LIVABLE STREETSCAPE: CREATING A PEDESTRIAN NETWORK IN THE TOWN OF MORDEN, MANITOBA

BY
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Practicum submitted in partial fulfillment
of the requirements for the degree of
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LIVABLE STREETSCAPE: CREATING A PEDESTRIAN NETWORK IN THE TOWN OF MORDEN, MANITOBA

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A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University of Manitoba in partial fulfillment of the requirement of the degree

MASTER OF LANDSCAPE ARCHITECTURE

ABSTRACT

Dependence on the automobile, environmental pollution and sedentary lifestyles all seriously impair the quality of our life and surrounding environment. There is a growing interest to create enhanced livable pedestrian environment as a way of reclaiming urban vitality. In recent years, we have witnessed a number of initiatives in urban areas throughout North America to create more pedestrian friendly infrastructure and networks, which would encourage and promote walking as a preferable mode of transportation.

In creating a walking environment, the urban design and landscape architecture communities are recently concerned about analysis and design interventions to create more context sensitive streetscapes. Well-designed streetscape is fundamental in making attractive places and promoting desirable destinations to live and work, or to visit. Moreover, effective and creative streetscape design can help to define a special location and a sense of place. As a whole, today's successful urban centers have started to incorporate a highly developed and well-connected public realm consisting of a linked network of streets, parks, open spaces, trails and regional recreational destinations.

This practicum recommends guidelines for developing the appropriate streetscapes to create a pedestrian network in the Town of Morden, a small town in Southern Manitoba. At the same time, the proposed interventions identify other potential design components to create in a pedestrian network reflective of vibrant cultural and local identities.

DEDICATED TO MY FATHER
LATE PROFESSOR TARIQUL ISLAM,
DIED IN 1964, DURING HIS DOCTORAL STUDY
IN THE DEPARTMENT OF AGRONOMY, TEXAS A&M UNIVERSITY,
COLLEGE STATION, TEXAS, USA.

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Mohammed Mesbahul Tariq
Winnipeg, Manitoba

TABLE OF CONTENTS

LIST OF FIGURES

Chapter II

Chapter III

Chapter IV

LIST OF TABLES

Chapter III

CHAPTER I

INTRODUCTION

"Streets should be for staying in, and not just for moving through, the way they are today"
(Alexander C., 1977)

Walking is an essential part of our daily activities, whether it constitutes an entire trip or complementary part of another navigation mode. Despite the importance, until recently pedestrian facilities have been often overlooked or merely considered in planning and development of transportation network systems (City of Portland, 1998). Since the industrial revolution, planners in North America have concentrated primarily on motorized transportation systems. Pedestrian infrastructure, amenities, and services were overlooked in municipal budgets and as a consequence, the physical environment for pedestrians has become largely forgotten both in large cities and small towns in North America (Krambeck, 2006).

There are a number of benefits that can be achieved from pedestrian-friendly urban communities. By reducing automobile trips, goals towards sustainability, and clean-air environments could be achieved. Increasing the number of pedestrians may enhance the opportunities for social interaction and community integrity. A pedestrian friendly livable environment helps maintain the vitality of an urban area, which is a major objective of many towns and cities. In addition, possibilities of pedestrian fatalities can be reduced through appropriate planning and design measures. Finally, an urban centre that is oriented more

towards pedestrian planning can reduce municipal expenditures for infrastructure, road construction, and maintenance.

Currently, the issues related to pedestrianization appear more challenging in many North American cities and towns. Urban communities are concerned about the issues associated with livability and the built environment. Hence, priority is now given to the traditional neighborhood design principles and the value of sustainable modes of travel such as walking. Pedestrian friendliness is seen as quality of life that improves the prevailing conditions should be planned for all future developments (FHWA, 1992 and City of Portland, 1998).

To promote sustainability and to maintain sound public health condition, the notion of 'active living' has emerged in Canadian towns, and is slowly gaining recognition as a strategic approach to enhance livability (Environment Canada, 2005). Livable communities can be designed and renewed to meet active living goals. Recently the American Society of Landscape Architects (ASLA) highlighted the theme 'Design for Active Living' and stated that the built environment affects inhabitants' daily activity levels and, in turn, their overall mental and physical health. ASLA emphasizes that landscape architects working with public officials, developers, and owners should advocate for more active living components like parks, recreational facilities, walking trails, and sidewalks (ASLA, 2006).

The pedestrian environment is a prominent element of urban visual experiences. In the strategic planning process of reclaiming urban vitality, pedestrian planning is being considered as an important approach to revitalize urban areas (Rainer, 1990). Allan B. Jacobs, in the book '*Great Streets*', explained the importance of pedestrian facilities as the most vital

organ of an urban area (Jacobs, 1993). He also explained the 'street' as a place for social and commercial encounter and community interaction. The perceived quality of an area is very much dependant on the nature of its streetscape. Streetscape is fundamental in urban placemaking, and also in defining a sense of place (Ibid, 1993).

In his book 'The Next American Metropolis: Ecology, Community, and the American Dream', urban planner Peter Calthorpe wrote, "Pedestrians are the lost measure of community" (Calthorpe, 1993). Consequently, over the past few decades, there has been a steady decline in the number of pedestrians in North America (Pucher and Renne, 2003). Major factors working behind that scenario are increasing levels of car ownership, prevailing big-box and supermarket culture, loss of local street-shops, a degraded and neglected pedestrian environment, and the growth of urban sprawl.

The idea and inspiration of this practicum was initiated from the studio *Morden Townscape Study*. In May 2005, this study was conducted under the course *Design Studio 6: Intersession 2005* offered by the Department of Landscape Architecture, University of Manitoba. The planning and design studio was intended to address a range of urban design issues in Morden, Manitoba. The primary aim of the studio was to assist the community of Morden in creating a vision for guiding its future and to target realistic ideas for achieving that future vision. The intensive studio provided opportunities for a site examination of existing conditions, site visits, literature review, interviews, and exchange of views with local officials and community groups, who were knowledgeable of the conditions and issues unique to the Town of Morden and its environ.

In reality, pedestrians and their needs are largely disregarded in urban and transportation planning process. There are a number of barriers that impede walking including unfavorable land use patterns, inadequate infrastructure, and unsafe facilities. However, the walking environment is one of the most basic public realms where people interact with the urban landscape. Many urban centres throughout the world have experienced the benefits of a more pedestrian-friendly urban environment and increased socio-economic activities. Livable pedestrian environment can serve many vital functions for the community and its inhabitants. As a small town, Morden does not have mass transit service. Significantly, almost 40% of the total population of the Town is children less than 15 years and elderly over 65, who may not be able to drive and depend only on walking to maintain their mobility (Hilderman, 2003). Paying particular attention is also essential to the needs of vulnerable road users among the disable population.

Besides a strong heritage, Morden has also a number of other vital tourist events and sites. Morden houses several unique provincial and regional establishments and natural features. Moreover, major events like the Back Forty Folk Festival and the ever-popular Morden Corn and Apple Festival provide highly exciting experiences for residents and visitors.

This practicum emphasizes the importance and need for landscape architects to be involved with the complexity of pedestrian activities. Recently, urban policy makers have recognized the social and economic implications of pedestrian streetscapes to the livability of urban communities. A number of projects and research have already established that quality pedestrian environment promotes walking activities. However, comprehensive programmes are required to encourage walking. These programmes should include different approaches,

which may range from policies to physical strategies, and complementary level of services to educational plans.

It is well established through a number of research, studies and also successful projects that well-designed physical environments have a positive impact on walking (Rodriguez et. al., 2006). In an urban community, people are more likely to walk if the surroundings are pleasant, walkways are safe and comfortable, and destinations are clearly linked through a network of appropriate components. Effective designs can create livable streetscapes that establish the role of the street as an important part of the public realm.

Recognizing a pedestrian network in Morden is the central element of this Practicum. However, development of design guidelines for appropriate streetscapes is indeed complementary in achieving the goals.

GOAL AND OBJECTIVES OF THE STUDY

The goal of this practicum is twofold: to explore 1) the components of a continuous pedestrian network; and 2) to develop guidelines which will help the Town to build up a quality pedestrian environment. These guidelines are illustrated with a series of design examples.

The main objectives of this study are:

- Study existing and potential pedestrian network components in Morden;
- Study existing facilities, opportunities and constraints for pedestrians in Morden; and

- Recommend appropriate design guidelines for development of a pedestrian network that integrates streetscapes in Morden.

This pedestrian network study for the Town of Morden is undertaken to develop a quality pedestrian environment that:

- Creates continuous links to provide attractive walking experiences for pedestrians;
- Establishes links to develop strategic and hierarchical connections among pedestrian zones;
- Develops more pedestrian friendly focal points of interest, urban squares, and public open spaces;
- Promotes the notion of sustainability in the planning and design process; and
- Minimizes conflicts and hazardous interactions between pedestrians and motorized traffics.

A well-connected pedestrian network is the essential element of pedestrian orientation in the Town of Morden. In addition, a variety of amenities can facilitate to create a comfortable and pleasant environment that will enhance walking. The collective arrangement of pedestrian facilities as part of the pedestrian network will create a quality environment in Morden.

The present study is intended to develop a comprehensive research work, and evaluate the strategic design principles and policy recommendations, which provide appropriate guidelines to reconcile the pedestrian infrastructure improvements in the context of Morden. However, in this study, the scope has been limited by available resources and primary focus on the pedestrian network.

METHODOLOGY OF THE STUDY

The research methodology for this study is as follows:

- Literature survey;
- Critical examination of existing conditions;
- Collection of data and information from available sources;
- Review of prominent urban design and planning experiences;
- Analysis of issues and existing conditions; and
- Recommendations and developments of design guidelines.

PRACTICUM STRUCTURE

Broadly, this practicum entitled *Livable Streetscape: Creating a Pedestrian Network in the Town of Morden, Manitoba* describes an approach for creating a desirable pedestrian environment.

Chapter One outlines the goals and objectives of the practicum and briefly explains the practicum approach. The chapter describes the methodology and scope of this practicum. Finally, it explains the organization of the research and proposed guidelines and design scenarios.

Chapter Two provides definitions and a theoretical framework about the concepts that constitute the practicum. This chapter provides a review of the relevant literature on pedestrian planning, design guideline documents, and selective successful planning

experiences in different cities. It also illustrates the historical overview of policies and trends supportive to create walking environment.

Chapter Three illustrates the contextual analysis and background information for examining Morden's pedestrian environment, issues and existing infrastructure. Relevant local documents of past planning experiences were also highlighted in this chapter.

Finally, *Chapter Four* concludes with proposed planning guidelines for creating livable streetscapes designs, and a series of infill site proposals as the components of a pedestrian network in Morden.

CHAPTER II

THEORETICAL FRAMEWORK

REVIEW OF CONCEPTS

In the urban design discipline, the term 'Livability' is increasingly referred to the 'quality of life' issues that relate the long-term well-being of communities and its inhabitants. The term encompasses different notions such as environmental quality, safety, convenience, affordability, and the presence of neighborhood amenities such as parks, open space, sidewalks, restaurants, and community serving stores like corner shops. With the presence of these assets, communities become pleasant and easy place to live in (Timmer and Seymoar, 2006).

Livability has many dimensions that prevail along a continuum. Perhaps most important is the subjective experience of living in a particular place. This experience may express a far different story than that yielded by quantitative data or abstract socio-economic or environmental analyses. As a result, no single best definition has emerged for "livability". Lynch (1981) offered to think of it in terms of five basic dimensions of city performance: vitality, sense, fit, access, and control. These concepts still influence urban design theorists today.

In transportation planning, livable communities are considered as an easy walkable area with several facilities such as secure sidewalks through attractive streetscapes, social and recreational hubs, recognizable and safe crosswalks, and other traffic-calming measures. Livable and active communities are sustainably organized to be less dependent upon the

motorized trips to accomplish various daily activities: commuting to work, school, recreational and exercise, shopping and errands (Pikora et. al., 2001 and Alliance for Regional Stewardship, 2004)

Streetscape refers to urban roadway and its right-of-way (ROW) planning and design. Livable streetscape is considered as the important component of the public realm that helps to define community identity and overall quality of life. Streetscape is a part of an urban design strategy focusing on traffic management, landscaping, street furniture, building fronts, and materials specifications.

In an Urban Design context, a pedestrian network is the part of a wider physical environment that includes both built and natural features along a travel route. The pedestrian network can be considered as a product of two types of components: the arrangement of the walkway network and the location of particular attraction points along that network. There has been a shift in principle over the last few decades to include pedestrians as a viable element of the transportation network. Many communities are beginning to realize the numerous benefits of providing pedestrian networks that promote connectivity, continuity, and linkages among activity centres and pedestrian attractions. In designing a pedestrian network, a planner faces many challenges. In reality, pedestrian traffic pattern is still insufficiently understood and analyzed. However, pedestrian network planning has concentrated on some traffic calming measures rather than adopting a holistic approach (Tolley, 1997).

HISTORICAL REVIEW OF PEDESTRIAN ENVIRONMENT DESIGN

The idea of pedestrianization is not a new concept. Urban design dates back to thousands of years and over this long period of time, all the towns were basically dependent on walking for their mobility needs and design scale (Mumford, 1961). However, conflicts between wheeled traffic and pedestrian were even evident in the history. Roman Emperor Julius Caesar banned chariots from the streets in Rome between sunrise and sunset to prioritize pedestrian movement (Hass-Klau, 1990).

Urban design and street layout are interrelated throughout the long historical journey. Archeological evidences show that proper road layouts were emphasized in ancient towns of Mesopotamia, Egypt, and Indian Sub-Continent. Road networks of Greek cities were emerged from the contemporary warfare strategies. Romans introduced wider streets that facilitated the group movements of their soldiers. Consequently, street design became an integral feature of Roman cities that contained wide paved roads and elevated sidewalks as a means of maintaining healthy atmosphere (Sen, 1999).

In the Renaissance period, different geometric forms, dramatic vistas, and religious landmarks were used to synchronize the patterns of street layout. The Renaissance suburbs were built in grid iron layout for the new businessman class during this period. Italian architect, Andreas Palladio (1518-1580), suggested several guidelines for street designs at that time to enhance the quality. He recommended that pedestrian traffic should be segregated from carts, and porticos should be constructed on both sides of the streets in order to protect the pedestrians

from exposed weather. Moreover, He proposed a line of trees to emphasize town entrance gates with separate pedestrian approaches (cited in Sen, 1999).

The Baroque cities of eighteenth-century Europe were designed with magnificent avenues to strengthen geometric axes. This design influence was also evident in the nineteenth century civic planning. Haussmann's urban renewal for Paris included a continuous network of urban plazas and focal points connected by a number of grand boulevards (Ibid, 1999).

Early North American urban designs consisted of formal axes, urban squares and grid layout. However, several cities were designed from the European influences. Washington, DC, designed by Pierre Charles L'Enfant is one of such examples. In early nineteenth century, many cities in North America (e.g. Buffalo, New York, Winnipeg etc.) were designed with radial streets overlaid with the grid layout (Ibid, 1999).

Since nineteenth century, the development of railway and highway systems has led to a dramatic change in travel behaviour. However, the bicycle retained its popularity as a non-motorized mode of travel (Southworth and Ben-Joseph, 2003).

Architects and landscape architects in England as well as in the United States stood against grid iron pattern by adopting curvilinear patterns in the designs of suburban streets. In 1823, John Nash designed an English suburb of a Park Village which is considered as an example of that trend. In the United States, Frederick Law Olmstead and Calvert Vaux's 1868 plan for Riverside, Illinois, used curvilinear tree-lined streets different from the grid pattern. Pedestrian

walkways were designed on both sides of the residential roads. The Pedestrian traffic was segregated by planting trees between the footpath and the road (Sen, 1999).

At the end of nineteenth century 'city beautification movement' and civic design on a grand scale influenced the form of the cities in North America. Architects used 'grand boulevards' as an integral design element. This movement also advocated several street improvements like pavement pattern, street furnishings, and planting in its design agenda (Southworth and Ben-Joseph, 2003).

As a model urban design concept of the early twentieth century, the 'garden city movement' provided several strong guidelines for roadway design. According to the idea of Ebenezer Howard, a system of small, self-sufficient cities surrounded by a greenbelt connected through a transportation network. Pedestrian pathways were designed to segregate the vehicular traffics. In the planning of Radburn, large residential neighborhoods (known as super blocks) were bordered by arterial or feeder roads that finally ended up and transformed as *cul-de sacs*, thereby, creating an hierarchy of streets and eliminating unnecessary traffic in the residential areas. Later on, the Radburn concept became a prominent feature of new town design in the North America (Sen, 1999).

At the same time, Clarence Perry (1924) presented his well-known concept of the neighborhood unit, which contained hierarchy of road networks, and segregation of vehicular and pedestrian traffic. In North America, Post World War II planning trends exhibited an expansion of suburban development that neglected pedestrians in general (Ibid, 1999). The neighborhood preservation movement launched by Jane Jacobs and others in the 1960s was

pleading against that trend. Also during that time, Kevin Lynch (1960) worked to introduce social and symbolic functions of the street to reclaim the urban identity (cited in Sen, 1999).

In the 1950s and 1960s, a growing volume of research in environmental design began providing theoretical and empirical foundations for enhancing livability. One of the pioneers of this movement was William Whyte, well-known for his studies on how people use urban plazas and other public spaces. More recently, several researchers have investigated how livable streets and pedestrian-friendly boulevards are created. In between 1960 to 1970, there was a growing concern for creating pedestrian malls. However, this was challenged with a vigorous introduction of large superstore and big-box culture (Sen, 1999). A new series of "International Making Cities Livable" conferences was initiated in 1985. This initiative propagated a concept in which urban designers should learn from the design elements of historic city centers and successful towns to improve the quality of life and livability (Lennard and Lennard, 1995).

Around the 1990s, Congress for the New Urbanism initiated an influential urban design movement. New Urbanists have sought opportunities for 'infill' and 'urban network' projects in more urban settings. Peter Calthorpe, a well-known urban planner, is one of the leaders of this movement. The 'New Urbanism' concept discourages the vehicle-only road construction and advocates that pedestrian friendliness could be enhanced by architectural character, sidewalks, street trees, and on-street parking (Sen, 1999).

The Smart Growth movement emerged in the mid-1990s to encourage more compact and mixed-use development against urban sprawl. The design concept behind the movement was

to construct infrastructure in the community area only. The growth management strategies are implemented to ensure cost-effective and sustainable form of settlements. In this movement, ideas of green infrastructure and integrated transport network were emphasized. This programme also recommended for reallocating the street right of way in favour of wider pedestrian walkway incorporated with vegetative strips to encourage positive pedestrian experience (Crandall, 2003 and CMHC, 2005). The 'Smart Growth' concept has also gained interest among policy makers in Canada.

NORTH AMERICAN POLICY TRENDS

In the context of flourishing automobile culture after World War II, policies and strategies for urban planning in North America were directed mainly in favour of motorized traffic. Infrastructure and facilities were largely overlooked and was minimally provided for the pedestrians. Moreover, compatibility for persons with disabilities was rarely considered by Federal and local transportation agencies. In 1990, the Federal Highway Administration (FHWA) of USA identified bicycling and walking as 'the forgotten modes' of transportation (FHWA, 1999). In the same year, the U.S. Department of Transportation (USDOT) launched a new national policy for the first time to encourage planners to accommodate bicycle and pedestrian needs in designing transportation facilities for urban areas, and increasing pedestrian safety through appropriate designs. The U.S. Congress expressed its deep support about the initiatives taken by the USDOT to increase proposed bicycling and walking, and approved $1 million in the fiscal year 1991 to launch the National Bicycling and Walking Study (Ibid, 1999).

In the last decade of 20th century, several green issues and sustainable development became major concerns around the globe that led to growing public awareness, and a new strategic direction to support alternative sustainable transport modes. As a major US federal initiative, the Intermodal Surface Transportation Efficiency Act (ISTEA) provided funding for pedestrian and bicycle accommodation in 1991. Later on, ISTEA was transformed to the Transportation Equity Act for the 21st Century. ISTEA called for a national bicycling and walking study, which was published by the USDOT in 1994. In this publication, Federal highway administration emphasized the integration of walking and bicycling in all transportation planning, design, construction, operations, and maintenance activities. Finally, the fundamental importance of walking was recognized by the USDOT in a highly revolutionary policy statement issued in February 2000. This strong statement of integrating bicycling and walking into transportation networks also provided excellent design resources for the urban designers (FHWA, 2003).

The introduction of the Americans with Disabilities Act (ADA) in 1990 provided design considerations and dramatic changes in the physical environment for pedestrians (FHWA, 1999). 'Canadians with Disability Act' is still in a drafting phase. The design professions are using the following standards: Canadian Standards Association (CSA), Americans with Disabilities Act (ADA), Building Code, Unversal Design Guidelines and the Best Practices.

In response to the public awareness, policy makers started thinking on reshaping communities in favour of pedestrian enhancement. Advocacy groups were pressing for smart growth policies, safe routes to school, and more and better walkways. Organizations such as the Partnership for a Walkable America developed "walkability" checklists and sponsored

national 'Walk Our Children to School' days. Local advocacy groups across the country created a national coalition, America WALKs, to effect improvements at local levels (Blomberg et. al., 2003).

Consequently, the planning profession also responded. The Institute of Transportation Engineers organized traffic calming publications and related conferences. The American Association of State Highway and Transportation Officials is working on expanding and updating pedestrian design gridlines to enrich its widely used Green Book, and simultaneously all state and local engineering departments adopted updated pedestrian standards for their planning (Ibid, 2003).

The federal role in funding and planning for infrastructure is quite different in Canada than that of USA. In Canada, they are implemented by the local level authorities. Planning and National Policy of Canada Transport stated as follows:

"It is hereby declared that a safe, economic, efficient and adequate network of viable and effective transportation services accessible to persons with disabilities and that makes the best use of all available modes of transportation at the lowest total cost is essential to serve the transportation needs of shippers and travelers, including persons with disabilities, and to maintain the economic wellbeing and growth of Canada and its regions...." (Adopted from "Canada Transportation Act, CHP.- C-10.4, 1996, c. 10", cited in Transport Canada, 2007).

Nevertheless, until recently, initiatives from Canadian government towards promoting non-motorized infrastructure are not sufficient (Pucher and Buehler, 2005). It is the obvious outcome of the circumstances that the Federal government has very limited jurisdiction. As

mentioned earlier, most of the development planning in Canada is performed by municipalities and local authorities. Municipalities and Cities are responsible for preparing official community plans. These are future oriented policy documents to provide a long term public policy framework for the short term decisions of governments and the private sector. The ultimate goal is to achieve a desirable built environment, with the desirability being defined and refined through local authority (Richardson, 1989). However, Transport Canada provided some occasional research and educational programmes in this regard (Pucher and Buehler, 2005).

