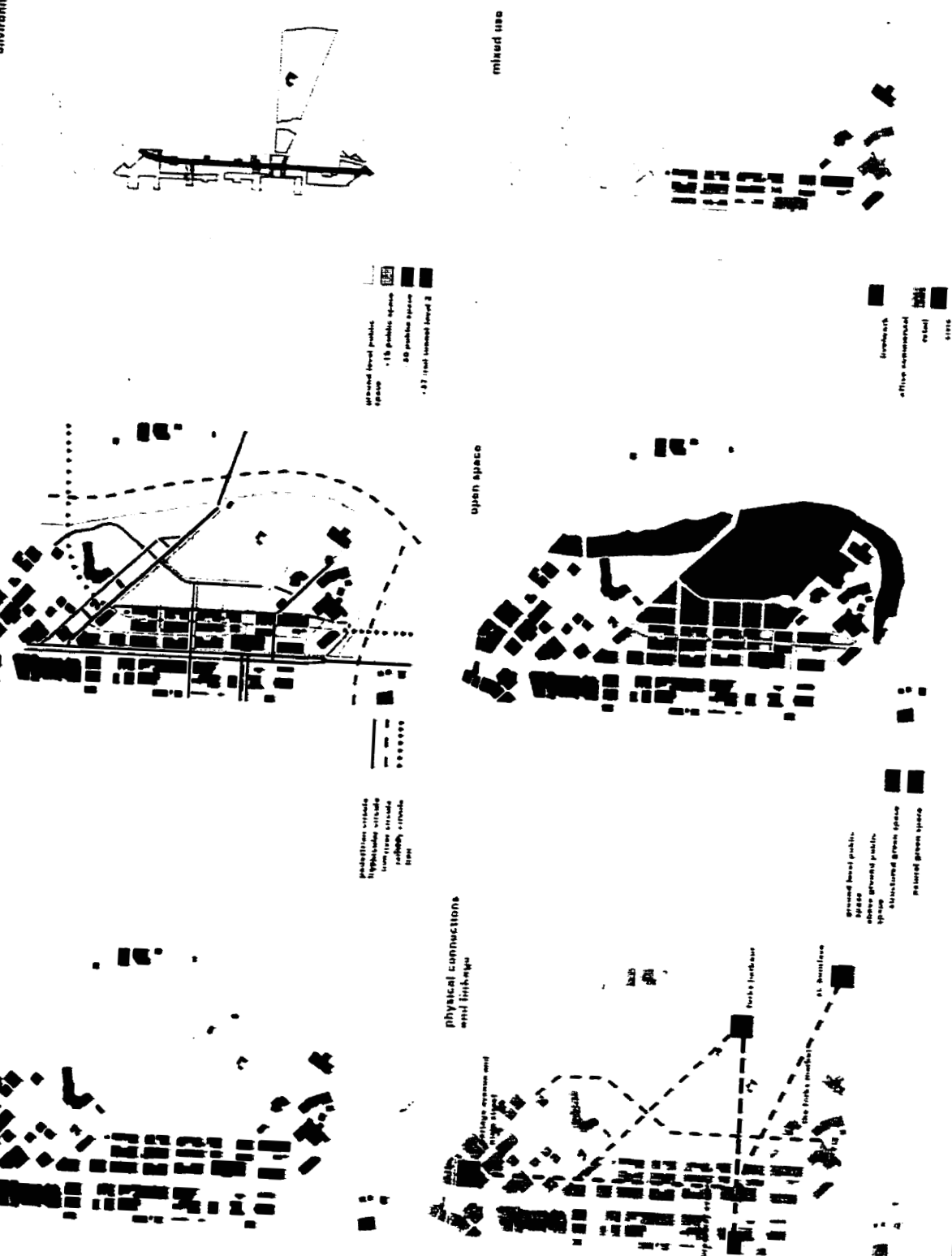
The Toronto Harboursfront is separated from the existing downtown by both the rail lands and the Gardiner expressway. The harboursfront is able to maintain pedestrian and transit links to downtown as well as provide special view corridors.