In spite of this, Canada has signed and committed to reduce car dependency and to promote sustainable transportation at both the United Nations Conference on Environment and Development (Earth Summit, 1992) and at the UN Conference on Human Settlements (Habitat II, 1996). Moreover, in 1997, Canada signed the Kyoto Protocol and pledged to reduce the greenhouse gas emissions to 6% below the 1990 levels by 2008-2012. In Canada, transportation accounts for 27% of greenhouse gas emissions and 46% of those emissions come from cars and light trucks (Greenspiration, 2001).

Transport Canada initiated an Urban Transportation Showcase Programme establishing model examples thorough a nationwide competition. As a result, eight Canadian municipalities were awarded a total of $40 million (US $32 million) over five years for innovative projects that would help reduce environmental pollution from motorized transportation modes (Greenspiration, 2001).

In the face of limited national level investment, there are some provincial programs, and some municipalities have used federal infrastructure program funds for specific sustainable transport projects in Canada. The federal Millennium Bureau recently awarded $7.7 million to the Trans Canada Trail Foundation to help build a 15,000 km, shared-use trail through every province and territory in Canada (Ibid, 2001).

In Canada, a wide variety of sustainable transportation initiatives and activist groups are working today. Some of these initiatives have a national or provincial focus. However, all of those have urban implications as follows:

- Canada pioneered the concept of multi-stakeholder round tables in the late 1980s. The *National Round Table*, composed of 24 distinguished Canadians appointed by the federal government, was created in 1989 to work on different sustainable issues.
- *The Centre for Sustainable Transportation* was launched in July, 1996 as a nationally chartered, nonprofit corporation based in Toronto. It is believed to be the first organization in the world dedicated exclusively to sustainable transportation.
- *Environment Canada* took a lead role in delivering the March, 1996 OECD Conference "Toward Sustainable Transportation" in Vancouver. Since 1986, the Ministry has published national "State of the Environment" reports on a five year cycle; the 1996 edition contains a chapter on transportation. Media campaigns are currently underway to educate the public on air quality and urban transportation issues, and to modify behaviour of private auto use.
- *Natural Resources Canada* has an ongoing program of research aimed at quantifying and understanding energy consumption and vehicle emissions particularly in urban areas.

Transport Canada is preparing a "National Framework for Sustainable Transportation" to be released next year.

- *The Federation of Canadian Municipalities* has organized a "20% Club" of cities whose goal is to reduce greenhouse gas emissions from transportation and other sources by 20%.
- *Pollution Probe*, an environmental non-government organization, has a major "Air Quality Program" underway. Through conferences and media campaigns, they seek to generate information and educate the public on the relationships between urban transportation, air pollution, human health and climate change.
- *Go for Green*, the Active Living and Environment Program, is a national non-profit organization that encourages Canadians to pursue healthy, outdoor physical activities with a view to protect, enhance or restore the environment.
- *The Victoria Transport Policy Institute* is an independent research organization dedicated to improve transportation planning and policy analysis, and to develop innovative and practical solutions to sustainable transportation problems.

LITERATURE REVIEW

The theoretical and philosophical foundation of the current study of pedestrian networks is inspired from the pioneering thoughts of several theorists. The following section illustrates the main principles and philosophical concepts of selected vanguard design philosophers including Kevin Lynch, Ian McHarg, Christopher Alexander, Jane Jacobs, Gordon Cullen, and Francesco Careri.

Kevin Lynch

Kevin Lynch's work, *The Image of the City* published in 1960, is the result of a five-year study on how people perceive visual experience and organize spatial information. Lynch observed the 'image' of a city as a physical quality that depends on legibility and clarity. Legibility and clarity are the qualities which help people to read and understand the built environment. He worked with 'identification' and 'structuring' of the urban landscape and observed that there are five elements which people use to identify and structure their environment. He proposed that these elements could be used by the designers to organize our urban experiences. Lynch found that people typically described their city in terms of five elements: paths, edges, districts, nodes, and landmarks. All these elements contribute to legibility of an area. Paths are the way in which most people navigate through a city. Edges are boundaries. Districts are elements that people understand as an organizing area. Nodes are places where paths meet; they provide a place in which to cross between elements. Lastly, landmarks are elements that are reference points. Taken together, these elements form a pattern or a mental image in which people navigate. The elements also express their meaning and identity through the interrelationship between the observer and the visual images (Lynch, 1960).

In another book, *A Theory of Good City Form* published in 1981, Kevin Lynch described five basic dimensions of a city performance: vitality, sense, fit, access, and control. For Lynch, a vital city successfully fulfils the biological needs of its inhabitants, and provides a safe environment for their activities. A livable city should be organized in such a way where residents can perceive and understand its form and function, and enjoy the spaces in which they work and reside (Lynch, 1981).

Ian McHarg

Ian McHarg (1920-2001), in his publication *Design with Nature* (1992), proposed that ecology is an essential component to landscape design and is a key to addressing the issues of physical planning within a regional landscape. McHarg's work highlighted the inter-relationship between form and function, describing that form should have repercussions on the natural environments in which it is designed. This requires a basic readjustment of a philosophical, ethical and aesthetic nature in order to stop the destruction of the planet. He introduced a systems approach to regional planning that is based on the principles of human cooperation and biological partnership. He concluded with the recognition that, ecological and social processes both influence the built and natural environments, a fundamental step in understanding holistic regional planning.

Christopher Alexander

Christopher Alexander is a well-known commentator concerned with the fundamental nature of design patterns in architecture and urban design paradigms. The pattern languages introduced by Christopher Alexander have been used in architecture and urban design for about twenty five years. The design patterns help the designer to find out alternatives that transform an environment more livable. Alexander developed a philosophy of nature and life that suggests a more profound connection between nature and the human mind. He perceived the universe as a coherent whole, encompassing feelings, as well as, inanimate matters.

Alexander devised a number of detailed patterns in the book, *A Pattern Language - Towns, Buildings, Constructions*, beginning with the regional and city level scale, to a smaller scale

like a room interior. Each pattern is connected to the other to form a coherent unified entity. Then, the total of the patterns forms a "pattern language" as the design tool. Many of the patterns in the "Pattern Language" provide guiding points for Alexander's philosophy. There is an emphasis throughout the language on the importance of a spiritual relationship to the built world and the potential of the individual or small group to shape their environment. All the patterns are elaborated further in the "nature of order" with social and political propositions (Alexander et. al., 1977).

In another writing *The Timeless Way of Building,* Alexander illustrated the process of urban design using a living pattern language to compose it organically. In his view, the pattern languages are deconstructed over the time with further elaboration or infusion and generate the foundations for livable space designs (Alexander, 1979).

Jane Jacobs

From the title of her first book *The Death and Life of Great American Cities* (1961), it is apparent that Jane Jacobs prefers to use a biological metaphor: the city is like a living being that is born, grows, matures, decays and can revive. The elements of the city, "people, streets, parks, neighborhoods, government and economy," cannot exist without one another. Those are, like the organs of the human body, connected with each other. She suggested that streets and their sidewalks are the main public areas of a city. She also proposed that a well used street is often safer than a park.

In Jacobs's evolutionary approach, streets play an important role where urban dwellers meet each other and recreational and commercial activities take place. According to Jacobs, the

street determines the security, social integrity and economic development of cities. The everyday activities and interactions among the dwellers eventually turn the city into a livable place to live (Jacobs, 1961).

In her works Jacobs recognized streets and its sidewalks, along with park system as the true public space of a city and street traffic as a necessary part of the city life. During that period, many planners were advocating for segregating pedestrians from vehicular traffic. Jacobs closely examined how streets and sidewalks should be actually used in vibrant urban districts. She concluded that a fine-grained mixture of land uses and activities must be supported by a continuous network of small blocks and frequent street intersections, intensified by parks, open spaces, squares, and public buildings at key locations (Ibid, 1961).

Jacobs (1961) described the following three main qualities of the streets in a successful neighbourhood:

- There must be a clear demarcation between public and private space to ensure privacy.
- There must be "eyes on the street" in the design interventions. These solutions come from orientation of buildings towards the street and plenty of windows. Jacobs suggested it as a way of crime and vandalism prevention.
- Sidewalks need continuous users' activity in different forms i.e. commercial, dining, recreational, and leisure activities. These encourage people to watch and enjoy. Once again, Jacobs emphasized the need for human scale in urban life for community involvement and to reclaim urban vitality.

Gordon Cullen

Gordon Cullen, the urban theorist and graphic artist, developed the views on the "art of environment" in his renowned book *Townscape* (1971). He described "place theory" as the understanding of cultural and human characteristics associated with physical space. He illustrated a contextual space where a visitor could experience the unique sense of place. It involves the integration of activities, the development of identity, and the recognition of the natural and socio-cultural features of an urban area. This response to a context often includes history and elements of time and attempts to enhance the coherence among design interventions and existing conditions. In his theory, social and cultural values and individual's visual perceptions have a control over the synthesis of immediate environment. Thus, it would be important to include such elements in analyzing the sequence of urban spaces, and their impacts upon the built environment.

Francesco Careri

In *Walkscapes*, Francesco Careri (2002) deals with walking and surrounding space in a perspective of landscape architecture. He illustrated walking as an autonomous form of art and a primary action in the symbolic transformation of domains through the space. Careri further described the pedestrianization as a physical transformation of the urban opportunity spaces that should be restored in the form of urban interventions. From primitive artistic concepts to development of Land Art, Francesco Careri reconstructs and deconstructs the perception of the landscape design through a history of the traversed cities.

Studies and Research Documents

A wide range of benefits of pedestrianization to both individual and society are reported in numerous public health and transportation related documents (Litman, 2003). In the last few decades, policy makers and local level planning officials have been promoting policies that are expected to improve the quality of the built environment for pedestrians. Such policies consider mixed land uses and urban infill projects, interconnected street networks, sidewalks improvements with pedestrian amenities, and traffic calming measures.

A growing number of empirical studies have established the relationship between the built environment and pedestrian travel attitudes (e.g., Handy, 2005; Rodríguez et al., 2004; Cervero and Radisch, 1996; Greenwald and Boarnet, 2001; Shriver, 1996). These studies present evidence of a positive correlation between the built environment and pedestrian behavior.

The design of the pedestrian infrastructure has a direct influence on the walkability of an urban area. Most studies establish that controlled land use mix and density, designed elements of the pedestrian infrastructure and network lead to a higher frequency of pedestrian travel (Moudon et. al., 2006 and Handy et. al., 2002).

The Project for Public Spaces (PPS) considered a number of key variables for pedestrian attractiveness: trees, telephones, bus stations, and sculpture (Frank and Engelke, 2000). Untermann (1987) described route safety as a function of traffic speed and presence of the pedestrian amenities. He stressed on the roadway redesign to control the vehicle speed that includes narrower road design, intersection curb extension and provision of angled parking. To improve pedestrian facilities, he emphasized the provision of sidewalks, design of mid-

block crossing, and use of pedestrian-friendly signals. The Federal Highway Administration (FHWA) also considered similar requirements (Frank and Engelke, 2000).

To improve the quality of life and livability, traffic calming techniques were initiated in the 60's and successfully implemented in most European towns (FHWA/ITE, 1999). Sarkar et. al. (1997) described traffic calming as a street design technique that enhances the quality of life through encouraging pedestrian use, and reclaims the street as a multiuse public place. The Institute of Transportation Engineers and the Federal Highway Administration also reviewed and advocated traffic calming practices throughout North America (TAC/CITE, 1998 and FHWA/ITE, 1999). Traffic calming interventions minimize pollution and noise, reduce traffic accidents, recapture urban space for pedestrian use, and achieve harmony in human scale design. Basically, the traffic calming techniques provide engineering solutions to the pedestrian issues to enhance the quality of urban landscape.

There is a substantial amount of general information and guidelines available on design issues related to pedestrians from different federal and State official sources in USA. The Institution of Transportation Engineers (ITE) and the American Association of State Highway and Transportation Officials (AASHTO) have developed comprehensive guidelines for the development of pedestrian facilities (ITE, 1998). AASHTO published a set of design guidelines that includes projects on the Main Street, pedestrian corridor improvements and urban roadway landscapes (AASHTO, 1994). Another significant guide is developed by the Federal Highway Administration (FHWA) entitled '*Pedestrian Facilities Users Guide – Providing Safety and Mobility*' provides a list of common safety and mobility needs of pedestrians within the road right-of-way in the urban areas (FHWA, 2002).

In recent years a number of cities and municipalities have developed a range of pedestrian treatments and design guidelines that can be applied to accommodate the needs of pedestrians. Throughout North America, many of these design guidelines have created good examples of resources in Portland, Oregon; Arlington, Virginia; Cambridge, Massachusetts; Austin, Texas; Oakland, California; Seattle, Washington; Washington D.C.; Vancouver, British Columbia; Hamilton, Ontario; Kamloops, British Columbia; and City of Ottawa.

CASE STUDIES

This section examines case studies of selected cities in North America and Europe.

City of Portland, Oregon, USA

The City of Portland is the largest city in Oregon, USA and is recognized as one of the most walkable cities in the United States. The population of Portland is estimated to be 556,370 as of July 1, 2005 within an area of about 130 square miles and an average elevation of 173 ft above sea level (Source: www.travelportland.com/visitors/portland_profile.html accessed on 12 April, 2006). The 'Prevention' magazine, a leading health and lifestyle publication and the American Podiatric Medical Association (APMA) announced Portland as the best Walking City'2006 in the USA from their joint study (Prevention, 2006).

Portland has an international reputation for innovative and successful planning approaches that address planning initiatives from the regional level to the neighbourhood scale. The City of Portland has integrated land use and transportation planning based on transit oriented development. The transit stations were developed as the hubs of planned pedestrian districts.

Downtown Portland is well-known for its livable design scale. Moreover, the City and its surrounding region have grown over time to combine transit and investments in public space in the downtown, with a growth boundary at the metropolitan edge. The pedestrian master plan, adopted by Portland's City Council in 1998, outlined a twenty-year vision and a detailed working plan for increasing opportunities of walking environment in the City (City of Portland, 1998).

To promote a sustainable, more balanced and efficient transportation system, the City of Portland utilized different planning tools e.g. Federal level tools ISTEA and its successor TEA-2I; State level tool Oregon's Transportation Planning Regulations; Regional level tool 2040 Regional Framework Plan and Local level tool Portland Comprehensive Plan (Portland City Policy, 2006). Overall, Portland's successful planning and designs for pedestrians are integrally linked with other transportation and non-transportation planning and goals (Ibid, 2006).

The pedestrian design plan that was adopted in 1998 includes design features for sidewalk corridors, street corners, crosswalks and pathways. The design features were initially implemented in the core area and outside the central city where there was an absence of special standards or guidelines. The implementation processes were initiated by developers and the City of Portland as well. Subsequently, more neighbourhoods were incorporated in the planning process, identifying specific issues and intervention projects (City of Portland, 1998).

For every planning and implementation of a pedestrian project, the City authority works with a Technical Advisory Committee and a dedicated citizens' working group by reviewing potential projects. The City of Portland mobilized various efforts aimed at creating a safe and comfortable environment for pedestrians and implemented a number of innovative and successful projects, including design modifications of curb ramps and extensions in compliance with ADA standards, advanced technologies including audible signals and passive detection signal systems using radar and microwaves, and educational programmes with outreach initiatives.

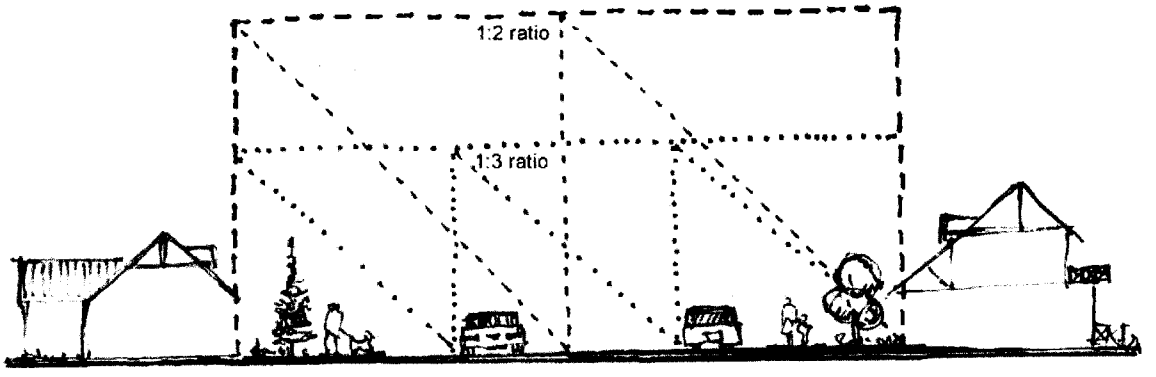
Portland also outlined a maintenance policy for landscape features in sidewalks. Landscaping in adjacent sidewalks is usually maintained by property owners, while landscaping in the mid-block sections is maintained by the City. In addition, Portland demonstrated a number of 'green street' projects aimed at sustainable visions and ecological goals (Scheer, 2004).

Following are the highlights of the key pedestrian friendly design features that support Portland's worldwide reputation as the most walkable urban centre:

- A number of Pedestrian Districts are developed throughout the city with a dense mix of land uses, convenient and frequent transit service, having compact and walkable dimensions. Pedestrian districts are intended to give priority to pedestrian access where high levels of pedestrian activity exist or are planned.
- One of the key elements that contributed to a livable and human scale in the city centre is the size of Portland's downtown city block of just 61m (200 ft). This resulted in more corner locations for retail trades. For any street, a human scale height and width ratio of

1:3 was maintained (illustrated in Fig. 2.1). Other notable programmes include: promoting public transportation, a controlled parking policy, and planning mixed and vibrant land use. All these efforts ultimately created a lively pedestrian environment (FHWA, 1998).

- Off-street pathways/trails combine recreational activities with other walking trips. Those are located along the rivers, through the parks, or forest areas where formal streets do not exist.
- As the most notable feature, the City of Portland developed a sidewalk corridor zone system. In this system, the sidewalk is divided into four distinct zones i.e. functional areas: *Curb Zone, Furnishings Zone, Through Pedestrian Zone, and Frontage Zone* (City of Portland, 1998a). Portland's sidewalk corridor zones are illustrated in Fig. 2.2.



Human scale height-to-width ratios fall between 1:3 and 1:2
as measured from the building fronts or large trees if present.

Fig. 2.1 Street human scale height and width ratio.
Source: (ODOT/ DLCD, 1999).

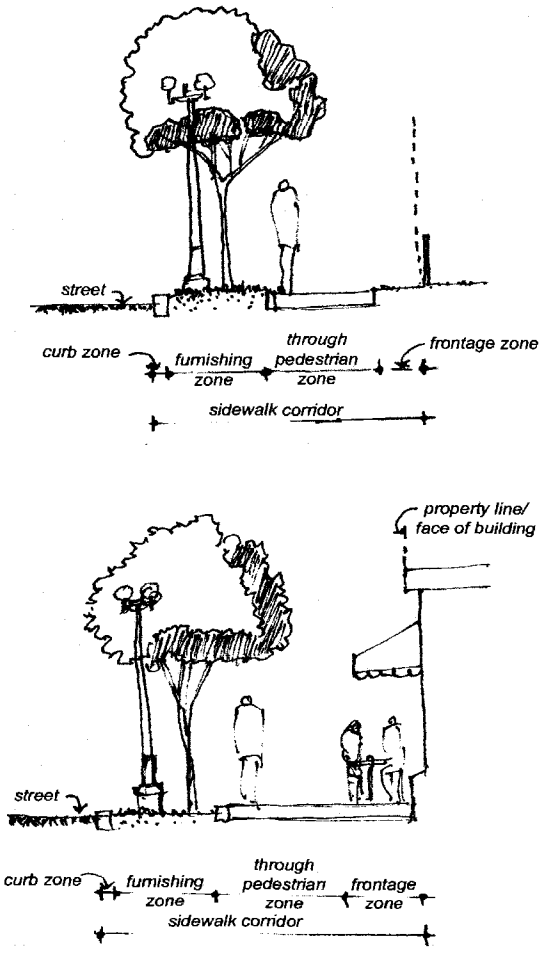


Fig. 2.2 Typical Sections of Sidewalk Corridor
Residential Zone (top) and Commercial Zone (bottom).
Source: (City of Portland,1998a).

- A system of hierarchy was developed to define sidewalks use. City centre transit/pedestrian sidewalks are intended to accommodate high levels of pedestrian traffic, providing appropriate urban design features to promote pedestrian activities, and visual signals to the motor vehicles to respect the presence and priority of pedestrians on the street. Arterial level sidewalks are intended to provide safe, convenient, and attractive pedestrian access to activities along major streets and to recreational and institutional areas within and between neighborhoods. Local level sidewalks are intended to serve

local circulation needs for pedestrians and provide safe and convenient access to local destinations.

- Portland's metro area has a detailed policy on 'green streets'. The City attempted a holistic approach to green street designs that integrated urban development and ecological needs.

City of Vancouver, British Columbia, Canada

Vancouver, one of the most spectacular cities in the west coast of Canada is reputed to be amongst the most livable cities in the world (Timmer and Seymoar, 2006). The City of Vancouver has a population of 545,671 (2001 Census data from Statistics Canada) in a Land area of 114.67 sq km (Source: http://www.metrotown.info , accessed on May 22, 2006).

According to the *Vancouver Pedestrian Study 2001-2002,* compared to other areas, downtown Vancouver is reputed as the most pedestrian friendly area. High opportunity for employment, mixed land use and the presence of attractive regional shopping complexes and educational institutions and particularly an efficient street grid system make walking an attractive mode of travel in the downtown area (City of Vancouver, 2002).

In both City and Regional Transportation Plans 'enhancing walking' is proclaimed as a key strategy. To meet these strategic goals, the City of Vancouver has undertaken a number of initiatives (City of Vancouver, 2002) which are summarized as follows:

- Under the Vancouver Transportation Plan (1997), pedestrian priority areas in different commercial centres have been created and additional facilities have been provided to improve pedestrian comfort and safety of those centres.

- The Downtown Transportation Plan (2002) has strongly recommended promoting a walkable downtown. This recent plan includes following measures as stated in 2001-2002 Pedestrian Study of the City:

  "• *Recognize ceremonial streets (Burrard St. and Georgia St.) and identify streets that are high retail focus streets or special streets with historical or scenic attributes.*

  • *Develop Granville, Carrall and Helmcken/Comox Streets as the main north-south and east-west greenway routes through the downtown peninsula.*

  • *Establish a network of pedestrian connector routes which would receive higher priority for maintenance and amenities.*

  • *Provide way-finding signs, curb ramps, weather protection, wider pedestrian crossings, pedestrian shortcuts through long blocks, mid-block crossings and pedestrian bulges where required.*

  • *Eliminate pedestrian impediments such as physical barriers or pedestrian holds at traffic signals where possible.*

  • *Improve connections to Central Waterfront, Coal Harbour Waterfront and the Vancouver Convention and Exhibition Centre.*

  • *Widen sidewalks on Davie Street between Burrard and Jervis through future setbacks of new developments.*

  • *Pursue a future comprehensive public realm study for the downtown."*

  (Source: 2001-2002 Pedestrian Study, City of Vancouver)

- Several other initiatives also targeted to enhance pedestrianization are as follows:

  • *Sidewalk Task Force*: A Task Force has been created to address different specific issues concerned with street furniture and amenities.