### chicago - michigan avenue and great park

Michigan Avenue in Chicago is an interesting transition between an active built environment and park space. The development of the Great Park and the Michigan Avenue development in 1939 as public grounds and would remain vacant of any buildings. The public green space has remained open however formally developed as structured green space. Michigan Avenue has been developed as a mixed use street that creates a 'wall' of buildings that create a dramatic edge and transition to the green space.









# the design proposal - a brief

The development scheme focuses itself on the existing CNR rail berm. Instead of trying to create a comprehensive design scheme on the small area of land available, the proposal would maintain the existing green space at the site.

Winnipeg, like most Canadian cities, is faced with the problem of rail lands separating or dividing portions of its downtown. A new direction of site development could propose a comprehensive and dense design without taking away land in exchange. The rail berm design scheme could help strengthen the Fork's connection to Broadway, establishing edges and intensify the relationship between built form, structured green space and the natural park space that is existing.

This proposal would work concurrently with the Forks North Portage Partnership development ideas for the site. The existing rail tracks would be reduced to two tracks and tunneled (at the same height) as they exist today to allow for development to occur around, above and below the tracks.

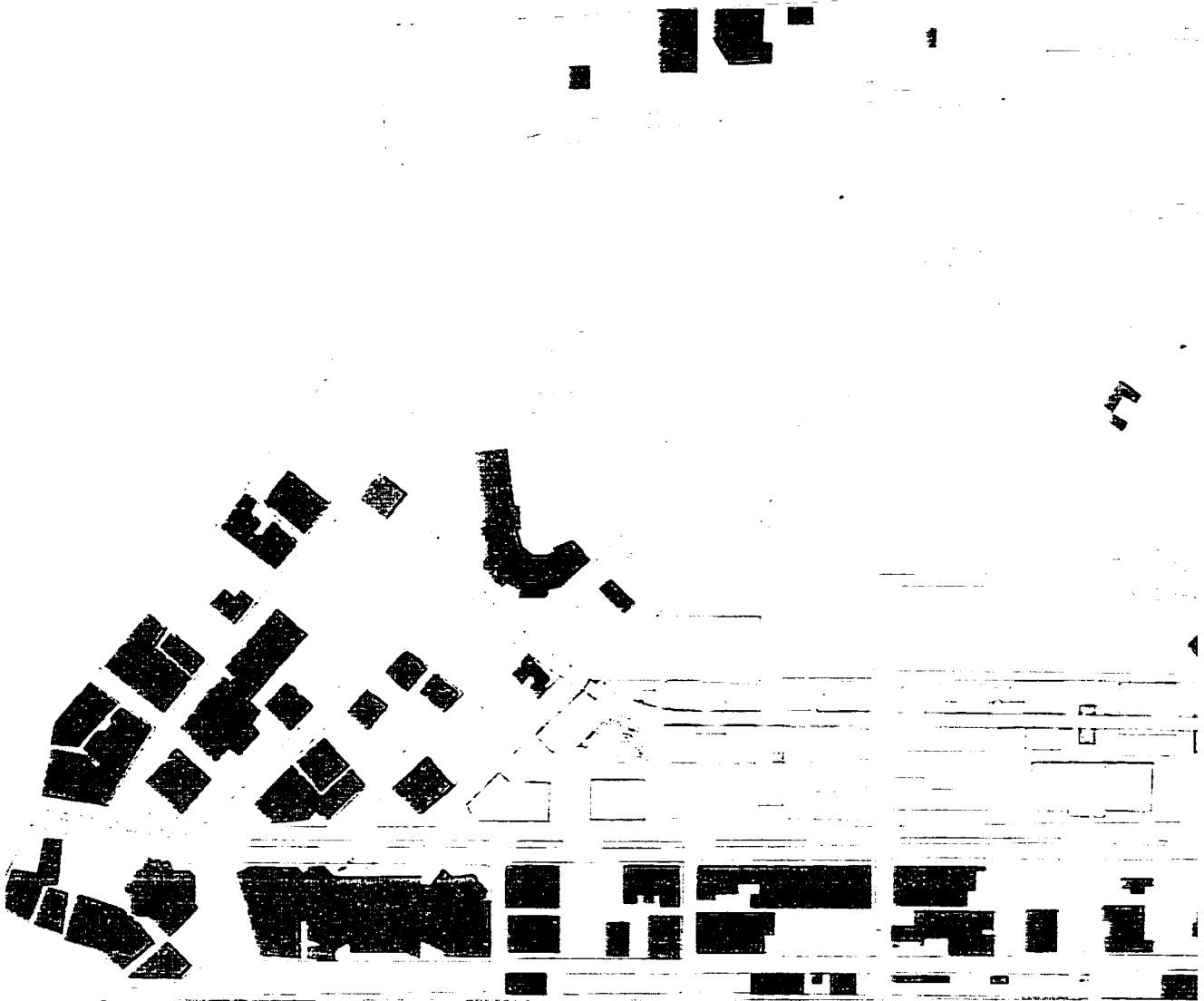
Mixed uses for the site include theaters, residences, office space, production (manufacturing), a transit node and retail. A service road is located under the tracks to provide a 'back alley' to the mixed uses along the berm.

The concept of combining transit with development has occurred for years in Europe. European cities regularly combat these problems because of density.

Special places can now exist at various levels (ground, +15, +30 and even +48) involving a variety of uses. Development at either end of the berm requires sensitivity and must not hinder the existing environment but act harmoniously with it.

Broadway can now be extended through Union Station that will in turn direct its users into the existing Fork's environment. View plans will continue towards the water and paths will provide direction to both the Forks Market and the vast green space (see fig. 48).

The overall concept is the integration of built form with public space as well as the transition of built form and the natural environment (see figs. 84, 85, 86).



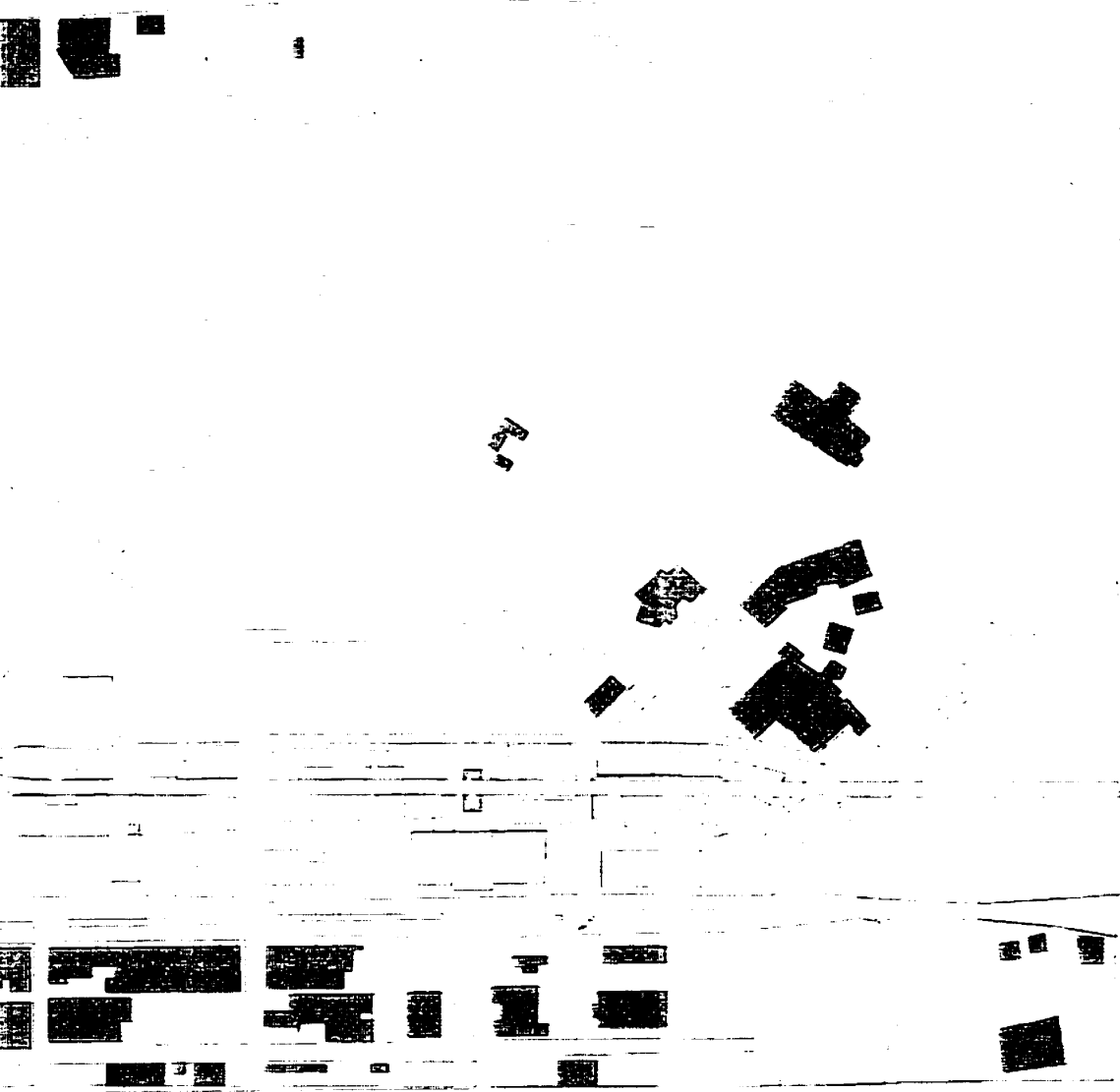




maintain the existing environment but act harmoniously with it.

Broadway can now be extended through Union Station that will in turn direct its users into the existing Park's environment. View planes will continue towards the water and paths will provide direction to both the Park's Market and the vast green space (see fig. 44).

The overall concept is the integration of built form with public space as well as the transition of built form and the natural environment (see figs. 64, 65, 66).



# nodes

## nodes

A new design scheme would require a detailed analysis of all existing nodes and nodes. Based on this analysis one must develop an integrated design scheme that will be a better environment.

The southern node must act in harmony with the Park's Market providing a blend of uses complementary to the market and gradually bringing wide views into the market place. The northern node must be carefully designed to reinforce movement towards the ballpark, the exchange district or ultimately the park space through the bridge. The bridge station is generally being used for office space but has the potential for retaining the use for its present use as a gathering place. This space is especially important both inside and outside because both have direct access into the larger space that surrounds it.

The nodes could also be thought of as anchors for the development of the rail line. They are responsible for filtering activity throughout the site evoking similar feelings that Union Station has on Broadway. These anchors serve for the southern node while being raised on a platform. The northern node seems on the other hand more suited as a transit focused area, office space and temporary commercial use.

Union Station, the southern node and the northern node are all important for the development of the rail line. The southern and northern nodes act as anchors for development allowing a filtering process to occur within them. Union Station then becomes the central node in the development of downtown, particularly Broadway. As



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A black and white photograph of a long, narrow, low-profile building, possibly a train car or industrial structure, with a series of windows and doors along its side. The building is oriented horizontally and appears to be made of metal or concrete. There are several rectangular openings, likely windows or doors, spaced out along the length of the structure. The background is dark and indistinct.



# e | e v a l u a t i o n s

[illegible][illegible]

s a p o u





# road sections and axonometrics

## Public space

Redevelopment of the cell kern and creating an environment that is pedestrian friendly requires more than the addition of new Public places are not assembled from the left overs of built form, instead spaces should be designed first and buildings second or in unison. Buildings lend other aspects that people place in the environment should be arranged in a way as to define and enrich public space, rather than all in space.