- *Streetscape Design Guidelines*: This document presents guidelines for sidewalk paving design and materials, street furniture, street trees and landscaping, lighting, public amenities, signs, way finding and other streetscape elements.
- *Street Furniture and Amenities Study:* A study was initiated in 1999 to explore opportunities for private sector delivery and maintenance of improved street furniture.
- The City of Vancouver analyzed the spatial suitability of walking distances from various activity centres in the downtown area. Most of the activity centres in the downtown area are located within an easy travel distances for 5, 10 and 15 minutes walking trips from the downtown activity centres (City of Vancouver, 2002). Using this planning tool, convenient pedestrian network should be designed by linking the attraction activity centres among the walking catchments.

City of Copenhagen, Denmark

Copenhagen, the capital city of Denmark with a population of about with a population of 503,699 inhabitants and a metropolitan area of 622 km^2 (Source: http://en.wikipedia.org/wiki/Copenhagen, accessed on August 15, 2007), is recognized as one of the most walkable cities in Europe.

The principle intervention undertaken in most European cities is creating pedestrian-only places, especially in old markets in the historic city centres which have been turned into pedestrian malls and plazas (Tan, 2006). Copenhagen improved its city centre, turning it from a car dominated centre to a pedestrian and soft traffic oriented vibrant place. City authorities

created several car-free streets and squares in Copenhagen which brought major changes in traffic culture in the last 30 years (Gemzoe, 2001).

Stroeget Street, re-opened in 1962 as the first car-free pedestrian street in Copenhagen, is quite a narrow road, about 10-12m wide. In the summer time when the weather becomes delightful, about 80,000 people walk through this narrow street. It was Copenhagen's first successful street from the pedestrian planning point of view (Ibid, 2001).

The successful pedestrianization in Copenhagen over a forty year period of time was analyzed and described in a research conducted by Professor Lars Gemzoe and Jan Gehl (cited in Tan, 2006). The research clearly presented the rise in pedestrian volume in the city centre. From 1968 to 1995, the number of pedestrians who spent time in the public space of the city centre increased about three and a half times (Tan, 2006).

CHAPTER III

MORDEN CONTEXT

Morden is located approximately 120 km southwest of Winnipeg city in south central Manitoba with a population of 6750 and an area of about 12.44 km^2 (Fig. 3.1). Since the early settlement, Morden has utilized its natural advantages, basically agricultural resources, and then diversified to bring in additional industrial shift and share, and also promoted tourism as well (Province of Manitoba, 2000).

Town of Morden was founded with the introduction of railway network connection by the Canadian Pacific Railway (CPR) in 1882. At that time, the railway station was known as 'Cheval', and soon the station name changed as 'Morden' after Land Lord Alvey Morden. Throughout its history of settlement, Morden had several names before its present day name. The native name was Pinancewaywinning, which means "Going down to the ford"; the French fur traders renamed the area Mort Cheval or "Dead Horse". The railway station became the main linkage of the newly formed settlement, and agriculture soon established as the most important industry there. As its location is in the middle of one of the province's richest agricultural areas, the early settlers immigrated to Morden to claim land and farm (Town of Morden, 2006).

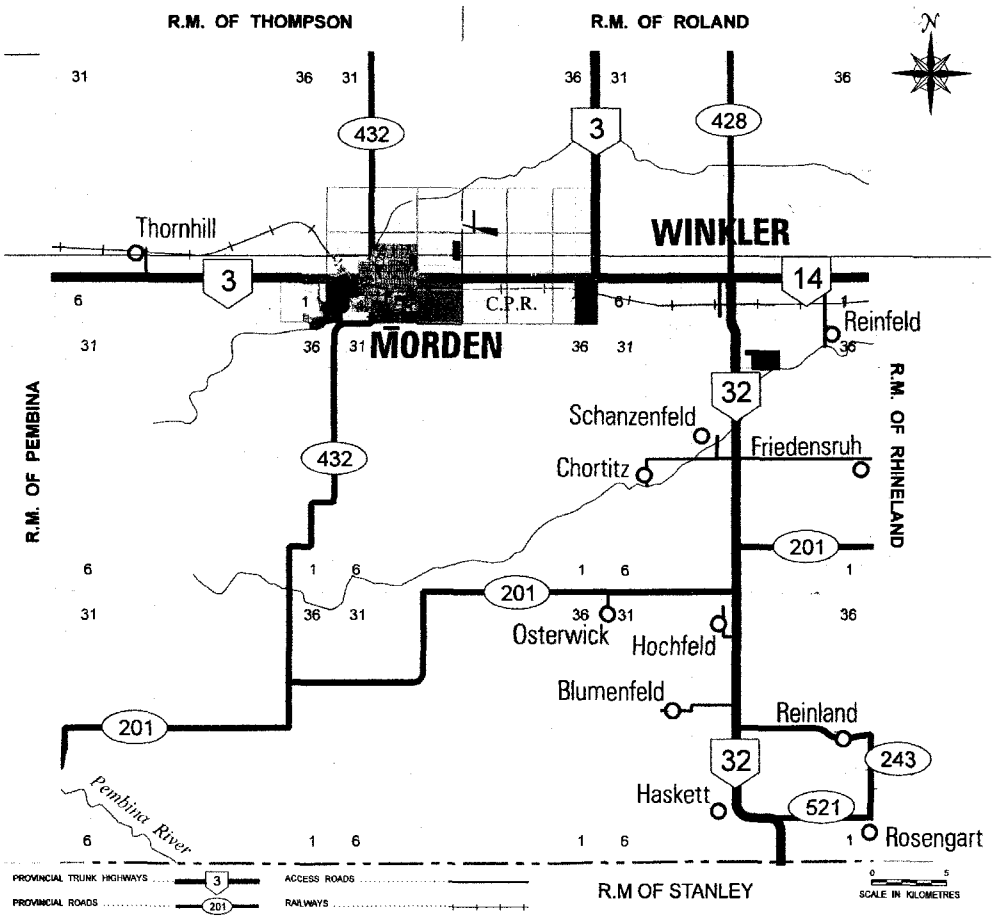


Fig. 3.1 Morden Regional Map
Source: http://www.communityprofiles.mb.ca/ accessed on 14 May, 2006

The population growth trends from 1981 to 2001 show that the population of Morden is growing. To meet this growth several new neighbourhoods are developing on the northwest, southwest, north-central and northeast sides of the town to meet the demand (Fig. 3.2).

Table 3.1: Growth Trends of Total Population

Year	Total Population	% Change
1981	4579	-
1986	5004	9.2
1991	5273	5.3
1996	5689	7.9

(Source: Hilderman, 2003)

Table 3.2: Demography of the Town of Morden

Population Age Group	1996	2001	% Change
0-4	425	380	(-) 10.6
5-14	815	895	9.8
15-19	385	400	3.9
20-24	360	395	9.7
25-54	2165	2400	10.9
55-64	455	520	14.3
65-74	515	510	(-) 1.0
75 & over	560	645	15.2

(Source: Hilderman, 2003)

The demography of Morden shows that seniors (age group 75 and over) is the fastest growing segment of the population (15.2%) followed by age group 55-64 (14.3%). This situation strongly argues for more appropriate pedestrian facilities for the seniors. It is also found from

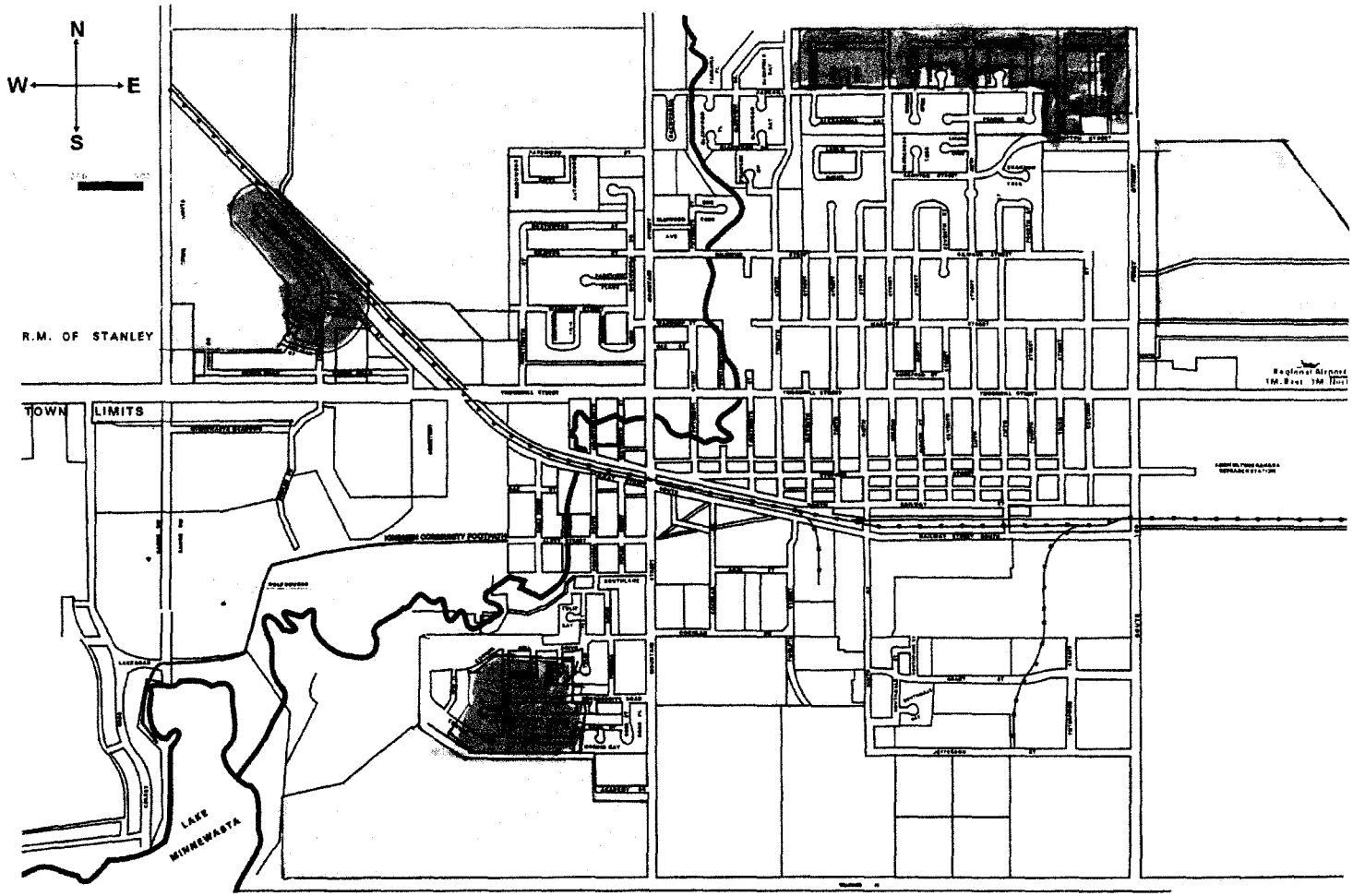
the data that age group 0-4 has the negative trend. This growth rate tendency is alarming for future planning initiatives in Morden.

From 1980, the economic base of Morden shows a strong growth. New buildings and communities are growing; local industries and retail businesses are expanding (Province of Manitoba, 2000). The development plan of the town identified suitable areas for future residential growth (Fig. 3.2). A number of real estate developments are executed in those areas: The Agassiz Estates, Glenwood Homes, Lots and Lots and Corners Hill (Hilderman, 2003).

NATURAL FACTORS: LANDFORM, SOIL AND VEGETATION

The Town of Morden is comfortably nestled in the lee of the Pembina Hills and Manitoba Escarpment. The Manitoba Escarpment marks the western shore of ancient Lake Agassiz. The escarpment is also referred to as the Pembina Hills. As one of the most prominent landforms in Manitoba, this escarpment contributes significantly to the natural drainage, groundwater, and salinity of the region, including Morden (illustrated in Fig. 3.3) (MSTW, 1991).

Fig. 3.2



TOWN OF MORDEN, MANITOBA

RESIDENTIAL DEVELOPMENT TREND
(Source: Hilderman, 2003)

Presently being developed

Future development area marked byMorden Stanly Thompson Winkler Planning District Development Plan

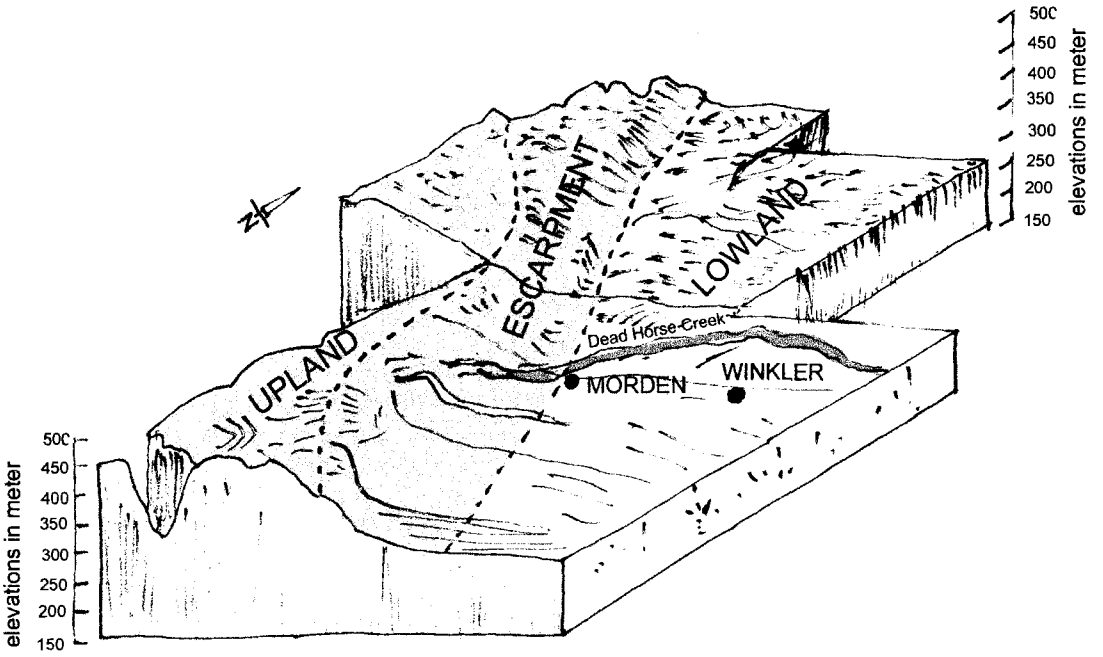


Fig. 3.3 Elevations and Land Form of Morden
Source: (MSTW, 1991) P. 25

The Dead Horse Creek Meander flows northeastward through the Town of Morden. Prior to the construction of the Dead Horse Creek Dam in 1941, the most significant instance of flooding occurred in 1932 in the midst of a summer drought and consumed most of the town area. The dam was later expanded in 1953 and Lake Minnewasta ('good water') Reservoir was created for domestic and stock watering purposes. The drainage of the town is primarily reliant on Dead Horse Creek. Street surfaces, open channels and a few storm sewers also move surface water (MSTW, 1991).

The soils in the Morden-Winkler area are some of the most productive soil in the province of Manitoba; excellent yields of cereals, grain, corn, sunflower, rapeseed, sugar beets and other horticultural crops are obtained from the area (Michalyna and Smith, 1973). Fig. 3.4 provides a generalized overview of the soils within and surrounding Morden. In general, there are three types of subsoil in the vicinity of Morden:

1. Morden Fine loams-clay
2. Blumenstein Light loams-clay
3. Altona Light sandy loams

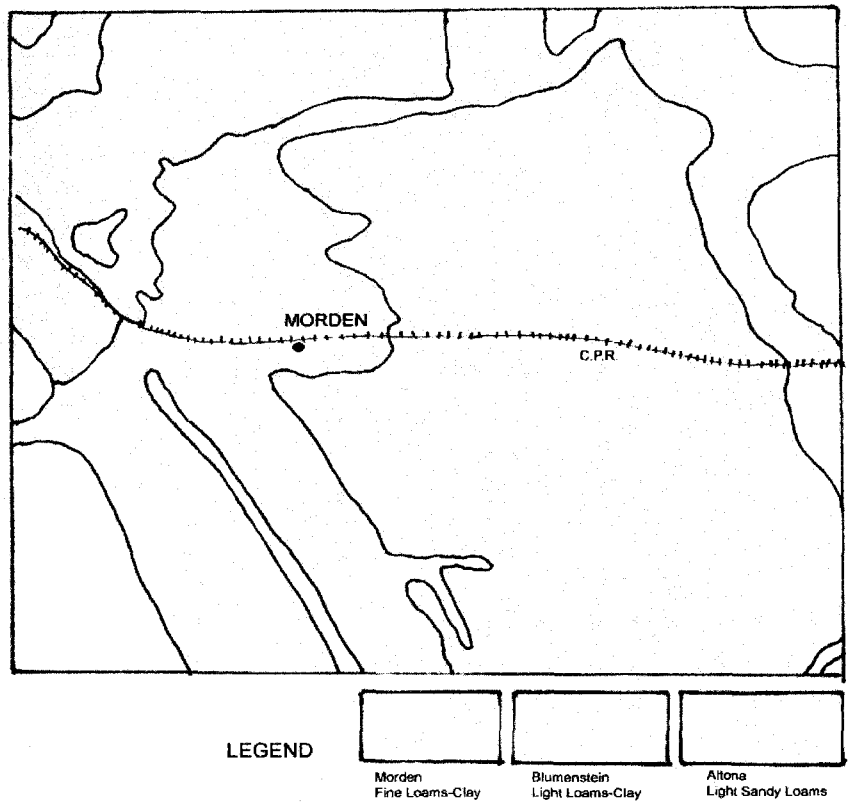


Fig. 3.4 Partial Soil Map – Reconnaissance Survey of South-Central Manitoba.
Source: <http://sis.agr.gc.ca/cansis/publications/mb/mb4/intro.html#sheet>, accessed on 14 May, 2006.

Morden is located in a vegetation transition zone, where the Lake Manitoba Plain and Boreal Transition eco-regions meet. The Town itself is located in what was originally tall grass prairie. To the west of the Town, the Manitoba escarpment supports wooded areas as do the riparian areas of streams and creeks.

Surveyors of the Dominion Land Survey in 1870's identified the following major vegetative associations (Fig. 3.5) in the area of Morden (McDowell, 1980):

1. Mixed woodland-oak dominant: Large trees of oak, elm, basswood, and some poplar and a thick undergrowth of hazel and cherry bushes with a lower undergrowth of will hops, 'grape vines' and rose bushes. Trees of this area were prized for lumber by the first sawmill operators in the area.
2. Oak-poplar parkland: This parkland association, dominated by oak was found along the escarpment slopes and the rolling land above.
3. Oak-willow parkland: This parkland association had oak bluffs and willow as the intervening vegetation, and was found mainly on the escarpment slopes between Dead Horse Creek and Shannon Creek.
4. Prairie: Tall grass prairie vegetation on the open "plain" with mixed grass prairie/meadow grasses in the wetter areas.

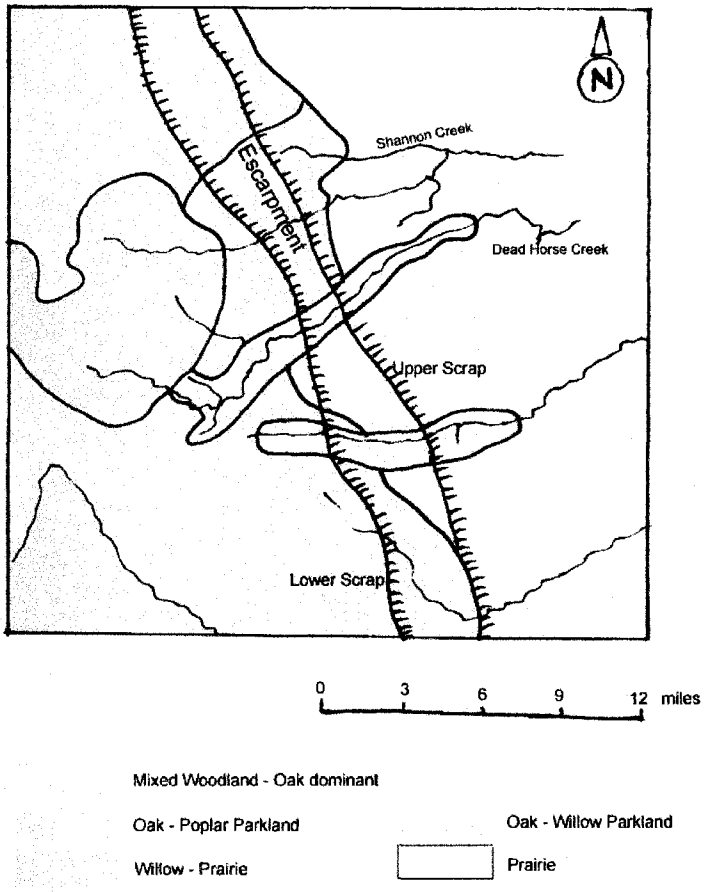


Fig. 3.5 Natural Vegetative Associations, Morden
Source: Mcdowell, 1980.

Today, original natural tree vegetation remains on the more rugged areas in the escarpment and along streams. The tall grass prairie, which included grasses such as big and little bluestem, has completely disappeared from the area, replaced by agricultural crops (McDowell, 1980).

The Agriculture and Agri-Food Canada Research Station – Morden was a significant developer of fruit species for the prairies including: apple, crabapple, plums, cherries, apricots, and raspberries; and woody ornamentals including: hawthorns, black ash, creeping

juniper, caragana, mock orange, spruce and roses; and herbaceous ornamentals, such as chrysanthemums, gladioli, and bee balm.

The climate allows a variety of crop species to grow in the area which do not grow well in other areas of the province. Crops include corn (field and sweet), field beans, pinto, navy, kidney, soybeans, peas (green and yellow), sunflowers and potatoes.

The following opportunities have been identified from the natural factors for the development of a pedestrian network in Morden:

- Topographically, Morden has almost flat land. The implementation of accessible pedestrian design would be cost-effective.
- The flat topography of Morden can open up longer and wider views and vistas for pedestrians.
- Revitalizations of the Dead Horse Creek and the other locations associated with Morden's natural history have potentials for interpretive designs and place making opportunities.
- The development of Lake Minnewasta beach would create more recreational opportunities for the pedestrians.
- Due to the high productivity of the associated soils, Morden has the ability to grow a rich and diversified variety of trees, shrubs, and horticultural species. The abundance in plant species varieties can enhance pedestrian environments. It also ensures a rich stock of trees and shrubs for Morden's planting programmes.