Spaces surrounded by buildings are more likely to bring people together and thereby promote public interaction. Public spaces enhance gathering, socializing and activity. A person can patioside, seminar, jog or skate through them.

Public space is a place for observation. Children (looking) by the water, women having tea, men off to lunch and performers in the plaza. Public places are important for an understanding of locale, outside and vertical separation.

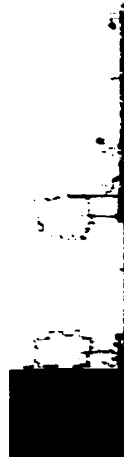
Without spaces there is no connection of place, no belonging, no self-gratification. The place is not a place. The space fluctuates, moves, expands, narrows, swirls, separates and vertical flight. They encourage excellence of plan, endurance of activity and ignorance of deadline.



road section through main street



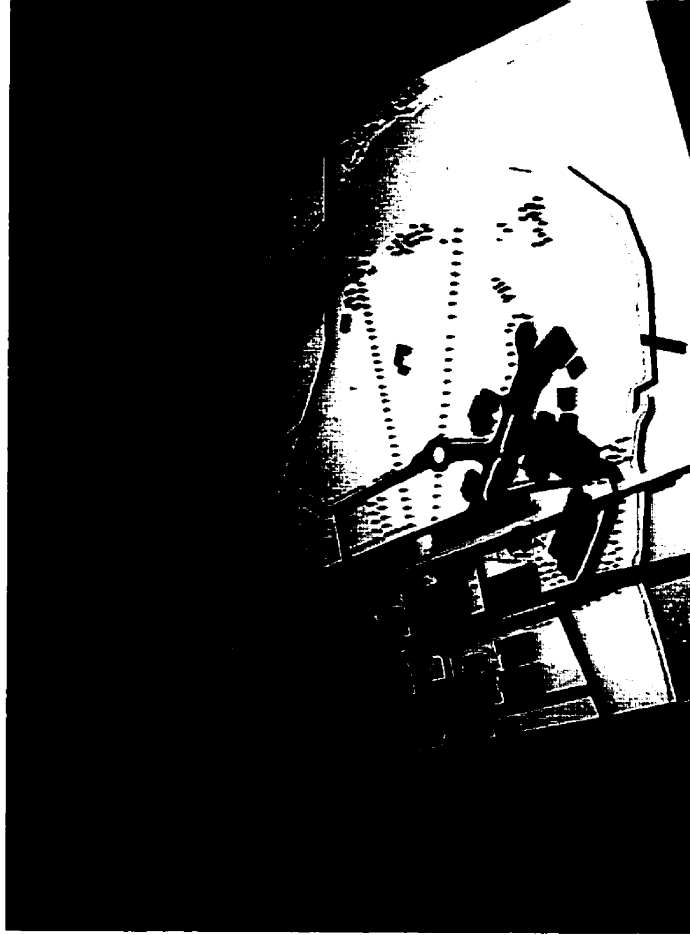
pedestrian street section



transition space for built form and structured green space



above ground pedestrian system



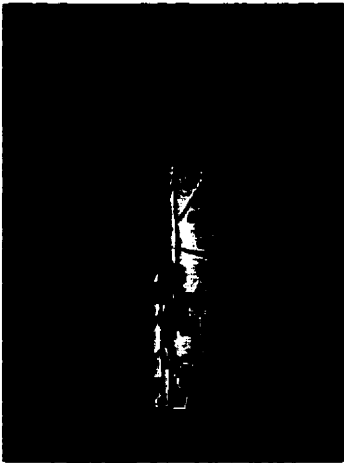




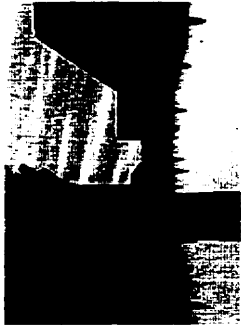
transition strip for built form and structured green space



green ground podiation system



## a sense of place



### a sense of place

The importance of the built site is obvious. It has the least location. The history of Monterey has been represented through its land patterns, built form, water's edge and river junction. The importance of "place" is a vibrant condition. A place has belonging, personal representation, personality, and pride. "It must have magic or should have, and it depends on hedonistic needs, on sights, on night lights, on fantasy, color and other imagery."