- The Agriculture and Agri-Food Canada Research Station – Morden could conduct further research to install appropriate and sustainable planting species depending on local soils and geological characteristics for successful pedestrian projects in Morden.
- The variety of vegetative species can be used to modify Manitoba's harsh environmental conditions.
- A number of plant species can be used to stabilize and revitalize the banks of the Dead Horse Creek. This will open up significant opportunities for developing the creek frontage and connecting the pedestrian nodes through a parkway network along the creek.
- The Lake Minnewasta and Colert beach area redevelopment requires an intensive planting programme. This includes enhancing the area through appropriate tree and shrub plantings, and creating planting buffer zones between beach and residential areas.

REVIEW OF RELEVANT PLANNING DOCUMENTS

The following documents relating to the community and development planning experiences in Morden were reviewed. Key to this review was the comprehensive study entitled "Parks, Pathways and Open Space Master Plan", compiled by Hilderman Thomas Frank Cram (2003), Winnipeg for the Department of Community and Social Development, Town of Moden. This document has been examined to identify specific initiatives, directions and recommendations that may relate to the development of the pedestrian network components in Morden. The highlights are illustrated following, in chronological order (Hilderman, 2003).

Morden Stanley Thomson Winkler Planning District Development Plan (1990)

Since 1990, the Morden Stanley Thomson Winkler Planning District Development Plan (1990) outlined a number of development planning principles for the whole district. Besides the general goals of the plan, the Town of Morden compiled following several specific goals for its own development process (Hilderman, 2003):

- Ensuring safe recreational opportunities for Morden inhabitants.
- Preserving historic and cultural amenities.
- Planning and expanding roadside commercial developments.
- Planning attractive buffers between industrial and residential areas.
- Establishing a number of green parks through land subdivision process (approx. one acre / 100 populations).
- Enhancing landscaping treatment throughout the town.
- Augmenting the Recreation Centre as the major community focal point of the Town.
- Protecting and developing Dead Horse Creek as a linear public park through a new building setback establishment.
- Creating attractive appearance mainly along major transportation routes.
- Establishing new development guidelines for the Lake Minnewasta.

Lake Minnewasta Development Strategy Proposal Phase II (1990)

In 1980, the Lake Minnewasta Development Strategy Proposal Phase II (1990) was prepared by the Morden and District Chamber of Commerce that included a five-phase plan for the Lake Minnewasta area. In general, all of the phases covered recreational and respective infrastructural development strategies (Hilderman, 2003).

Lake Minnewasta Environmental Assessment/ Recreation Development Capacity Study (1992)

This study identified a number of issues and proceeded through a series of recommendations concerning recreational development of the Lake Minnewasta area (Hilderman, 2003). Several relevant highlights of the development opportunities are as follows:

- Acquisition of private land for expansion of the Colert beach, campground amenities and parking facilities.
- Creating planting buffer between beach and residential area.
- Enhancing embellishment of the area through tree and shrub planting.
- Renovating entrance signs and relocating control gate.
- Developing leisure and recreational spots e.g. facilities for picnic and sitting activities and through creation of terraced landscapes.
- Creating universal access to the beach for disabled persons.
- Preserving existing vegetation and launching a replanting programme for the town.
- Developing additional walkways to create more recreational opportunities through a sustainable design process, where environmental impacts would be minimized.

'Greening Morden Project' Morden Arboriculture Development (1992)

This arboricultural proposal was developed by the Parks and Recreation Commission in 1992 for managing the Town's green and forest resources (Hilderman, 2003).

Some of the specific initiatives are as follows:

- Special vegetation planting programme along the entrance ways.
- Launching appropriate maintenance programmes for the trees and green spaces.

- Introducing by-laws to ensure green developments within new establishments.
- Continuing tree and shrub planting programme within the core area of the town and Lake Minnewasta area.

Dead Horse Creek Nature Park Master Plan (2000)

In 2001, a master plan of a nature park was prepared for the Town of Morden Millenium Committee. The planning was undertaken as the part of the community pathway project to create the pedestrian network linking significant natural and historic spots. The planning process included three phases (Hilderman, 2003).

- Phase I covered habitat and vegetation enhancement and maintenance along the Dead Horse Creek and pathway development.
- Phase II covered lake and creek shore stabilization programmes.
- Phase III covered expansion of walkways, building a pedestrian bridge, and incorporation of appropriate signage and site furniture.

'Come for a Walk in Morden' Tourism Marketing Plan (2001)

This is a tourism marketing plan for the Town of Morden undertaken in May, 2001 to create a recognizable image of the community for visitors. Several long term and also short term interventions were undertaken by the town to fulfill the plan (Hilderman, 2003). Some of the relevant initiatives are as follows:

- Short term initiatives:
  - Relocating the town map from the existing tourist information booth located at the Route 100 to a more appropriate location.

- Planting more native shrubs and flowers throughout the town with appropriate identification tags.

- Long term initiatives:
  - Elaborating the town's historic and regional themes.
  - Improving the walkways - especially using interpretive signs.
  - Improving the townscape, and streetscapes in the historic core area especially incorporating lighting, furniture and landscape elements to reinforce the sense of the community.

Community Recreation Needs Assessment Survey (2002)

The Community Recreation Needs Assessment Survey (2002) includes public opinions regarding needs for the recreation facilities (Hilderman, 2003). Several relevant highlights are as follows:

- Walking is the most preferred activity for all age groups and for seniors (16.2% of total population).
- Improving the walking environment was a high priority. Preferences include more street light, safety measures and improved sidewalks.

The key findings from the review of planning documents are as follows:

- Existing planning documents clearly support a more pedestrian friendly environment for the Town and encourage the adoption of pedestrian-friendly development standards, policies, and guidelines;
- The planning documents identify and recommend various linkages, connections, and trails to serve as a framework for connectivity throughout Morden;

- Existing Local plans have a number of recommendations that aim to support connectivity and enhance the quality of the pedestrian environment, including specific recommendations for pedestrian-related improvements in the core area;
- A number of community concerns, needs and priorities are identified from the previous planning documents that offer a good starting point for developing a complete pedestrian network in Morden.

EXISTING CONDITIONS OF THE PEDESTRIAN NETWORK IN MORDEN

Sidewalks

The sidewalk is the most prominent element of the pedestrian network. Morden has a number of along-street sidewalks or footpaths throughout the Town. However, there is a lack and inconsistency especially in the newly developed areas. Fig. 3.6 outlines existing sidewalk facilities in Morden. The southern portion of the Town i.e. Industrial Park and adjacent areas are still under development. Undeveloped plots, unpaved roads and an absence of walkway facilities are the common spatial characters of this area. Pedestrian facilities, especially walkways, are inadequate where new residential development and expansion is going on. These areas include the west and northwest, north and northeast and southwest (Fig. 3.2).

In the whole town, only a few crossing points on Stephen Street and Thornhill Street are facilitated with signalized pedestrian crossing and signage. Pedestrian amenities and street furniture are rarely provided. Tree plantings in the historic core area enhance pedestrian use, however, overall inconsistencies are evident throughout the town regarding the number and frequency of street trees. Fig. 3.7 shows the streets with established trees canopy in Morden.

The Town of Morden identifies some of the off-street and on-street pathways as trails. These trails are used by pedestrians, cyclists and inline skaters. Fig. 3.8 shows these trails designated by the Town. The Trans Canada Trail passes to the west of Morden and can be accessed near the R.M. of Stanley Park, a distance of about 5 km west of Colert Beach.

The existing land-use types are illustrated in the Fig. 3.9. The prevailing land-use typology can be categorized as the character zones/areas for specific streetscape treatments. Based on the present development strategy, ROWs (Right of Ways) for different streets in Morden can be categorized as follows (Fig. 3.10):

Table 3.3 Existing ROW (Right of Way) widths in Morden

Street Type	Street Name	ROW
Highway	Thornhill Street	30m (100 ft)
Secondary Highway	Mountain Street	30m (100 ft)
	Colert Crescent	30m (100 ft)
Arterial Road	First Street	30m (100 ft)
Collector Road	Stephen Street	20m (65 ft)
	South Railway Street	20m (65 ft)
Local Road	rest all	18m (60 ft)

(Source: Field Survey, 2005)

An analysis of existing conditions has been summarized in the Fig. 3.11. The following issues have been identified from the analysis of the existing sidewalk systems and other associated pedestrian network components in Morden:

- It is evident from the reconnaissance survey that present sidewalk facilities provide limited opportunities and inconsistent infrastructure for pedestrians.
- Sidewalk width and design requires review to ensure pedestrians comfort, especially in accordance with accessible standards compliance.
- Present state of sidewalk and walkway developments shows a lack of necessary buffering from the adjacent roads. Moreover, development works like hydro lines create unpleasant visual impacts.
- Presently, there are a few spots where pedestrian amenities and street furniture are provided by the Town. In some spots, landscape treatment, furniture and amenities have been provided by private initiatives. However, more amenities and furniture like benches, garbage receptacles and drinking fountains are required to enhance the pedestrian environment.
- The street system in Morden has a hierarchy according to ROW dimensions. However, similar patterns of hierarchy are not evident in the sidewalk construction within different zones.
- Safety features such as pedestrian level lighting or payphones are lacking in Morden. However, some portions of Stephen Street have been treated with special paving and traffic calming devices.
- There are opportunities to provide signage, interpretive informative features, way finding markings and other art works to enhance the pedestrian environment in Morden. These features can express different historical and socio-cultural events and create town character. Directional signage and distance markings can be useful for visitors to the Town.

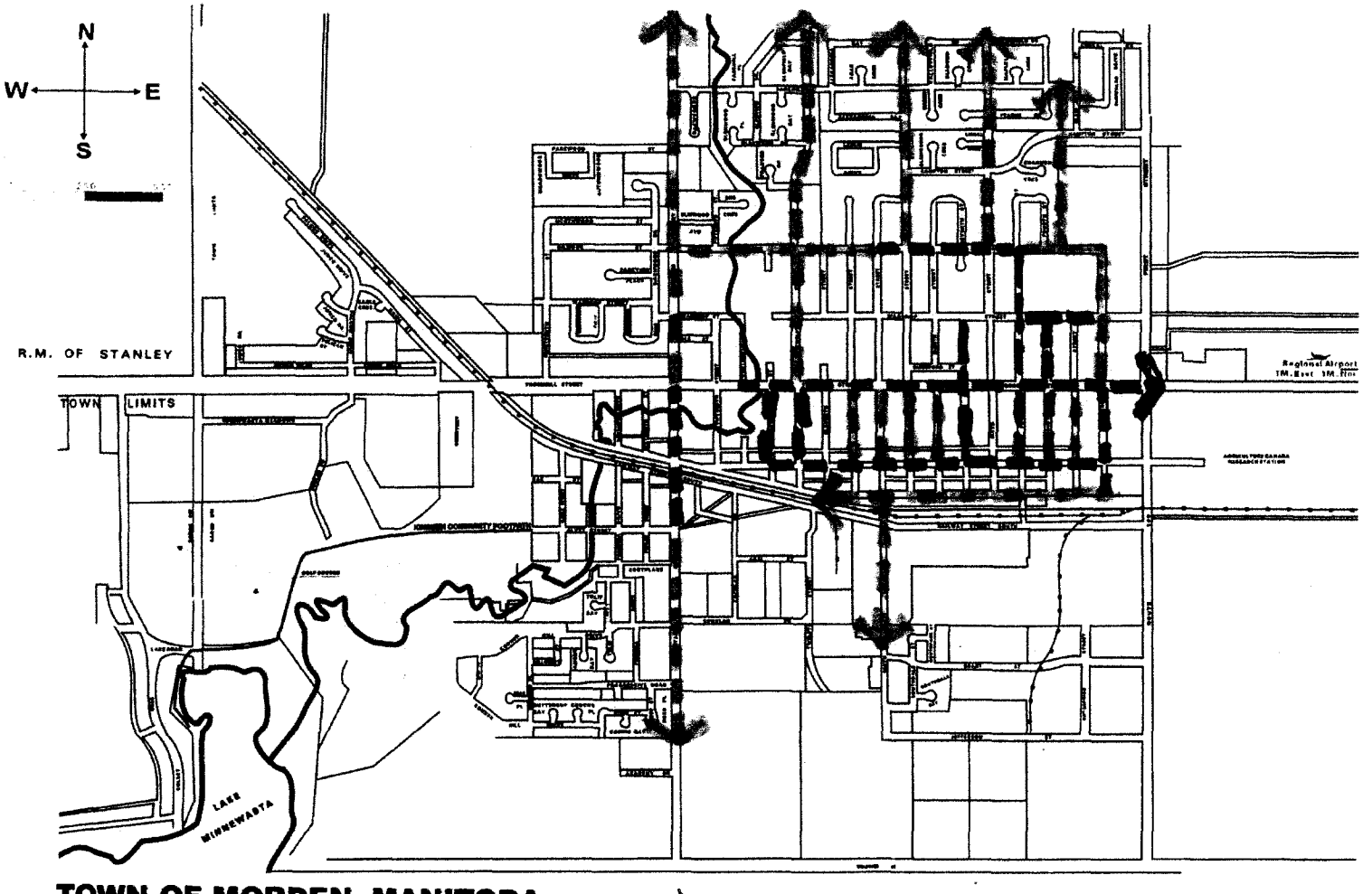
- The frequency and present pattern of street trees in the town core area is suitable and pleasant for pedestrian use. However, treatment with other landscape elements e.g. ground covers and hedges, is lacking. Moreover, overall inconsistencies are evident throughout the town regarding frequency of street trees. Many areas look unattractive due to absence of street trees.
- There is a lack of designed mid-block crossing facilities and also mid-block connections with alleys, lanes or pathways. Most of the older town blocks are designed with a travel length of about 200 ft. However, several newer areas of the Town appear to have mid-block connections as convenient ways of traversing blocks.
- Thornhill Street is a regional highway (Route #3) that divides the Town into two distinct segments i.e. South-segment and North-segment. This creates the most fundamental issue of segregating the pedestrian linkages and thereby results in a discontinuous pedestrian environment.
- The present state of designated trails in the Town is fragmented. The proposal of a pedestrian network depends on making more viable interconnections among them.

Pedestrian Trip Generating Sites

There are a number of sites in Morden that generates significant pedestrian traffic throughout the Town. Some of these are of provincial and national importance. Morden also has numerous parks, open spaces and natural features. Identification of these points of interest is essential as they are important parts of the proposed pedestrian network in Morden.

Fig. 3.9 identifies the pedestrian destinations & points of Interest can be categorized as follows:

Fig. 3.6



TOWN OF MORDEN, MANITOBA

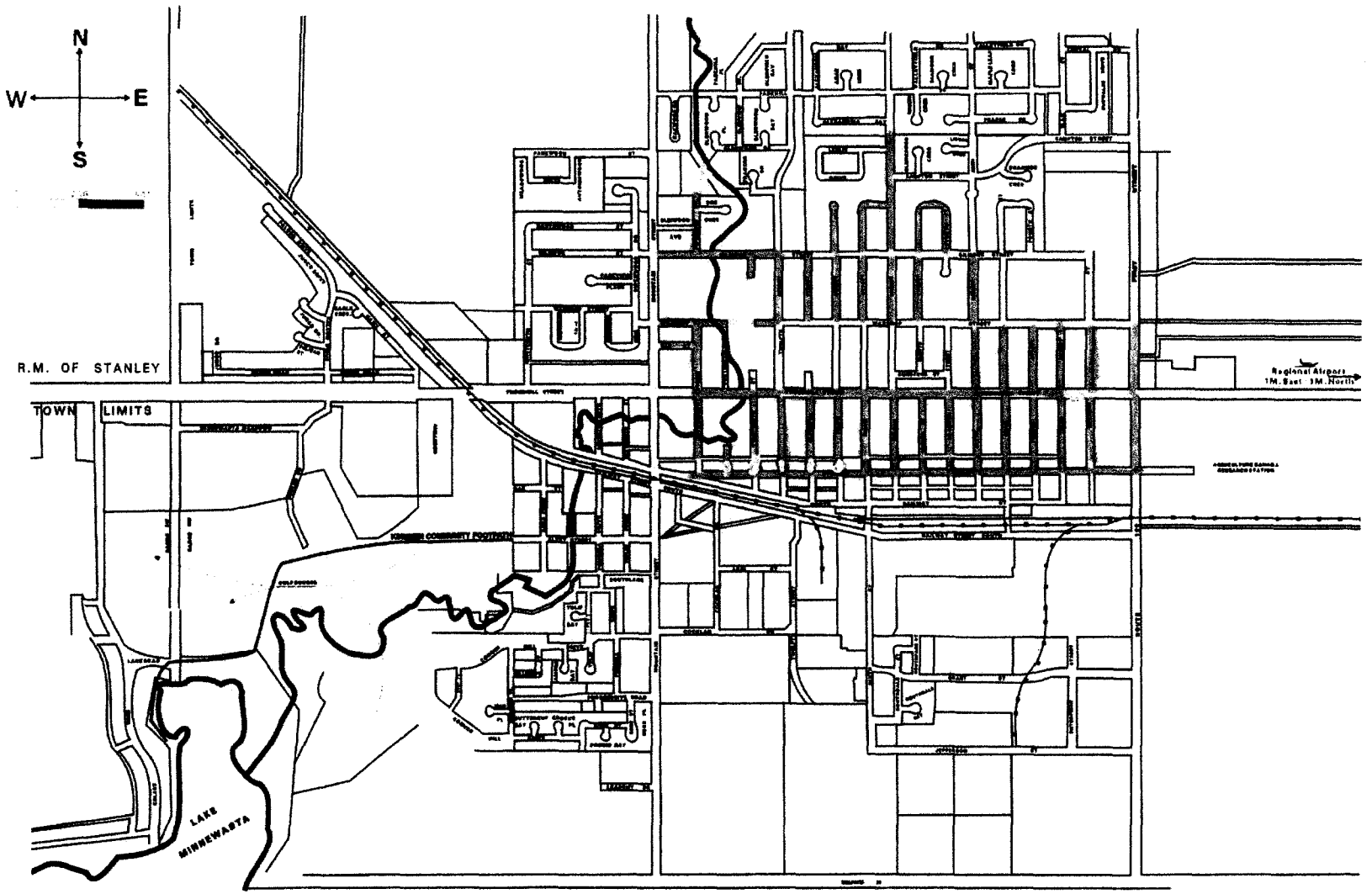
EXISTING SIDEWALKS

(SOURCE: FIELD SURVEY, 2005)

→ SIDEWALK ON ONE SIDE

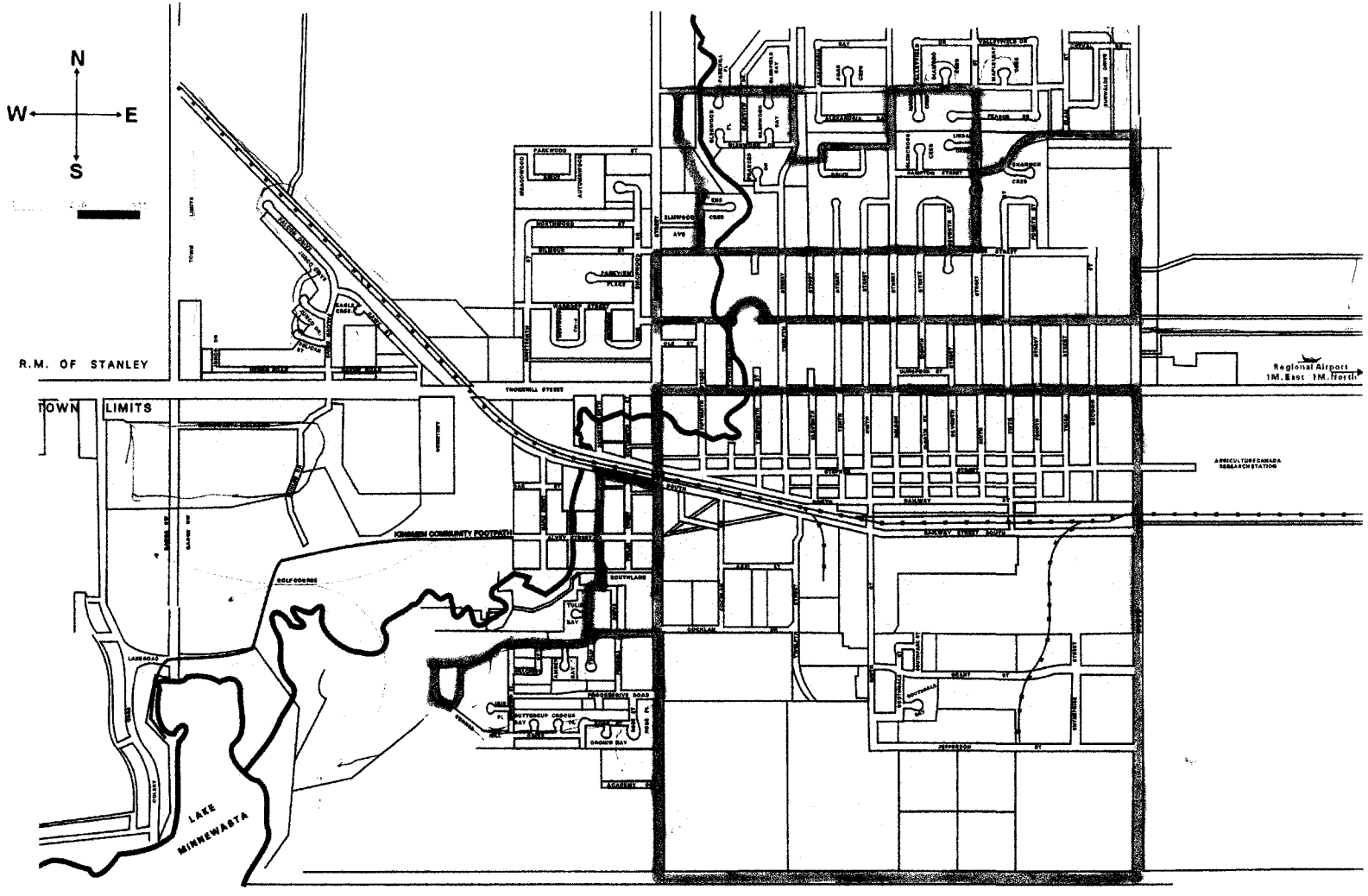
→ SIDEWALK ON BOTH SIDES

Fig. 3.7



TOWN OF MORDEN, MANITOBA — STREETS WITH ESTABLISHED TREE CANOPY
(SOURCE: HILDERMAN, 2003)

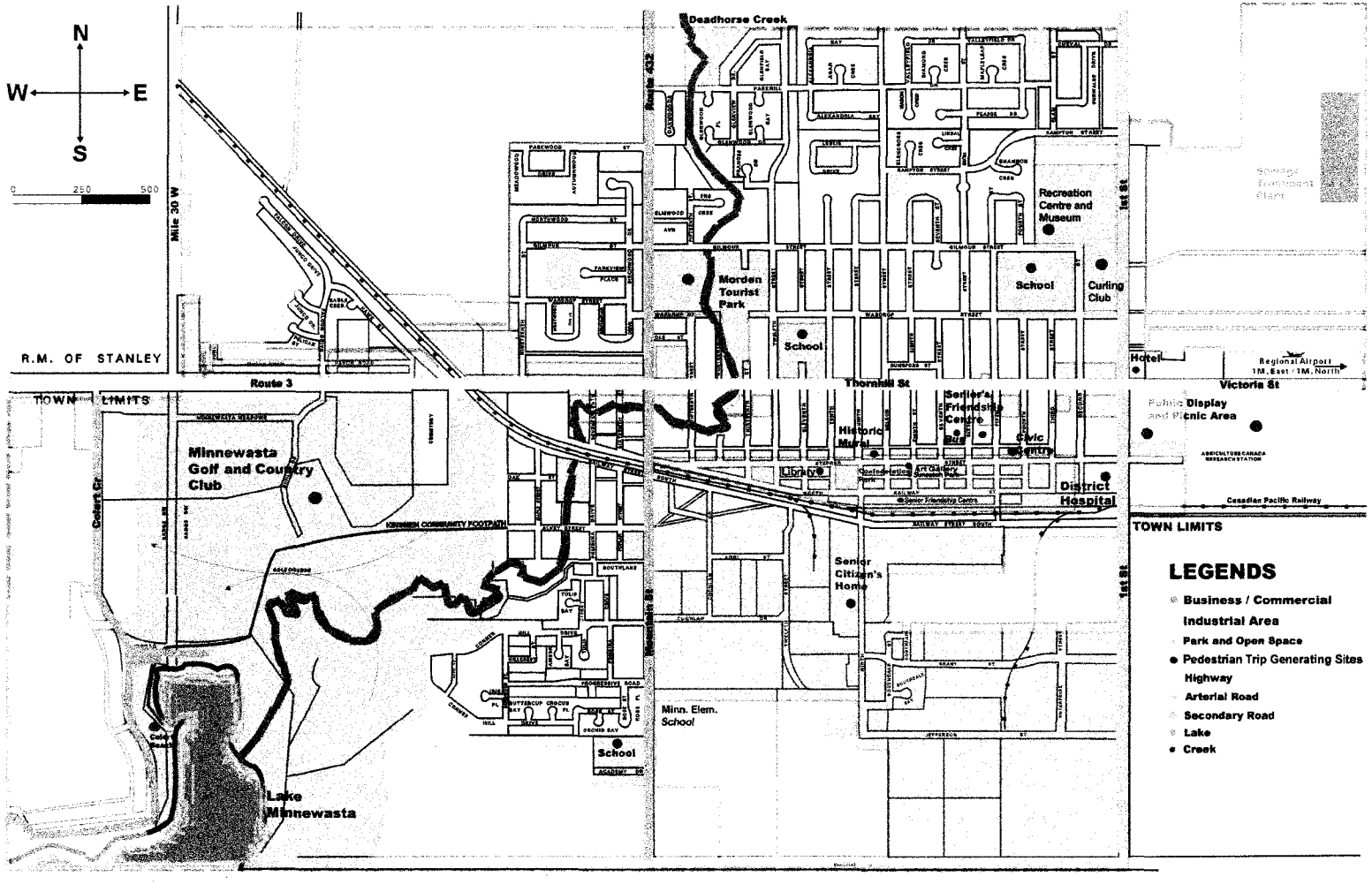
Fig. 3.8



TOWN OF MORDEN, MANITOBA

PATHWAY TRAIL
(SOURCE: TOWN OF MORDEN)

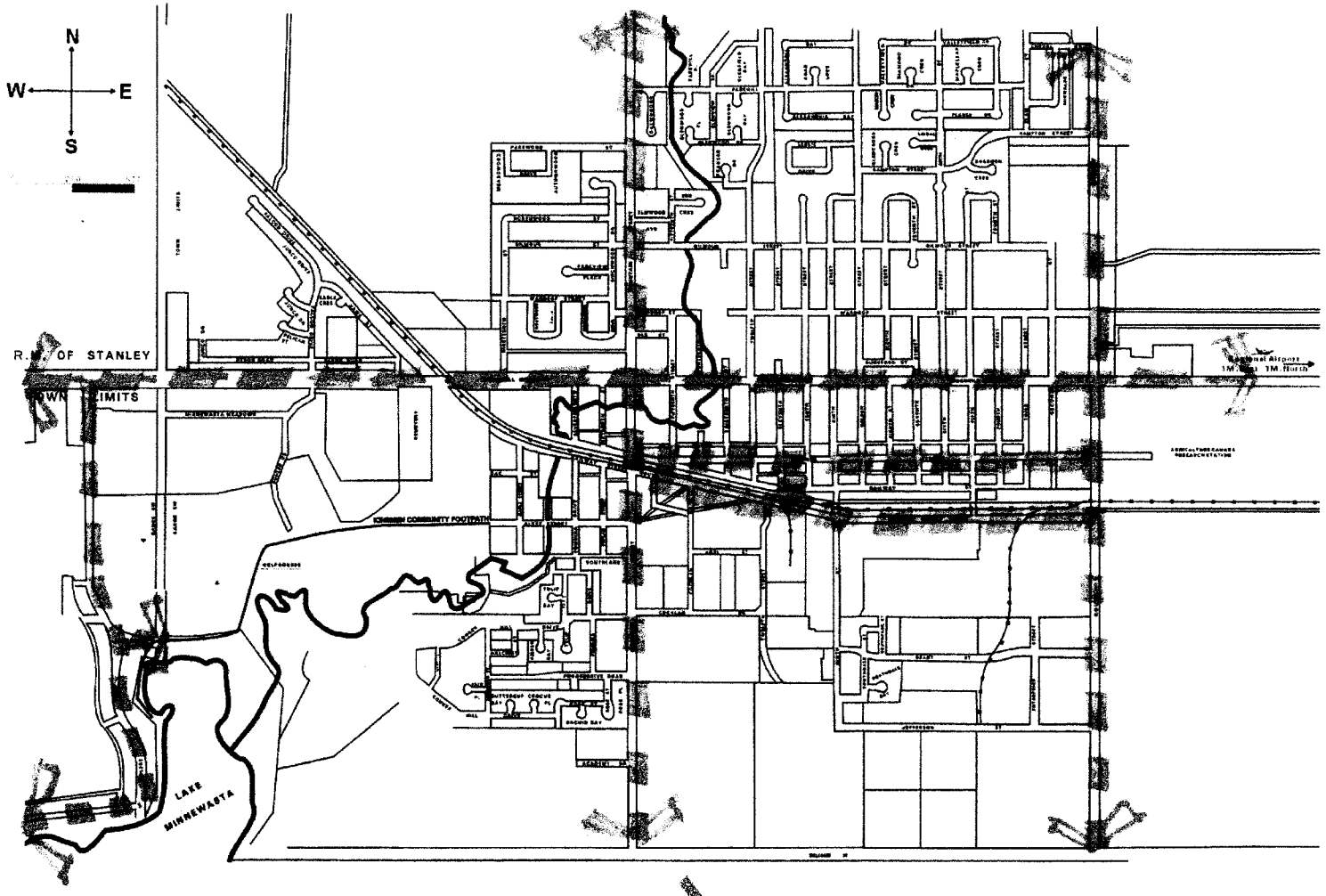
Fig. 3.9



TOWN OF MORDEN, MANITOBA

EXISTING LANDUSE AND PEDESTRIAN TRIP GENERATING SITES
(SOURCE: TOWN OF MORDEN)

Fig. 3.10



TOWN OF MORDEN, MANITOBA

EXISTING ROW WIDTHS

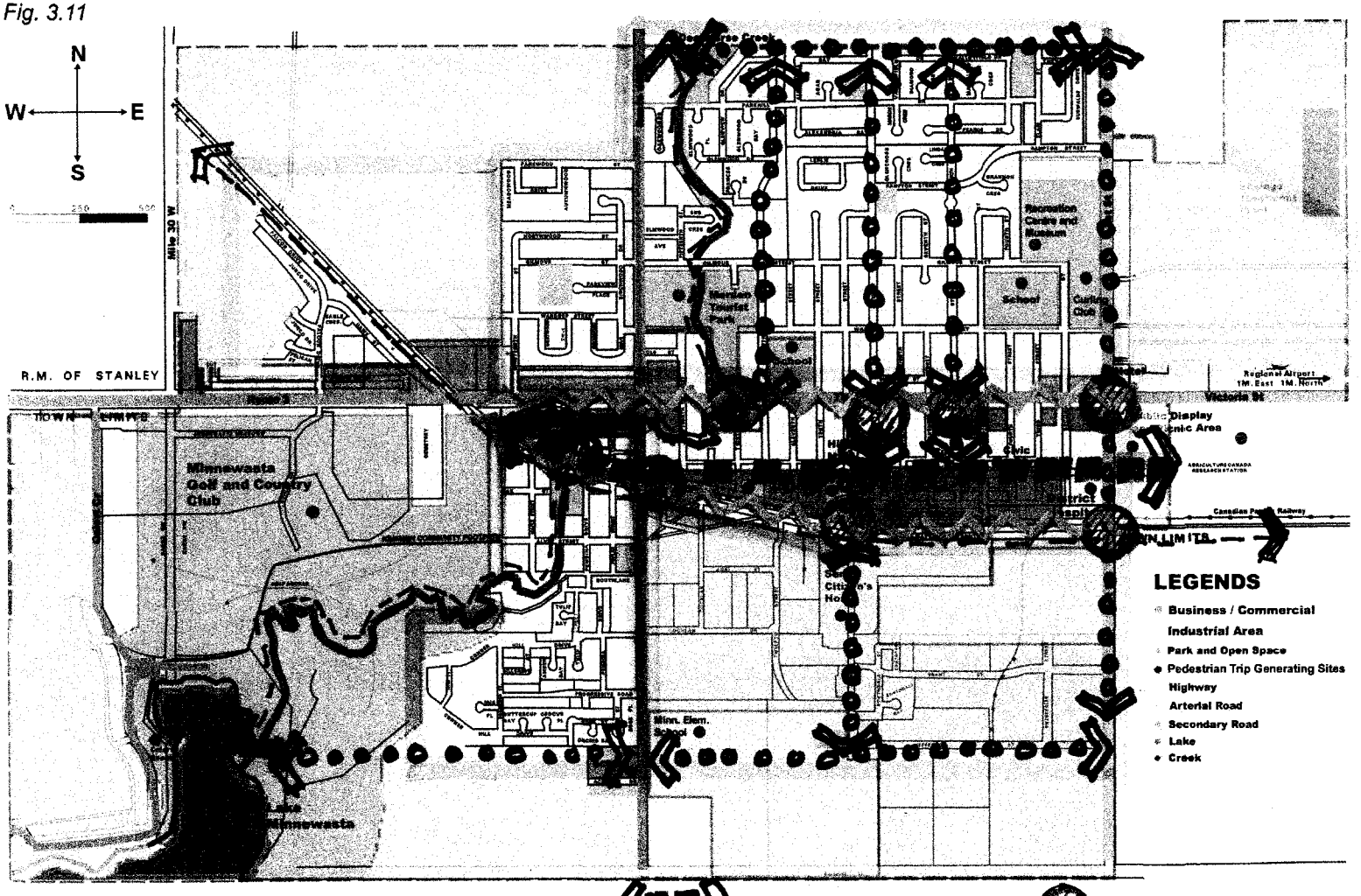
(SOURCE: FIELD SURVEY, 2005)

HIGHWAY, SECONDARY HIGHWAY & ARTERIAL 30m = 100 ft

COLLECTOR 20m = 65ft

REST ALL 18m = 60ft

Fig. 3.11



TOWN OF MORDEN, MANITOBA

ANALYSIS OF EXISTING CONDITIONS

MAIN PEDESTRIAN SPINE

NETWORK TO BE DEVELOPED

TRAIL TO BE DEVELOPED

NODE TO BE DEVELOPED

AREA LACKING PEDESTRIAN FACILITIES

PHYSICAL BARRIER/DISCONTINUITY

Pedestrian Destinations & Points of Interest

A) Institutional

- Civic Centre

  Located at 106-195 Stephen Street, Civic Centre Building houses the following offices:

  - Administration
  - Town Police
  - Economic Development
  - Chamber of Commerce
  - Fire Hall
  - Morden Area Foundation

- Schools and Collegiate

  - Maple Leaf Elementary School

    Location: 225-12th Street

  - École Morden Middle School

    Location: 150 Wardrop Street

  - Minnewasta Elementary School

    Location: 1 Academy Drive

  - Morden Collegiate Institute

    Location: 345-5th Street

- South Central Regional Library

  Location: 514 Stephen Street

- Agassiz Medical Centre

  Location: 115 - 30 Stephen Street

- Court House

  Location: 301 Wardrop Street

- Agriculture and Agri-Food Canada Research Station – Morden

  Location: 100-101 Route 100

B) Socio-Cultural

- Friendship & Senior's Service Activity Centre

  Location: 306 North Railway Street

- Pembina Hills Art Gallery

  Location: 352 Stephen Street

C) Parks and Green Spaces

- Morden Tourist Park

  Located on Highway 3 (Thornhill Street) and offers a natural setting for recreation, picnics and get-togethers.

- Confederation Park

  The Confederation Park was established in 1967 to commemorate Canada's 100th Birthday. The park is Located on Stephen Street and

contains Manitoba's largest tree, known as the Van Gertz Cottonwood, at the south-east corner.

- Suncatch Park

  Located on 8th Street, the small park is considered an important pedestrian attraction point. This park highlights a sculpture by renowned artist Leo Mol.

- Elks Park

  Located on South Railway Street, this attractive park is integrated with creek-side environment. The park is also located at a proximate distance to the railway track.

E) Recreational

- Lake Minnewasta & Colert Beach
- Minnewasta Golf & Country Club
- Morden Recreation Centre

  The Morden Recreation Centre is located at 111 Gilmour Street, an all season facility that includes two artificial ice arenas, community hall with a seating capacity of 1,000 and banquet seating for 400, conference rooms, tennis and racquetball courts, physiotherapist, athletic clubs and fitness centre, fast food shop, Paleontological Museum, Baseball Hall of

Fame, baseball and softball diamonds, playground equipment and Outdoor Classroom.

F) Tourist Attractions

- Tourist Information Centre

  Location: 530 Thornhill Street

- Morden Murals

  Morden Murals is a community project that established three murals at three different sites. The first mural is located at the corner of Nelson and Stephen Street on the Olympic Sports Building depicting the 1873 crossing of the Dead Horse Creek by the British North America Boundary Commission Surveyors. The second mural is located on the east side of Ideas Etc. at the corner of 7th Street and Stephen Street. It is a re-enactment of the visit to Morden of Prime Minister Sir John A. Macdonald on July 15, 1886. The third mural of this project is located on the northeast corner of the Morden Friendship Centre, 306 North Railway Street.

- Festivals and Events

  Morden offers year round festivals and events for its inhabitants and visitors. The Back 40 Folk Festival is in June, Cripple Creek Bluegrass and Gospel Festival and Trappers Trade Fair and Rendezvous is in July, the Morden Corn and Apple Festival is in August and the Pembina

Thresherman's Reunion is in September. All of these community events take place in the downtown core area. These different annual activities offer even more opportunities for residents and visitors alike to explore Morden and are primarily pedestrian events.

G) Commuters' Point

- Inter-City Bus Stop

  Location: On Thornhill Street at the corner of Sixth Street and Thornhill Street.

The following issues can be identified from the analysis of existing pedestrian destinations and attraction sites:

- It is revealed from the field observations that present attraction sites generate a number of pedestrian trips in Morden. It is also evident from the survey that newer developments are lacking pedestrian facilities. There is an opportunity to connect them through a continuous pedestrian network in Morden.
- There is a lack of designed social nodes or gathering places like urban square in the core area. There is a remarkable opportunity to plan a town square especially, emphasizing the present location of the Civic Centre.
- Currently there is no bus shelter facility for the inter-city commuters. There is an opportunity to provide bus shelter with tourist information booth and way-finding facilities.
- The Agriculture and Agri-Food Canada Research Station – Morden is well suited for recreational and educational walking trips as it is open to public. However, the

station has limited pedestrian accessibility. It is not well connected to First Street or to Stephen Street. There is no walkway along First Street. Hence, there is an opportunity to expand pedestrian facilities e.g. pedestrian path and interpretive signage.

- In the Lake Minnewasta and Colert Beach areas, pedestrian amenities such as seating, pedestrian lightings, drinking fountains, and landscape treatments including both softscapes and hardscapes are lacking. Pedestrian circulation within the area is not well defined. There is no buffer zone between access roads and the adjacent residential areas. Also there is no direct access from the campground office to the beach.
- The value of the Dead Horse Creek (erstwhile The Mort Cheval Creek) as one of the community's greatest natural assets is unrecognized. Private property developments adjacent to its edges limit public opportunities for physical and visual access to this valuable resource. Few public viewpoints or access opportunities exist through several open spaces and parks. At present, Dead Horse Creek, is an unimproved natural drainage channel, runs east, and then north, through the town. It could provide potential opportunities for community enjoyment, identity, and pride.
- As with many other town developments, Morden's location was initially determined by the path that the rail line took. Later, this historical significance faded as community resources and economic bases shifted to elsewhere. Dead Horse Creek provided water for the steam locomotives and prompted the railway to build a water tower at the creek crossing. However, the location of the railway track divided the town into two distinct northern and southern portions. There is an opportunity to develop a trail along the existing Canadian Pacific Railway track.

Historic Core of Morden

Morden has an attractive and lively core area. This area is considered the main hub of commercial and administrative functions of the town. In 1980, the Town initiated a downtown beautification project that included more street tree planting, ornamental lighting, and decorative pavement in the core area. Existing streetscape initiatives in the downtown Morden are a good start; however there exits many opportunities to enhance the pedestrian environment.

Analyzing the potential of the core area toward planning a pedestrian network in Morden, a number of issues can be identified:

- Present conditions of streetscape treatments in the downtown area need to be updated and modified to meet the criteria of a livable pedestrian environment.
- Streetscape enhancement should include more pedestrian amenities such as street furniture (benches), garbage receptacles and drinking fountains, buffers of hedges or planters, as well as features such as signage, way finding devices, art work, and corner treatments at street crossings.
- There is the opportunity to link all significant points of attraction along the axis of Stephen Street to the Agriculture and Agri-Food Canada Research Station – Morden and ultimately to intensify the reputation of this roadway as the Main Street of Morden.
- To enhance the importance of the Civic Centre, there is an opportunity to utilize the adjacent open and vacant lands.

- Seniors form the largest segment of the population in Morden and also their numbers are increasing. In this context, there is a demand for opportunities to meet their special needs such as open space amenities and places for leisure activities.

SUMMARY OF ISSUES, OPPORTUNITIES AND STRENGTHS

Highlights of Issues

• Circulation

- Lack of continuous pedestrian circulation facilities
- Need to strengthen physical connections among northern side and southern side of Thornhill Street, northern side and southern side of Canadian Pacific Railway track; historic core and Recreation Centre; historic core and Agriculture Canada Research Station; and historic core and Lake Minnewasta

• Topography

- The rising topography and slope on Thornhill Street at the western end of the town near the Lake Minnewasta results in safety concerns and accessibility issues
- The changing topography may impose challenges to continuous sidewalk design along Thornhill Street

• Streetscape

- Character of existing streetscape is inconsistent, piecemeal, and poorly maintained
- Lack of designed bulb-outs and excessive curb cuts, not pedestrian friendly
- Lack of street medians and mid-block crossing facilities
- Lack of functional landscape and pedestrian amenities

- Inadequate sidewalk widths

- Signage not coordinated

- Lack of clear connectivity

- Undefined street edges

- Lack of pedestrian facilities in the developing areas

• Community Identity

- Identity by Uses: lack of anchor uses, attractive public space and heritage landmarks

- Identity by Design: lack of strong and consistent themes and elements in existing architectural, streetscape, public arts designs can create identity for a character zone

• Community Services

- More services for recreational and social purposes needed

- Possible firehouse relocation and issues related to create a centrally located community landmark

- Community parks and open spaces need renovation and clear pedestrian connections

- Need more facilities focusing on the senior age group

• Natural Areas

- Natural areas are not well focused

- Access to the waterfronts (both lake and creek) is limited

Potentials for Walking Trip Generation

Morden has many opportunities and elements to attract people to walk for different purposes:

- Small and intimate scale town and neighborhoods
- Presence of unique regional and natural establishments
- Quiet rural settings perfect for health-conscious jogging and recreational walking
- Beautiful and naturally well developed parks and open spaces
- Established and well developed tree lines present on several streets
- Strong historic heritage elements
- Numerous natural corridors, trails and creek that can provide off-road opportunities
- Vital tourism potentials
- Round the year major events and festivals

Strengths for Design Interventions

- Wider Right of Ways (ROW) offers good opportunity for streetscape redesigns
- Strong natural character
- Infill opportunities for different streetscape projects
- Presence of creek, lake and attractive open green spaces
- Mix of older structures with newer development generates an interesting and varied urban landscape
- The cluster of commercial and institutional establishments at Stephen Street creates a vibrant activity spine with collective events.

CHAPTER IV

RECOMMENDATIONS AND DESIGN GUIDELINES

DEVELOPMENT OF A PEDESTRIAN NETWORK

Pedestrian network and streetscape design guidelines refer to the visual character and physical improvements for public rights-of-way and civic spaces in Morden. The goal is to foster a safe and attractive public realm to invite pedestrian activity, promote traffic calming, and encourage community gathering.

Morden has both significant assets and considerable potentials to develop a pedestrian network enriched with quality streetscapes. It is a community with an attractive lake and a creek, a rich blend of residential neighborhoods, and a traditional and historic core area. The plan aims to transform Morden as a place where one can live comfortably, preferably without extensive use of motorized vehicles. This practicum acknowledges Morden as a place, where people from many different walks of life can feel welcome, and find affordable and livable environments.

A well-connected pedestrian network is an essential component of the civic realm. Identifying a network of existing walkways and pedestrian attraction points is one of the central elements of this practicum. Development of design guidelines for appropriate streetscapes and other urban design interventions is thus complementary for achieving the goals and vision for the proposed pedestrian network in Morden, thus increasing the safety of pedestrians. Integrated policies, landscaping and traffic calming measures, and pedestrian

amenities as the components of the pedestrian network, would create a comfortable and pleasant environment for pedestrians, encouraging more people willing to walk more often.