Design as if people mattered. If belonging means a sense of place then providing those conditions will produce well being for its users. These attributes might not be physical but however subtle and fulfill the things we all require for happiness and well being.

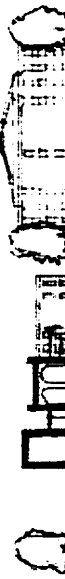
## the 3d environment



section A (low site plan)



section B (low site plan)



### 3d environments

A three-dimensional environment is one that is not only active participation in the daily surroundings. Not only does it enhance livability but it also creates unique places for human interaction. The design of these environments includes the creation of dynamic edges, and places which are made within the built form. These edges are made, underneath and inside the built form.

The built environment is situated when defined by landscape. Places are created through the use of a variety of levels and edges. Without these dimensions, environments' places become devoid of vertical levels, interest, and activity. The result is activity occurring at

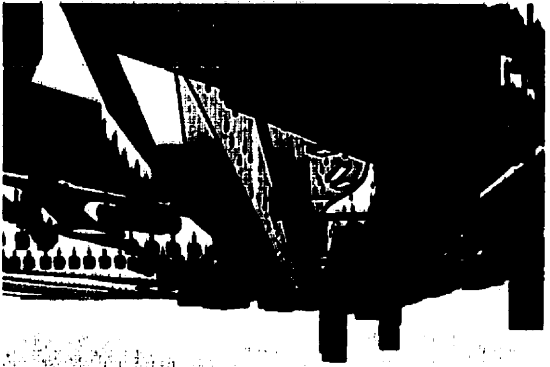


the self term looking north



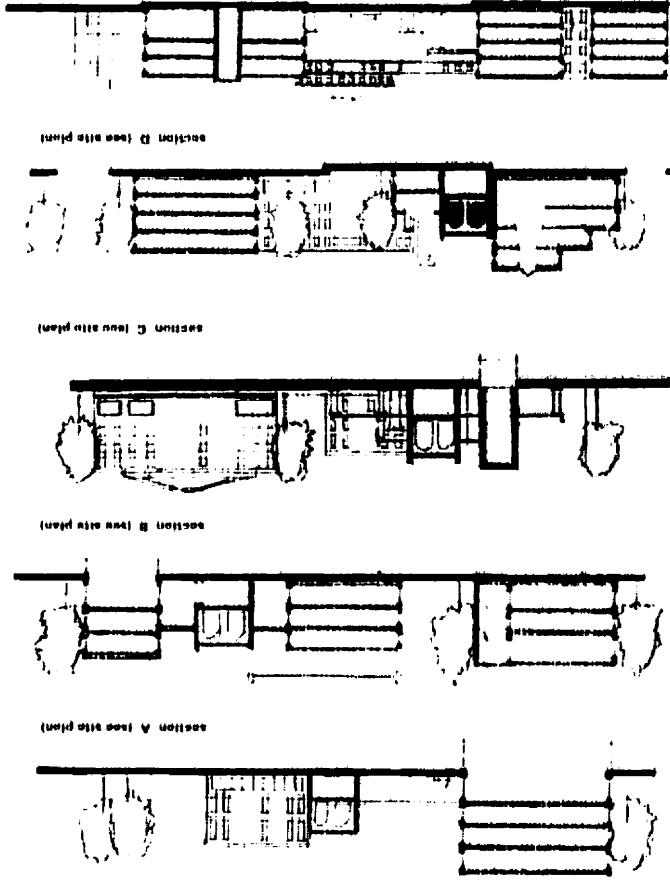


th e 3 d e n v i r o n m e n t



424TH FLIGHTS, 125TH AIRBORNE DIVISION

As governments and private industry invest more heavily in research and development, the need for a more efficient and effective way to manage the investment process has become increasingly apparent. The development of a new investment management system is a high priority for many governments and private industry alike. The system must be able to handle the large volume of investment opportunities that are available, and it must be able to provide the information needed to make investment decisions. The system must also be able to track the progress of investments and provide feedback to the investment process. The system must be able to handle the complex and often changing nature of investment opportunities, and it must be able to provide the information needed to make investment decisions. The system must also be able to track the progress of investments and provide feedback to the investment process. The system must be able to handle the complex and often changing nature of investment opportunities, and it must be able to provide the information needed to make investment decisions.



(unclassified & unles)