The successful implementation of pedestrian network policy goals can encourage walking in the town and reduce automobile dependency. To this end, livable streetscape design would begin with the layout of street right-of-ways and the development of a continuous pedestrian network throughout Morden. The project designs include provisions for pedestrian circulation that are attractive and integrated with the larger pedestrian network.

Pedestrian Network Needs

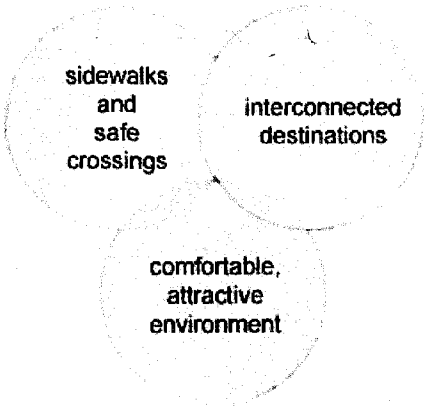


Fig. 4.1 Pedestrian Network Needs
(Source: City of Portland, 1998a)

Pedestrian-oriented urban design can help to address these needs. These designs would be human-scaled, approachable, and attractive to pedestrians. Livable streetscape design would provide pedestrians with a sense of safety and comfort. In this process, needs and design solutions will vary, depending on the type of land use and connectivity. Usually, retail and mixed use areas are best served by wide sidewalks, while lower density residential areas are

adequately served by relatively narrower sidewalks. Creating a pedestrian-friendly environment, as part of a well-designed network of facilities, would help to achieve livability goals.

Key Policy Goals

Key policy goals that relate to create a more livable streetscape and pedestrian network in the Town of Morden include the following:

- Create a network of safe and attractive linkages and pleasing environment that encourages pedestrian activity, integrates existing activities, land uses, and supports future development /redevelopment and economic growth;
- Strengthen civic identity of the public buildings and heritage sites;
- Preserve and enhance Morden's historic core area character;
- Link disconnected areas of the Town where physical divisions affect the pedestrian connectivity;
- Revitalize and integrate Dead Horse Creek in the pedestrian network system;
- Capitalize on the regional and natural features and character to create a complete pedestrian network in Morden;
- Improve the visual quality of physical environment and provide on-site amenities to enhance the pedestrian experience;
- Reinforce the notion of sustainability in the design of the pedestrian environment.

- **Link Key Pedestrian Corridors**

  - Develop pedestrian links (streetscapes, trails, boardwalks) between existing pedestrian activity centers, recreational uses, and open green spaces.
  - Develop attractions in key open spaces and create pedestrian network infill projects with opportunity sites to encourage pedestrian linkages.
  - Complete the sidewalk system in the areas where there is no sidewalk.
  - Fill in gaps in the pedestrian network considering acceptable 'level of service'[1]. This strategy provides pedestrian attractions that fill in the gaps between existing centres, where substantial portion of a pedestrian corridor already exists. This strategy also maximizes the use of existing pedestrian facilities to create an overall pedestrian network.
  - Ensure safe street crossings, particularly along high traffic volume streets or locations, where, there is high pedestrian traffic (i.e., adjacent to schools and activity centers).
  - Reconstruct the existing substandard sidewalks according to the pedestrian demand and accessible standards.

[1] **Level of Service (LOS)**: This is a measure of the mobility characteristics of transportation facility. Level of service for vehicles is determined by the delay or the volume/capacity ratio. Pedestrian and bicycle level of service can be quantitative or qualitative, using measures such as connectivity, comfort, accessibility and convenience.

Intervention Ideas

- Streetscape treatments focusing on more pedestrian orientation:
    - Reallocating and redesigning street ROW widths and sidewalk system.
    - Intersection treatments.
    - Design solutions for mid-block crossing
- Strong streetscape connections among existing pedestrian attraction sites and open/green spaces.
- Connect trails along the Dead Horse Creek and existing railway track.

- **Strengthen Civic Identity**

- Relate potential landscape designs to uphold the dignity of the Civic Centre to the context of the historic civic core.
- Develop unified streetscape themes to link all pedestrian corridors and give identity to the Town.

Intervention Ideas

- Design main entrance gateways at the eastern and western boundary lines along Thornhill Street i.e. Route # 3 to enhance the identity of the Town.
- Design an intercity bus stop combined with the tourist information booth to define a new destination that would reinforce Morden's sense of place.
- Design exterior plazas/open spaces adjacent to the Civic Centre to help knit the historic civic core with the pedestrian network.

- **Preserve and Enhance Morden's Downtown and Heritage District Character**
  - Infill key land parcels along the traditional downtown "Main Street"—Stephen Street.
  - Reinforce pedestrian linkages with other character districts designing appropriate streetscape and gateway themes.
  - Design streetscapes and encourage uses that enliven street life.

Intervention Ideas

- Design a corner plaza/ pocket park at the intersection of Stephen Street and North Railway Street incorporated with a gateway theme.
- Develop opportunity sites, as the means of strengthen heritage themes, and preserve historic identity e.g. first historical railway station site and adjacent areas where Morden settlement started.
- Enliven street life with sidewalk cafes, coffee shops, corner shops, galleries and artists' studios.

- **Integrate Dead Horse Creek**
  - Initiate creek revitalization and restoration projects.
  - Increase landscape and ecological buffers on edges.
  - Open up naturalistic view sheds on the potential turns of the creek and strengthen streetscape linkage with existing pedestrian corridors.
  - Establish more pedestrian bridges across the creek and develop with provisions for leisure related facilities.
  - Encourage new recreational developments related to the creek.

Intervention Ideas

- Develop linear parkway and trails along the creek edges.
- Develop creek front with social and recreational facilities integrated to the existing pedestrian corridors.

- **Link the Discontinued Areas of Morden where Physical Divisions Affect the Pedestrian Connectivity**

  - Develop connectivity between northern and southern sides of Thornhill Street.
  - Develop connectivity between northern and southern sides of Canadian Pacific Railway track.

Intervention Ideas

- Construct a pedestrian bridge over Thornhill Street.
- Develop on-grade railway crossing to enhance pedestrian convenience.
- Redesign the intersections/crossings to make them pedestrian friendly.

- **Capitalize on the Regional Establishments and Natural Characters- The Built and Natural Landscapes**

  - Integrate regional establishments and attractions with existing pedestrian linkages.
  - Strengthen linkages among regional establishments and attractions sites with appropriate streetscape and gateway themes.
  - Enhance direct access to the natural resources like lake, creek, and natural landscapes to improve the livability, and vitality of the town.

- Develop social and recreational hubs using water front locations and natural areas.

Intervention Ideas

- Develop vacant land parcels and existing open/green spaces that are identified as having redevelopment potential to enhance sense of place and cultural identity.
- Develop recreational centre and tourism facilities on waterfront along the Lake Minnewasta shore.
- Develop 'Green Street' design concepts to make storm water management processes sustainable and aesthetically expressive.

STREETSCAPE DESIGN GUIDELINES

Morden is located in a natural setting which offers a number of picturesque views and vistas. A sense of physical and visual separation from other communities is provided by extensive open spaces and natural features which surround Morden. For residents and visitors alike, encounters with the agricultural settings and Pembina valley landscape happen along the highway corridors and several other roadways. The sense of scale and country-side urbanity of the Town complements these scenic rural and agricultural environments.

The overall urban form of Morden consists of a low density urban core centered in the town, with a series of varied and dispersed residential neighborhoods, and bordering agricultural areas. These provide residents with a range of housing environments and an immediate relationship to natural areas. Several interspersed agricultural areas accentuate the

juxtaposition of town and country. Much of the character of Morden is derived from the architectural styles of its buildings, particularly of older historic residential and commercial buildings near the town's historic core. For the most part, buildings are small in scale and only a few buildings are three stories or more in height.

Elements and features that comprise the streetscape design guidelines draw their inspiration from forms and materials that may be found in Morden's natural features like Dead Horse Creek, eminent pre-historic subjects like marine reptile, heritage landmarks and significant events and buildings within the historic core. Attaining the vision of sustainability is another key factor in the design guidelines that encourages references to these assets through the use of materials and forms which are local and sustainable to the town.

Guiding Principles

This practicum proposes the following guidelines to develop a comprehensive streetscape design. The guiding principles give direction to the pedestrian network components. These principles will guide design process according to their respective themes. Although these principles apply general directions, they can be further articulated and customized to specific context and objectives when neighbourhood or local design guidelines would be prepared.

- **Connectivity**

The pedestrian network and sidewalks should connect neighborhoods, natural open spaces, focal points, and activity centres. Thus, various parts of the community would be integrated through design interventions.

Provide direct pedestrian connections and enhance connectivity

- Provide direct pedestrian linkages to all activity areas, and civic facilities.
- Complete the sidewalk system where it is discontinued
- Create visual links to key pedestrian attraction points.
- Construct clear entries to the destinations as viewed from the walkways.
- Provide separate and direct pedestrian entries from the street, not through the parking areas.
- Integrate signs and light fixtures to enhance the pedestrian environment.
- Ensure that sidewalk uses, such as outdoor cafes in the frontage zone of the retail areas, are compatible with direct pedestrian access to the destinations.
- Provide a direct and visible connection of sidewalks or pathways between blocks. Corner plot treatment should be designed differently with the demand of the adjacent land use in mind.
- Create direct pedestrian connection between *cul-de-sacs* especially in the newly developed areas.
- Ensure appropriate width of sidewalks and street crossings for convenient pedestrian movement.
- Minimize any physical obstructions impeding direct pedestrian access.

- **Continuity and Compatibility**

The streetscape and surrounding built environment should be physically continuous along the same street block, and different activities can be visually, as well as, functionally linked together. Streetscape components, materials and colors should be made compatible between old and new, existing and proposed, and historic and contemporary.

Link all pedestrian network components to establish a continuity and consistent character

- Provide a clear pedestrian network by integrating continuous sidewalks preferably on both sides of the street.
- Install a consistent arrangement of street trees and design consistent vegetative strip between the curb and the sidewalk.
- Provide continuous alignment of building facades adjacent to the sidewalk.
- Review existing sidewalk width according to the land use demands and expand the sidewalks in areas of high pedestrian activity.
- Use pedestrian-scaled furniture, signs, landscaping, and other amenities to unify pedestrian network components.
- Ensure opportunities for sidewalk cafes and similar features on the frontage zone of the sidewalk that allow and support continuous pedestrian movements.

- **Safety and Security**

Pedestrian safety concerns and diverse users' requirements are important prerequisites of the livable streetscape design.

Design and develop safe, comfortable, and attractive street crossings

- Develop medians to improve the safety and comfort of the street crossings.
- Establish safe designs for street-crossing and traffic calming improvements that include crosswalks, median, corner sidewalk widening, lighting, signs, signals, and landscaping.
- Install well-marked crosswalks that are visible to vehicle users, coherent to the local urban design context and character, and safe for all age and ability groups.
- Develop signals, signs and street markings for clear pedestrian crossing points.
- Design bulb-out[2] and minimize curb radius in order to reduce the speed of turning vehicles, and to decrease crossing distance for the pedestrians.
- Locate lighting, signal and signage poles so that those are not conflicting with safe pedestrian movements.
- Consider access for persons with different abilities.

[2] **Bulbout**: A term for a curb extension, which protrudes into the street at an intersection or mid-block crossing to reduce the crossing distance for pedestrians and also to reduce vehicular traffic speeds.

Create a pedestrian environment perception that is perceived safe for the users

- Accommodate human activity in the newer developments by providing balconies, terraces, and yards that overlook the pedestrian environment.
- Promote pedestrian use of the street edge by designing entrances, porches, balconies, canopies, decks, and seating to provide weather protection, security, and safety.
- Apply principles of Crime Prevention Through Environmental Design (CPTED) when assessing development and in the design of public spaces.
- Provide clear and direct 'lines of sight' for pedestrians to increase their feeling of security. Minimize the use of tall and dense shrubs, walls, berms, and other features which obstruct pedestrian views within their immediate environment.
- Provide general illumination for security and visual safety of pedestrian areas. Avoid over-illuminating as this can create shadowy areas which may create threatening to pedestrians.
- Use lighting features to identify and highlight key pedestrian facilities. These designs can be developed at pedestrian intersections, sidewalks, paths, and entrances to increase a sense of safety and security.
- Provide indirect light to the street environment such as trees, and canopies.
- Develop physical buffers or edge treatments along sidewalks, streets, and parking lots to properly define their boundaries.

- **Visual Interest and Pedestrian Amenity**

A well designed pedestrian amenity incorporates all those elements that directly affect the quality and character of the public realm. The design provisions are intended to achieve a high quality of streetscape and pedestrian comfort in Morden.

Appealing streetscapes should be designed to create visual interest for the users. This environment should be safe, functional and accessible to all. It should provide a wide variety of opportunities for socio-cultural and economic activities. The pedestrian environment should be characterised by design integrity and appropriate materials.

Develop visually appealing attractions and features to create a livable pedestrian network

- Provide pedestrian interventions should fit within the context and enrich pedestrian character.
- Employ color, materials, and design forms that create an integrated environment for the pedestrian.
- Integrate special design features, public art, and details that can enhance the pedestrian amenity.
- Incorporate pedestrian amenity features including banners, signs, and planting containers.
- Integrate the pedestrian lighting system to improve the physical appeal of the pedestrian environment.
- Minimize long term maintenance cost by using quality materials and design. Pedestrian facilities should be maintained throughout the year.

- Develop a continuous edge of deciduous canopy street trees on both sides of the street.
- Select species that provide shade, shelter, scale, and continuity for the pedestrian environment.
- Establish pattern and spacing of street trees to provide a formal visual rhythm, linear edge, and organization of the sidewalk area.
- Use a limited selective range of tree species to provide a unified image and cohesive character.
- Reduce cover of smaller plants and disorganized planting.
- Use special landscape themes to help distinguish zones.
- Design retaining walls, where required, by using materials that reduce their apparent scale, such as brick or stone. These materials should be treated architecturally to create an appropriate scale and rhythm.
- Organize hanging or climbing vegetation to soften the appearance of retaining walls. High retaining walls should be terraced down and included landscaped setbacks.
- Design attractive urban open spaces to have a distinctive and definite shape, and enclosure.
- Develop corners of the intersections as small pedestrian plazas.
- Screen blank building walls and retaining walls with landscaping, architectural features, or art to enrich the pedestrian environment.
- Consider parking facility location at the rear of the building rather than at the front.

- Utilize selective landscape buffers and screens to cover roadside on-grade parking lots, and to soften hard appearance of the parking lots.
- Use landscaping selectively to soften hard appearance of the buildings at the sidewalk edge.

- **Human Scale**

A pedestrian friendly environment is a key factor to enhance social interaction and livability. One of the criteria to achieve this environment is to design the intervention according to the standards emerging from human needs and perceptions in the context of Morden. The scale and massing of proposed streetscape should be viewed in the context of adjoining surroundings, general pattern of natural and built features including views and vistas. Needs and convenience for the pedestrians should be the primary concern in all streetscape design projects in Morden. Overall, the streetscapes should be designed with people's comfort and well-being in mind.

The quality of streetscape depends on the contribution of each individual element to a harmonious total concept, through relating to the scale creating a continuous theme of urban form

- Develop streetscapes and public realm to complement the surroundings.
- Improve the design and function of sidewalks to a comfortable human scale.
- Define a sense of enclosure for the pedestrians.
- Emphasize the vertical streetscape elements e.g. lighting, trees, signage, and artwork– in order to define edges, and create a human scale.
- Continue or create a strong building line that addresses public realm.

- Create useable space by design where setbacks arise from the building line.
- Consider microclimatic conditions and sun-shade in building designs.
- Integrate wayfinding signage and maps especially within the historic core.
- Reflect human scale and needs into the building design and details.
- Encourage outdoor activity areas in the commercial areas to enliven pedestrian character and human scale.

- **Community Identity**

The positive features of a place and its people contribute to its special character and sense of identity. These include landscape, building traditions and materials, patterns of local life, and other factors that make one place different from another. The best places are memorable, with a character which people can appreciate easily. The streetscapes of an area reflect its history, functions and connections with adjoining areas. This contributes to the richness of 'community identity' and to the adaptive potential for further changes in the future. Integrating existing precedents and inspirations into a new development can maintain the continuity of the built fabric as well as retaining heritage and historic merit.

Each element of the streetscapes contributes to the identity of the place, including vegetation, lighting, railing, bollard, recycle bin, paving, fountain, public art and other street furniture

- Use of local materials, construction methods and details in enhancing local distinctiveness.
- Keep the design of street and walkway simple, and use appropriate materials to fit local character.

- Use street furniture to delineate the public realm.
- Emphasize use of vertical elements e.g. lighting, trees, signage, and artwork in order to reinforce a community identity.
- Use scale, texture and colour of construction materials to reflect an area's special function and character.
- Reflect local art and craft traditions (such as, ironwork, stained glass, masonry, decorative wall, retaining wall, and pavement) in the development as the integral parts of the design.
- Utilize streetscape and townscape elements and public art to express unique qualities of the history, and icons of the community.
- Create a wayfinding system to reinforce the community identity and history.
- Intensify the use of streetscape elements to create defined gateway corridors.

- **Sense of Place**

A 'sense of place' can be expressed as the essential character and spirit of a built or natural environment, that makes a place unique or special, as well as it fosters a sense of belonging to that area. It creates an image that remains in the memory embodying notion of cultural landscape quality that exists in that area. The sense can be built on a particular element, or stretched to a theme of common design elements, particularly in the public realm. It also can be a mosaic of details that creates a fine-grained streetscape. An overall sense of place should be context specific in the design of the streetscape elements respecting local climate, topography, vegetation, building materials, community character and cultural heritage.

Contextual land form, character and cultural qualities of landscape should be taken into consideration to create a sense of place when designing a new development

- Integrate natural features into the wider systems.
- Conserve natural features (that include creeks, trees and wildlife habitats) to provide a better relationship between built and natural environment.
- Apply indigenous ecological knowledge to determine the character and identity of both a development and the place of which it is a part.
- Integrate streetscape design rather than impose it upon to the landscape setting to reduce its impacts on nature.
- Link urban forms and landscapes between new and existing streetscapes.

Streetscape design should respond to the local built forms in the detailed layout and design development to reinforce a sense of place

- Contribute to the distinctive qualities of a place by using local built forms and details.
- Relate to the existing surroundings in terms of scale, massing, built form and design detail.

- **Environmental and Sustainable Design**

Development patterns influence sustainability through the community design, and ultimately determine the overall "livability" of a settlement. A key goal of the pedestrian network design is to reduce the dominance of the automobile, and transform it to a pedestrian friendly town.

As we are struggling towards a sustainable future, we must rethink our urban landscape. It is now necessary not only to improve our existing infrastructure but to think of emerging concepts of promoting sustainable design values.

Explore sustainable design features and materials to protect ecological balance

- Design, plan and construct with respect for economic, environmental, social and cultural sustainability.
- Provide open spaces with extensive landscaping that contributes to the enhancement of local air quality, and helps to reduce the volume of urban stormwater runoff.
- Employ 'green street' approaches that reduce the negative environmental impacts.
- Provide biodiversity through the selection of plant materials.
- Use trees and shrubs for shading, cooling, and wind protection.
- Incorporate native plants and trees into landscaping designs. Prominent plant species that are common locally will help to reinforce the distinct natural qualities of a place.
- Use more local and sustainable construction materials e.g. wood/reclaimed lumber.
- Utilize stormwater management through permeable surface treatments wherever possible.
- Incorporate structural soil techniques underneath road and pathway bases to allow for the healthy growth of the trees, and water infiltration into the ground.

Enhance the natural environment to increase the attractiveness and pedestrian comfort

- Protect and maintain a green network of parks, and open spaces.
- Continue to 'greenery' with more trees, open green spaces, and vistas to the Dead Horse Creek.
- Enhance outdoor recreational opportunities, and incorporate the natural resources.

- **Accessible Design Provisions**

All pedestrian facilities should be designed and constructed to meet the essential accessible standards by providing mobility needs for persons with disabilities. Particular attention should be given to accessible standards for the following areas:

- Sidewalk width and other provisional requirements
- Running and cross slopes
- Curb ramp design and installation
- Sidewalk surface materials and construction tolerances
- Crossing signal design
- Detectable warning strips and tactile surfaces
- Protruding objects and obstructions
- Street crossing designs
- Available and accessible parking integrated with pedestrian circulation system
- Pedestrian access and walkways linked to the trails and natural features

STREETSCAPE AND LANDSCAPE CONCEPT PLANNING

The transition and distribution of street types in Morden provides an opportunity to create a distinctive streetscape system of tree-lined streets, enhanced sidewalks, street lighting and furniture, trails, parks, plazas and open spaces.

The streetscape elements including gateways, public art, light fixtures, street furniture, and signs need to be coordinated with a landscape concept plan, unique to the Town of Morden. This landscape concept plan should be designed to reinforce pedestrian walkability, and create a unified and coordinated planting structure, with some variations within the different zones to create visual interest, and ecological variety within the landscape.

The network would serve as the major pedestrian connectors throughout the town to support the residents and visitors to community experience, by promoting access to year round activities and events. To create distinctive streetscapes, the following elements should be considered:

- Shared sidewalks for pedestrians and bicycles should be used through improved and coordinated pedestrian network linkages to all attraction sites.
- Wide tree-lined sidewalks with a shaded canopy of trees, benches, and coordinated street furniture, and trash receptacles should be designed.
- Traffic calming measures with landscape design process should be coordinated to enhanced intersection treatments.
- Pedestrian streetscape areas should have a higher level of pavement detail and expression. Material quality and appearance should be consistent in nature, but subtle variations in color, texture, and style are encouraged to allow the opportunity for distinct

districts to develop throughout the town. Visual unification and integration of the pedestrian traffic generating sites should be achieved through the use of streetscape, lighting, special paving, and landscape treatments.

- Pedestrian streetscape zones should incorporate appropriate regulatory and information signage and wayfinding devices. Signage and wayfinding devices shall be appropriately scaled to pedestrian zones.
- Pedestrian streetscape areas should utilize lighting elements to safely illuminate corridors and plazas.
- Site furniture, such as benches, picnic tables, and trash cans, should be placed to enhance the user's experience.
- Special activity enhancing elements such as children's play sculpture, and water features should be placed to encourage activity and gathering at key nodes and plazas.
- Landscape elements should be placed to enhance user experience, reflect seasonality of the natural environment, and offer opportunities for seasonal lighting and displays. Irrigation systems shall be introduced for all landscaped areas.
- Placement of public art should be considered to enhance visitor experience and shall incorporate public opinion identifying locations and appropriated art pieces
- Snowmelt systems should be provided to improve winter safety considerations.
- Landscape street planting program should be coordinated with future developments.

STREETSCAPE PLANTING GUIDELINES

In order to enhance the quality of civic realm, a consistent and attractive planting design should be created throughout the Town using native and locally available deciduous shade trees, ornamental and conifer trees at regular intervals. Morden should develop a comprehensive street tree planting and maintenance program which includes the following components:

- Identification of streets, where trees may be installed.
- Identification of streets, where underground utilities limit tree planting.
- Standards for the location of street trees; generally, locations will either be in wells located between on-street parallel parking areas, in cutouts within the sidewalk where the sidewalk is of sufficient width (7 feet or more), or in containers where the preceding locations are not workable.
- Street trees should be placed at curbside on all streets, spaced 20 to 40 feet depending on species requirements and underground utilities.
- Specification of a list of acceptable tree species, and appropriate streets and locations for each species.
- Standards for the size of trees and specifications for their installation (e.g. size of well, staking, materials).
- Identification of responsibilities, procedures, and standards for preservation of existing tree maintenance; where space is insufficient for street trees, trees may be incorporated into the landscape design on private property adjacent to the street property line.
- Provision of irrigation for supplemental water during drought periods.

Wherever applicable, shrub, bush and plantings strips would be used that are consistent to the character area of the community. Native and locally established vegetation has the significant advantage of being survivable to the environmental conditions. Plant selection should consist of hardy, drought-tolerant, indigenous, or naturalized plants adapted to local soils and conditions. By acknowledging sustainability, existing desirable vegetation should be retained as much as possible, considering appropriateness of the plants and the level of weed infestation. Moreover, overall biodiversity should be considered to lessen the potential impacts of diseases.

In the streetscape zones, where pedestrians would be in close contact with plantings, a finer level of details should be provided, with a comprehensive selectivity for variety, color, texture, and aroma.

DESIGN RESOLUTION OF WALKWAYS: PEDESTRIAN AND VEHICULAR ZONES

The following walkway improvement design standards encourage maximum use of the public street right-of-way by implementing a consistent, and safe pedestrian-friendly streetscape design throughout the Town. General design continuity is suggested; however some flexibility in design and implementation recognizes that the streets in the plan support distinct types of roads and character area.

The Town of Morden should consider implementing this vision for an integrated pedestrian network and streetscape design guidelines put forward in this practicum. This plan focuses on unifying the street with uniform street trees and different decorative paving elements

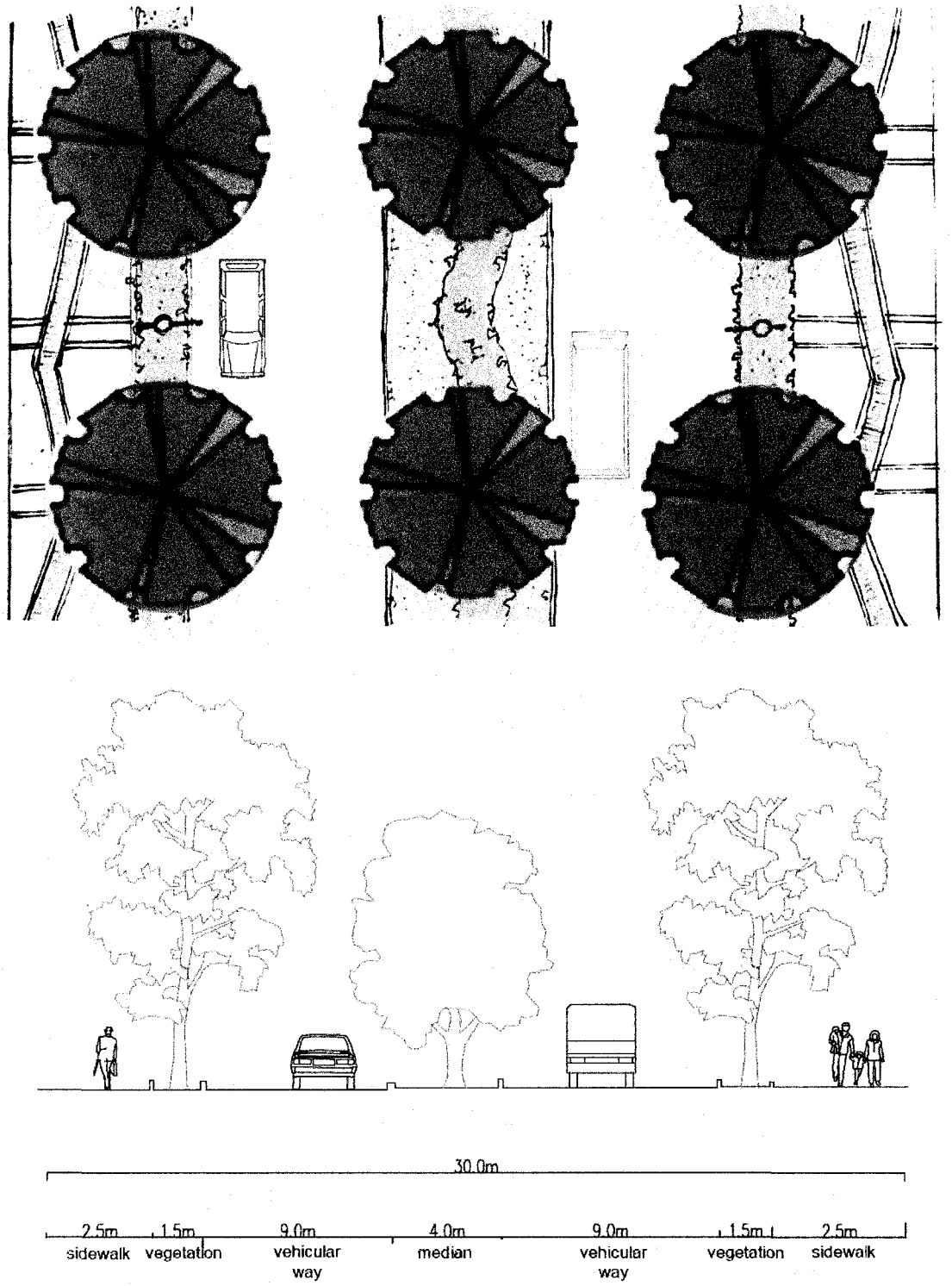
throughout the walkways. However, the street right-of-ways are re-structured into three sections based on street configuration, land uses, and pedestrian activity.

Development Concepts

- Support and promote pedestrian activity at key focal points.
- Create attractive and pedestrian-friendly walking environments by:
  - Soften the impact of heavy traffic with trees;
  - Enhance the visual experience with vegetation;
  - Unify the street with a distinctive tree palette, but allow some variation;
  - Reinforce the identity of the surrounding land uses.
- Provide safety and comfort for pedestrians with:
  - Wider sidewalk.
  - Median to give pedestrians a crossing refuge, and slow down vehicular traffics.
  - Planting strips to separate pedestrians from vehicles.

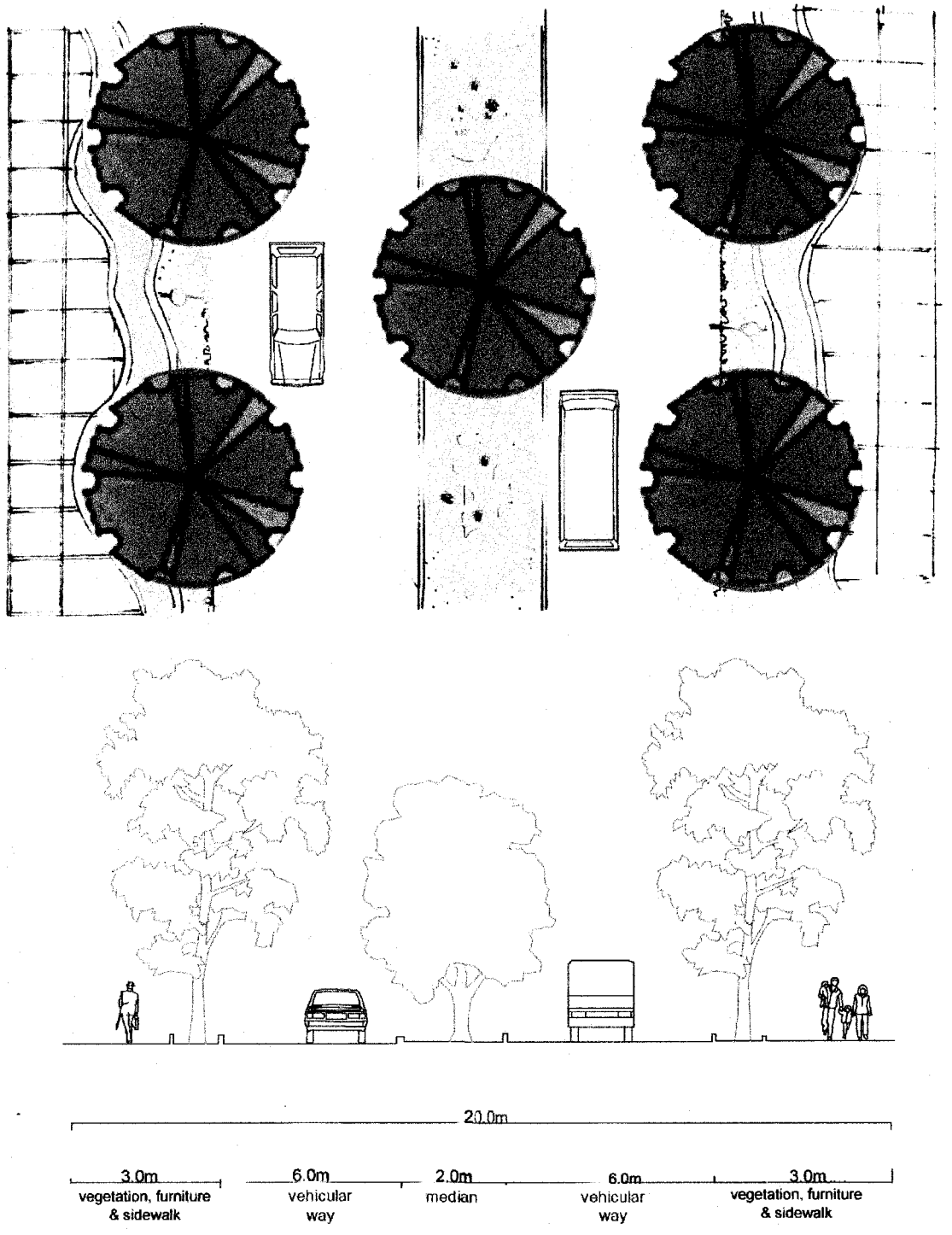
Fig. 4.2 – Fig 4.6 illustrates the possible ROW adjustments in Morden. The streetscape treatments and pedestrian amenities/ furniture design concepts should be coherent throughout the Town to promote a unified appearance.

Fig. 4.2



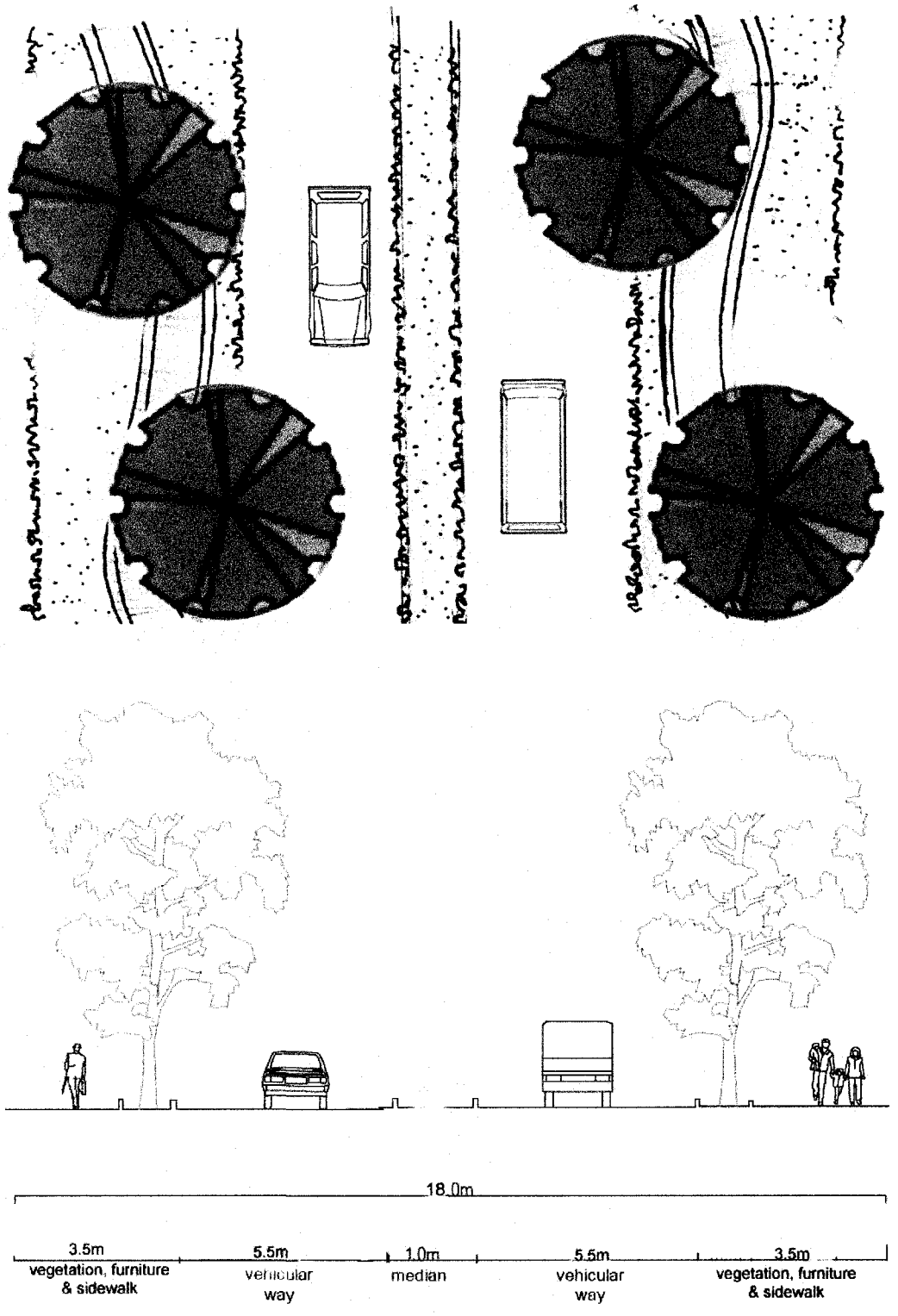
ROW WIDTH ADJUSTMENT
HIGHWAY, SECONDARY HIGHWAY AND ARTERIAL ROADS

Fig. 4.3



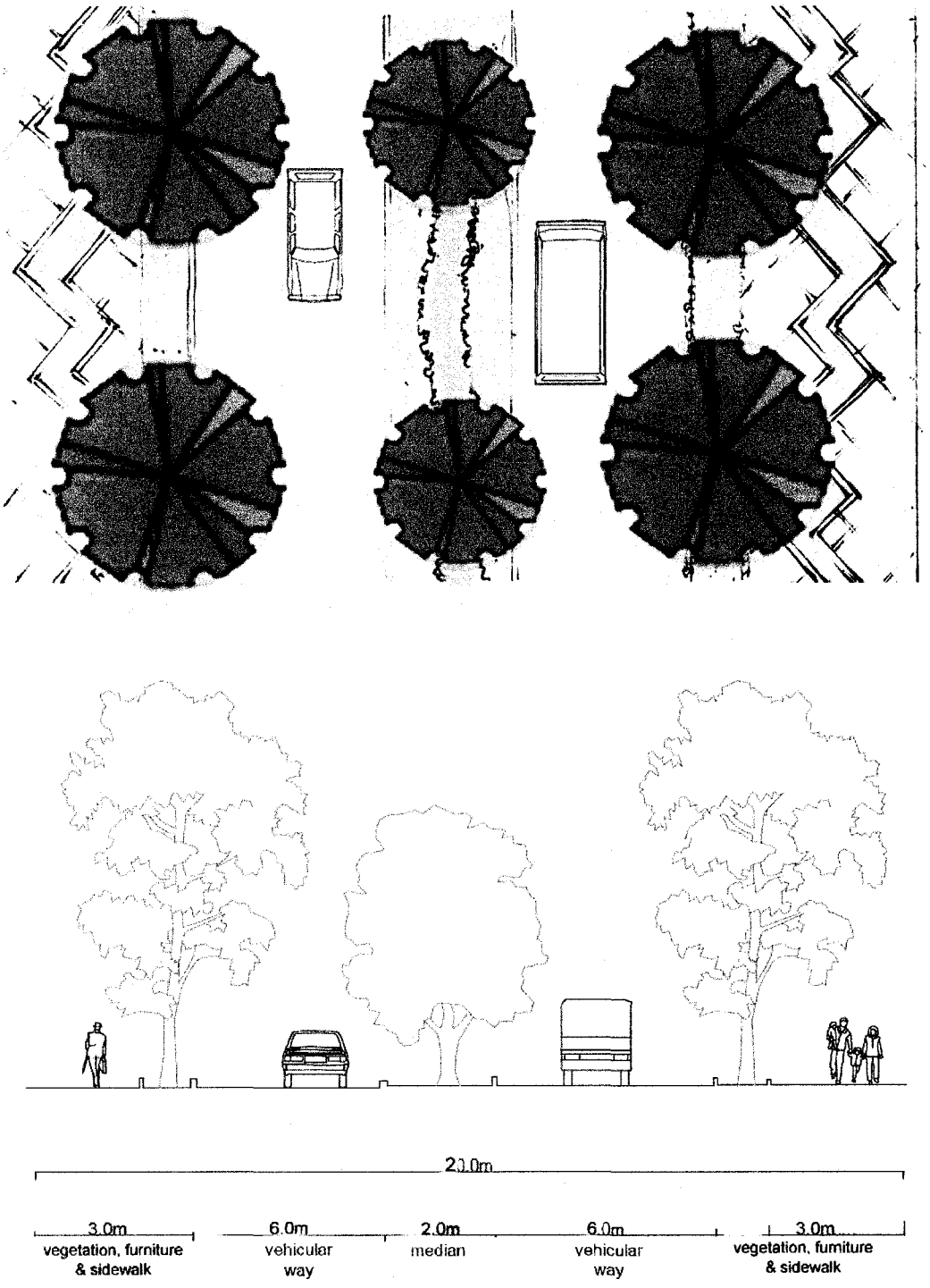
ROW WIDTH ADJUSTMENT
COLLECTOR ROADS

Fig. 4.4



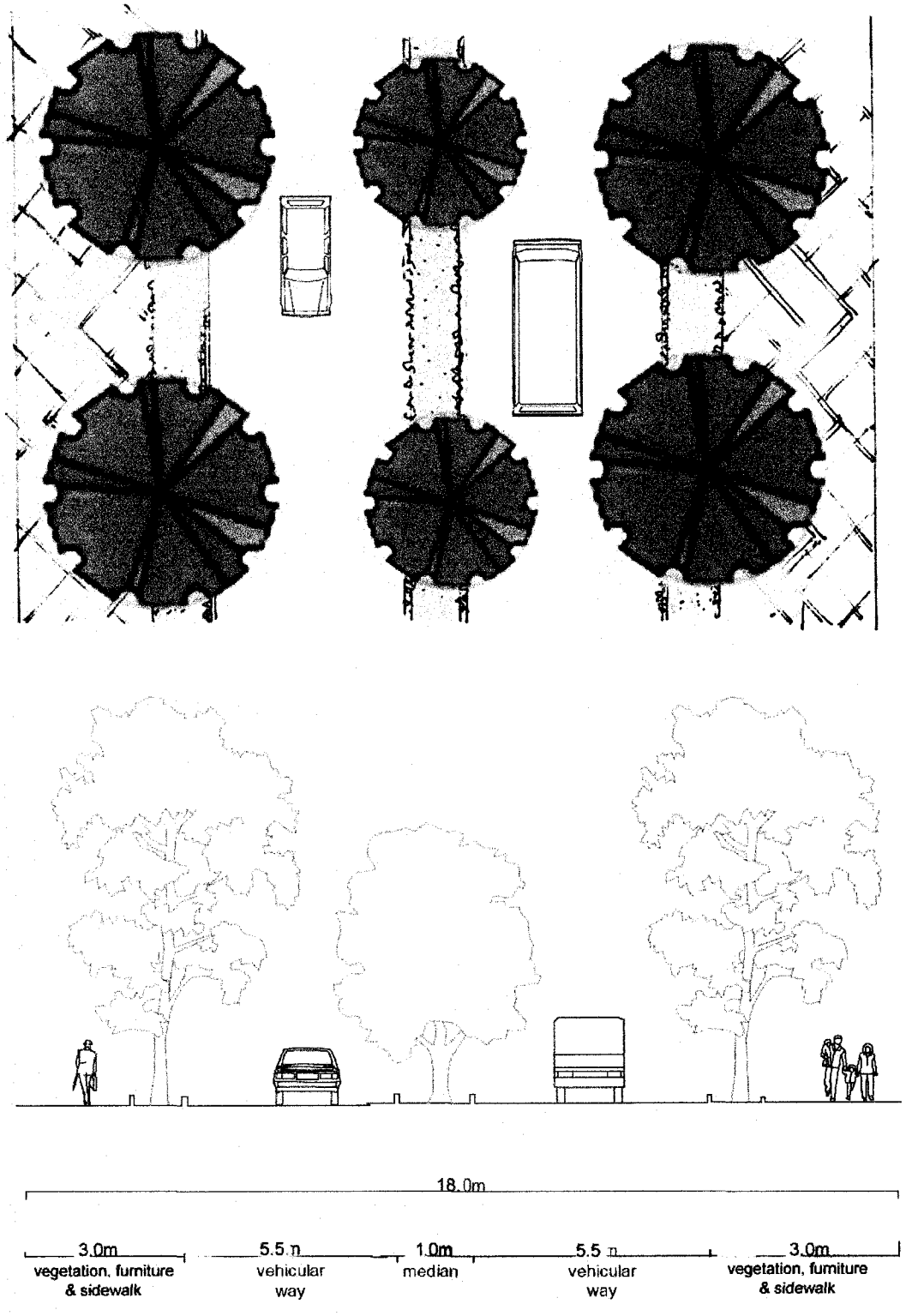
ROW WIDTH ADJUSTMENT
LOCAL ROADS

Fig. 4.5



ROW WIDTH ADJUSTMENT
COLLECTOR ROADS - INDUSTRIAL AREA

Fig. 4.6



ROW WIDTH ADJUSTMENT
LOCAL ROADS - INDUSTRIAL AREA

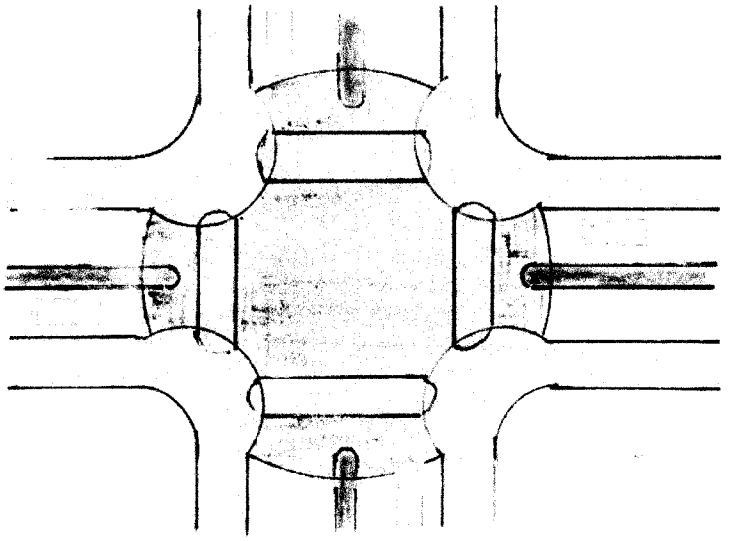
INTERSECTION TREATMENTS

The key objective of the streetscape design is to create a pedestrian friendly environment. Fig. 4.7 – Fig 4.8 illustrate examples of possible intersection planning. The following guidelines for the treatment of the intersections will help to integrate the physical connectivity, create a functional and aesthetic community core and provide a safe environment for pedestrians.