## **end notes**

<sup>1</sup> Adapted from The Forks Heritage Interpretive Plan Sub-committee, The Forks Heritage Interpretive Plan, Winnipeg, Manitoba, 1993.

<sup>2</sup> The Centre for Environmental Design Research and Outreach, CIP/ACCUPP Case Study Series, The Forks Urban Revitalization Project, Calgary, Alberta, 1997, p.5.

<sup>3</sup> The Centre for Environmental Design Research and Outreach, CIP/ACCUPP Case Study Series, The Forks Urban Revitalization Project, Calgary, Alberta, 1997, p.3.

<sup>4</sup> The Forks North Portage Partnership, Progress Report, Winnipeg, Manitoba, 1997, p.9.

<sup>5</sup> Adapted from The Forks North Portage Partnership, General Brochure, Winnipeg, Manitoba.

<sup>6</sup> Adapted from The Centre for Environmental Design Research and Outreach, CIP/ACCUPP Case Study Series, The Forks Urban Revitalization Project, Calgary, Alberta.

<sup>7</sup> The Centre for Environmental Design Research and Outreach, CIP/ACCUPP Case Study Series, The Forks Urban Revitalization Project, Calgary, Alberta, p.3.

<sup>8</sup> The Forks North Portage Partnership, Planning and Development Guidelines, Winnipeg, Manitoba, p.2.

<sup>9</sup> Adapted from The Forks North Portage Partnership, Planning and Development Guidelines, Winnipeg, Manitoba.

<sup>10</sup> The Forks North Portage Partnership, Making Connections, Winnipeg, Manitoba, October, 1996.

<sup>11</sup> The Forks North Portage Partnership, Projected Development Diagram, Winnipeg,

Manitoba.

<sup>12</sup> The Forks Heritage Interpretive Plan Sub-committee, The Forks Heritage Interpretive Plan, Winnipeg, Manitoba, 1993, p.1.

<sup>13</sup> Adapted from The Forks Heritage Interpretive Plan Sub-committee, The Forks Heritage Interpretive Plan, Winnipeg, Manitoba, 1993,

<sup>14</sup> The Forks Heritage Interpretive Plan Sub-committee, The Forks Heritage Interpretive Plan, Winnipeg, Manitoba, 1993, p.23.

<sup>15</sup> The Forks Heritage Interpretive Plan Sub-committee, The Forks Heritage Interpretive Plan, Winnipeg, Manitoba, 1993, p.15.

<sup>16</sup> The Forks Heritage Interpretive Plan Sub-committee, The Forks Heritage Interpretive Plan, Winnipeg, Manitoba, 1993, p.71-72.

<sup>17</sup> Stephen Cohlmeier, "Meeting Places in Winnipeg, Manitoba" in Landscape Architectural Review, Vol.13, No.2, May 1992, p.5.

<sup>18</sup> Kent Smith, "A Successful Combination" in Plan Canada, Vol. 38, No. 2, March 1998, p.34.

<sup>19</sup> Excerpts from the Downtown Winnipeg Zoning Bylaw, Winnipeg, Manitoba, Part III, Sect. 15 325 (1), Sect. 16 326 (1).

<sup>20</sup> Donald Appleyard and Allan Jacobs, Toward an Urban Design Manifesto, Working Paper #384, The Institute of Urban and Regional Development, The University of California, Berkeley, June, 1982, p.20.

- <sup>21</sup> Peter Cardew, (Lonsdale Quay Market) in Canadian Architect, Vol. 32, No. 7, July 1987, p.25.
- <sup>22</sup> Gene Desfor, "Redeveloping the Lakeshore" in Urban Design International, Vol. 3, No. 4, May-June 1982, p.26.
- <sup>23</sup> Gene Desfor, "Redeveloping the Lakeshore" in Urban Design International, Vol. 3, No. 4, May-June 1982, p.27.
- <sup>24</sup> Gene Desfor, "Redeveloping the Lakeshore" in Urban Design International, Vol. 3, No. 4, May-June 1982, p.28.
- <sup>25</sup> Kevin Powell, "Finding Common Ground" in Landscape Architecture, Vol. 82, No. 7, July 1992, p.37.
- <sup>26</sup> Kevin Powell, "Finding Common Ground" in Landscape Architecture, Vol. 82, No. 7, July 1992, p.39.
- <sup>27</sup> Kevin Powell, "Finding Common Ground" in Landscape Architecture, Vol. 82, No. 7, July 1992, p.41.
- <sup>28</sup> Internet Document, Chicago Imagebase, [www.uic.edu;80/depts/ahaa/imagebase/mactean/aenals1](http://www.uic.edu;80/depts/ahaa/imagebase/mactean/aenals1)
- <sup>29</sup> Sim van der ryn and Peter Calthorpe, Sustainable Communities, Sierra Club Books, San Francisco, 1986, p.3.
- <sup>30</sup> Sim van der ryn and Peter Calthorpe, Sustainable Communities, Sierra Club Books, San Francisco, 1986, p.29.
- <sup>31</sup> Sim van der ryn and Peter Calthorpe, Sustainable Communities, Sierra Club

Books, San Francisco, 1986, p.3.

<sup>32</sup> Sim van der ryn and Peter Calthorpe, Sustainable Communities, Sierra Club Books, San Francisco, 1986, p.3.

<sup>33</sup> Donald Appleyard and Allan Jacobs, Ioward an Urban Design Manifesto, Working Paper #384, The Institute of Urban and Regional Development, The University of California, Berkeley, June, 1982, p.17.

<sup>34</sup> Donald Appleyard and Allan Jacobs, Ioward an Urban Design Manifesto, Working Paper #384, The Institute of Urban and Regional Development, The University of California, Berkeley, June, 1982, p.16.

<sup>35</sup> Sim van der ryn and Peter Calthorpe, Sustainable Communities, Sierra Club Books, San Francisco, 1986, p.17.

<sup>36</sup> Donald Appleyard and Allan Jacobs, Ioward an Urban Design Manifesto, Working Paper #384, The Institute of Urban and Regional Development, The University of California, Berkeley, June, 1982, p.23.

<sup>37</sup> Donald Appleyard and Allan Jacobs, Ioward an Urban Design Manifesto, Working Paper #384, The Institute of Urban and Regional Development, The University of California, Berkeley, June, 1982, p.24.

<sup>38</sup> Sim van der ryn and Peter Calthorpe, Sustainable Communities, Sierra Club Books, San Francisco, 1986, p.18-19.

<sup>39</sup> Donald Appleyard and Allan Jacobs, Ioward an Urban Design Manifesto, Working Paper #384, The Institute of Urban and Regional Development, The University of California, Berkeley, June, 1982, p.38.

<sup>40</sup> Donald Appleyard and Allan Jacobs, Toward an Urban Design Manifesto, Working Paper #384, The Institute of Urban and Regional Development, The University of California, Berkeley, June, 1982, p.13.



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