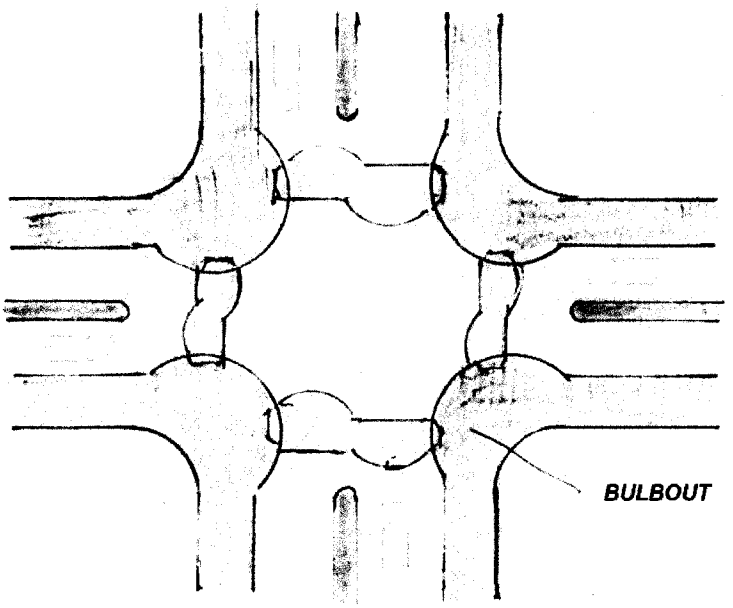
In designing pedestrian crossings at the intersection points, the following elements should be considered:

- Pedestrian crossings should be constructed of a contrasting material including highly contrasting colour to provide high visibility for both motorists and pedestrians.
- Pedestrian crossings should be integrally designed with the rest of the intersection.
- Additional paving treatments should be considered for the infill of the intersection in order to further emphasize the main intersection as the focal point of the core.
- Curb extensions or "bulbouts" should be provided at the four corners of the intersection as a means of reducing pedestrian travel distance across the intersection, providing additional sidewalk space, providing additional opportunities for streetscape treatments and to slow traffic.
- Street trees and raised planters should be considered where they will not interfere with pedestrian movement or obstruct sightlines for both motorists and pedestrians.
- These areas should have high priority for pedestrian features such as artwork, special lighting, sitting, and directional signage.

Fig. 4.7

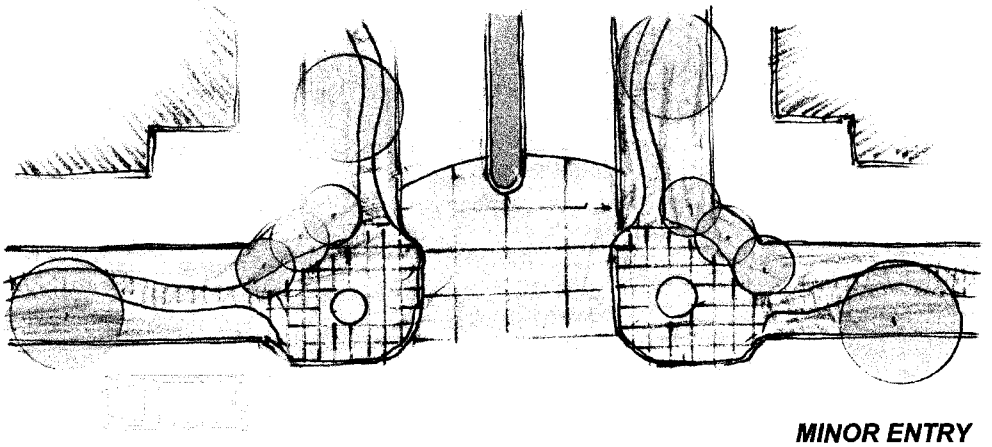


HIGHLIGHTED WITH DECORATIVE PAVING
FOR MAJOR AND SIGNIFICANT CROSSING

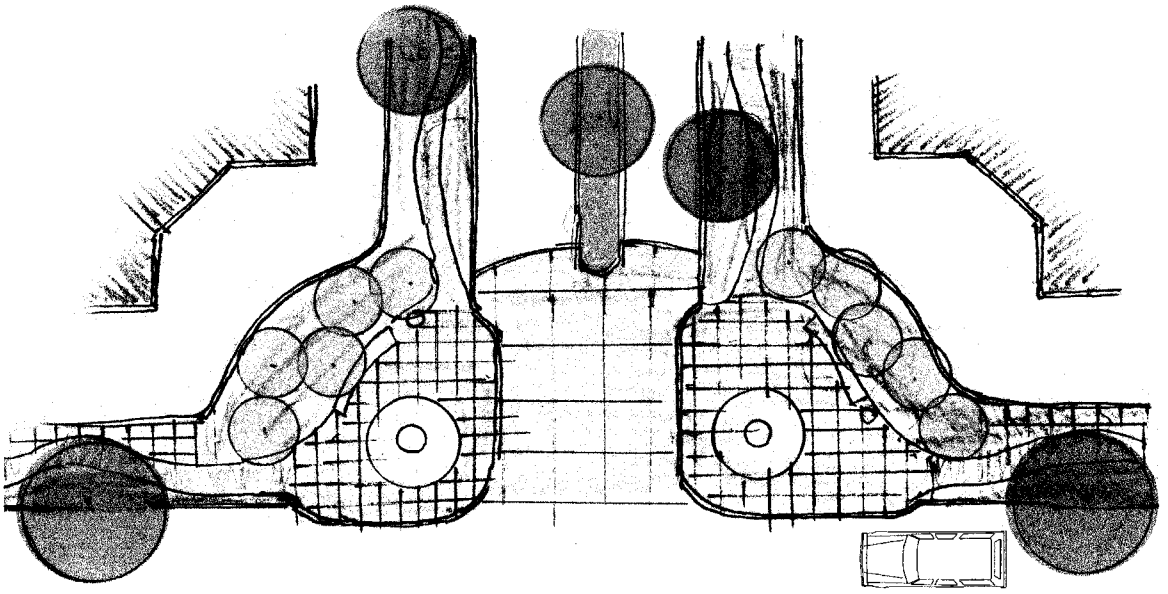


INTERSECTION TREATMENTS

Fig. 4.8



MINOR ENTRY



MAJOR ENTRY

COMMUNITY ENTRY THROUGH INTERSECTION DESIGN

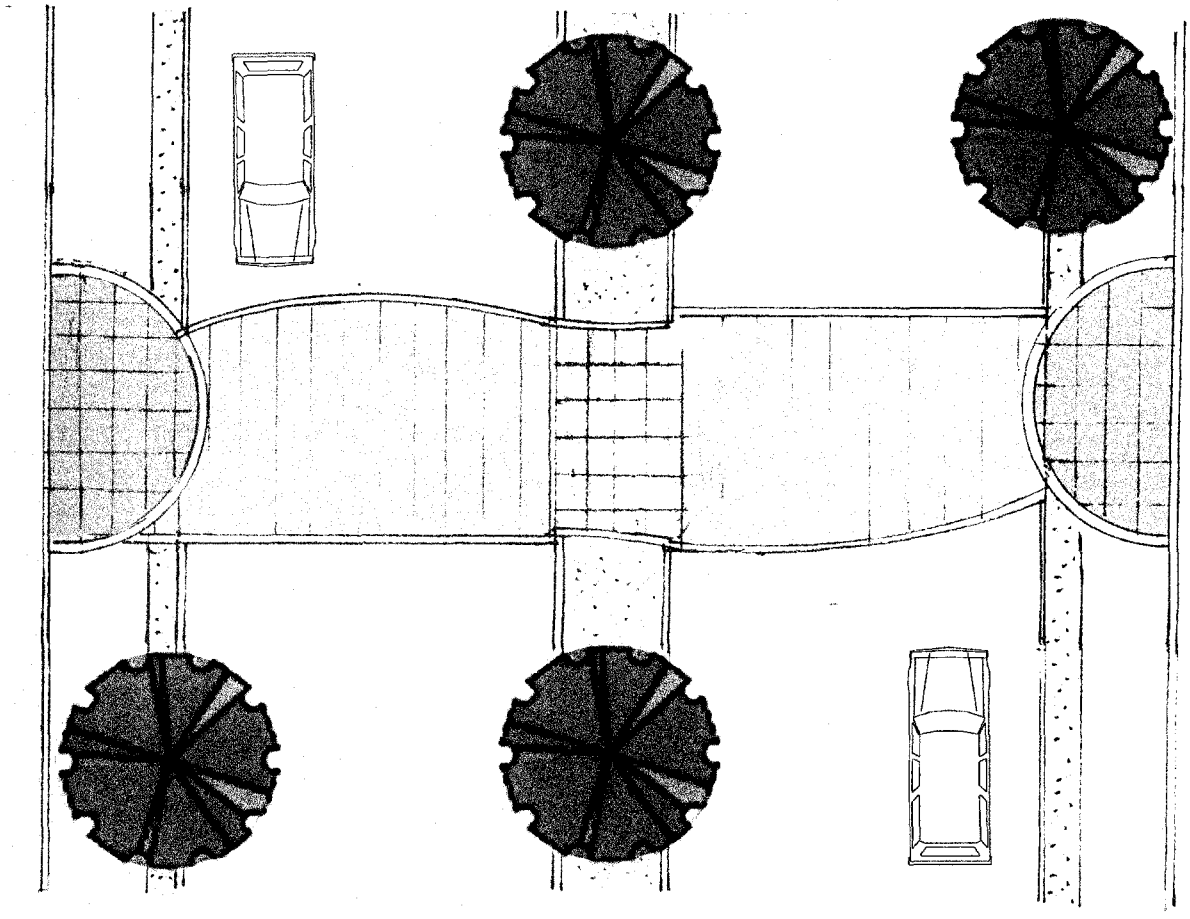
MID-BLOCK CROSSING

One of the pedestrian issues identified in Morden is the lack of designed Mid-block crossings. In the historic core area the existing town-blocks are about 200 ft long without any intermediate designated crossing facilities. In designing more pedestrian oriented streetscapes, crosswalk treatments should be provided at all intersections and Mid-block crossing should be considered in locations in the high pedestrian use area (such as between a school and a residential area; a housing and a grocery store; or a shopping center) and longer town-blocks. Mid-block crossing points can provide convenience and safety for the pedestrians to cross street at the safest location. Fig. 4.9 represents an example of a Mid-block Crossing.

To enhance the pedestrian experience and create legible connectivity, the following elements should be considered:

- Decorative paving of changing materials and/or color defined with compatible and non-slippery materials should be used.
- Clear marking and signage must be provided to maintain visibility.
- Special considerations and quality maintenance are also required during times of harsh winter and snowfall period.
- Adequate sight distance for the motorist and pedestrian should be provided. The obstacles that would affect the visibility at the crossing location (mailboxes, utility poles, street furniture, signs, and landscaping) should be removed or relocated. On-street parking should be set back from the crossing point to improve pedestrian visibility.
- Adequate nighttime lighting should be provided at marked crosswalks and areas near churches, schools, and community centers for nighttime pedestrian activity.

Fig. 4.9



MID-BLOCK CROSSING

PEDESTRIAN NETWORK INFILL PROJECTS

The Town of Morden should encourage and support specific infill projects that will anchor the pedestrian network in strategic locations throughout the town. A number of potential projects for infill redevelopment have been identified that offer excellent opportunities to strengthen the pedestrian network system. These example projects are selected based on the analysis of a number of data sources including earlier planning documents and studies, field observations, needs assessment from community discussion meetings, and investigation of existing conditions.

Developing these infill projects would boost the pedestrian environment in Morden, by:

- Enhancing the level of pedestrian activities and experiences.
- Creating 'anchors' at strategic points where infill redevelopment should occur.
- Creating a stronger sense of excitement, ambience, and identity within the town area.
- Providing opportunities for cultural, artistic, and historic educational and recreational activities for visitors and residents.
- Providing revitalization for pedestrian realm that can add energy and vibrancy to the pedestrian experience.

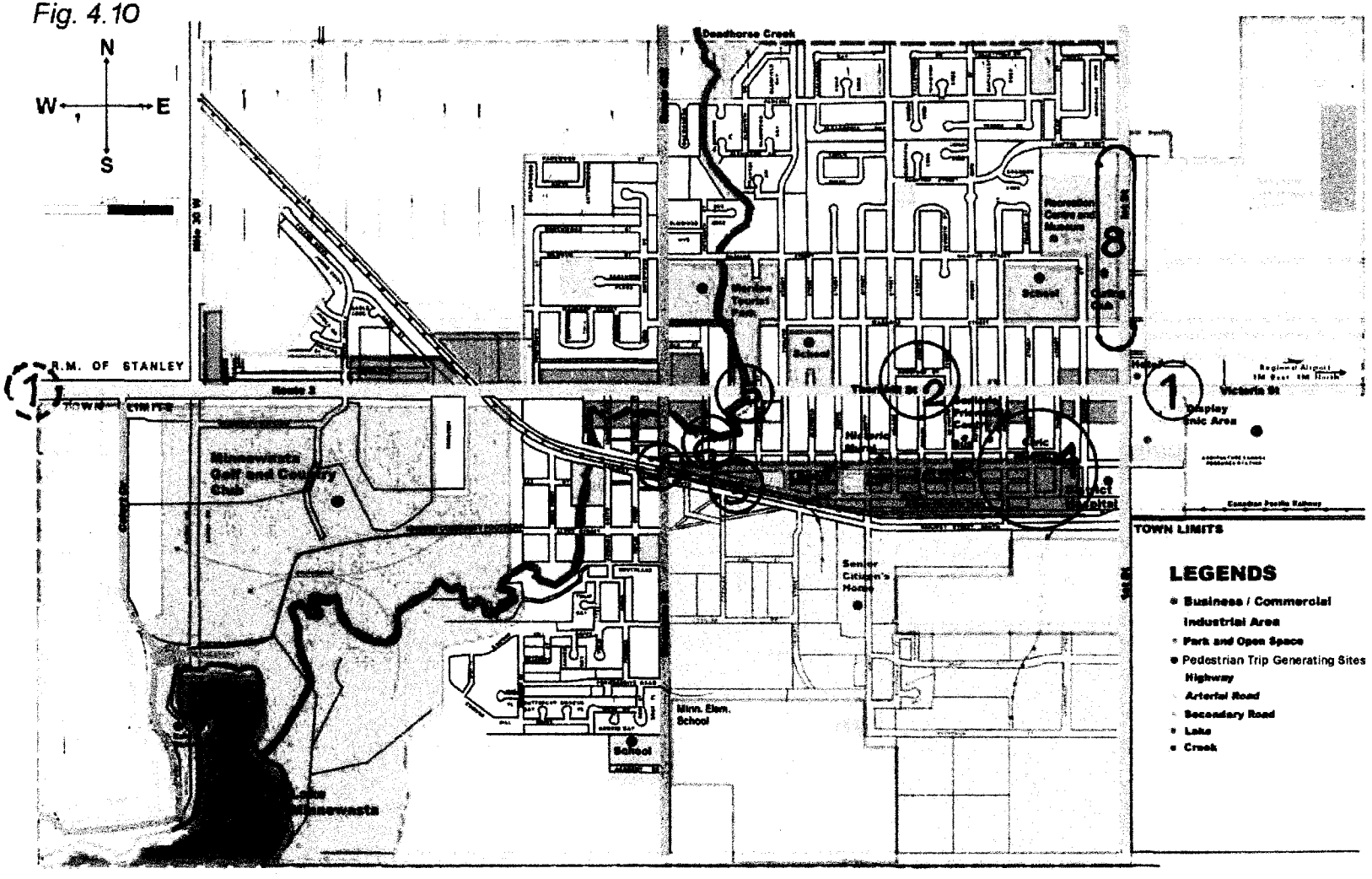
Pedestrian Network Infill Projects

The following examples of infill projects are identified in this practicum:

1. Entrance Gateway to the Town
2. Intercity Bus Shelter and Tourist Information Booth
3. Gateway to the Historic Core
4. Civic Centre Plaza and Heritage Trail
5. Pedestrian Bridge over Thronhill Street
6. Creek Front Development
7. On-Grade Railway Crossing Enhancement
8. Green Street Development

The locations of these special projects are shown on the Fig. 4.10. Development concepts are presented in brief for each of the opportunity sites. These concepts are intended to illustrate one possible redevelopment scenario that would be successful in accomplishing many of the goals of the pedestrian strategic plan. In many cases, the feasibility of the concept has not be thoroughly evaluated, and as more information becomes available, other redevelopment concepts may prove to be better than the ones illustrated here.

Fig. 4.10



TOWN OF MORDEN, MANITOBA

PEDESTRIAN NETWORK INFILL DEVELOPMENT

OPPORTUNITY SITES AND PROJECTS:

1. ENTRANCE GATEWAY TO THE TOWN
2. INTERCITY BUS SHELTER AND TOURIST INFO BOOTH
3. GATEWAY TO THE HISTORIC CORE
4. CIVIC CENTRE PLAZA AND HERITAGE TRAIL
5. PEDESTRIAN BRIDGE OVER THORNHILL ST.
6. CREEK FRONT DEVELOPMENT
7. ON-GRADE RAILWAY CROSSING ENHANCEMENT
8. GREEN STREET DEVELOPMENT

PROJECT 1: ENTRANCE GATEWAY TO THE TOWN

Development Concept and Brief

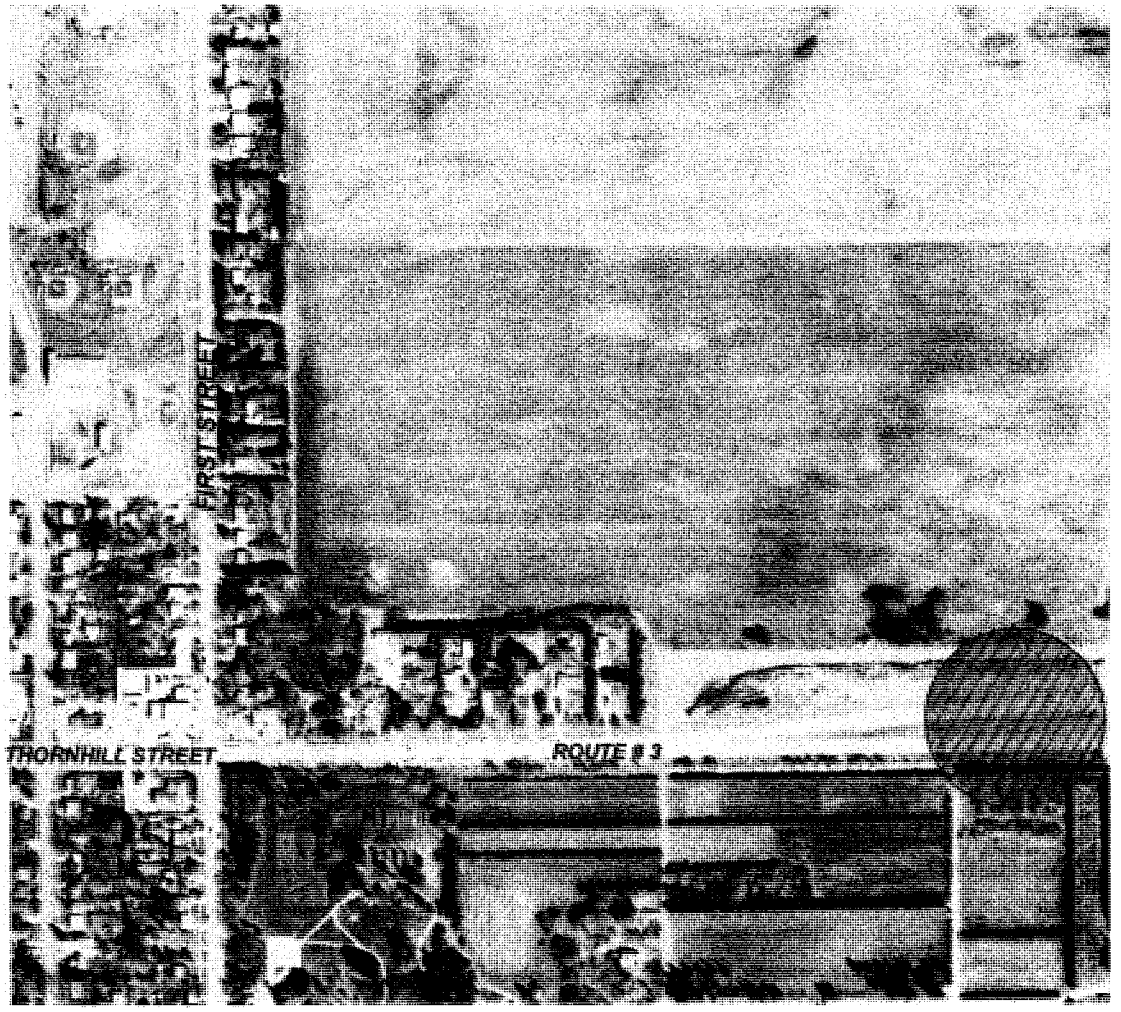
The main entrances to Morden are perfect locations to enhance the identity of the Town. Such elements foster a stronger sense of community, as well as, helping with wayfinding. In order to be effective, any landmark feature installed should also take vehicular speed into consideration and be designed to the appropriate scale. Primary gateway should be oriented at the eastern and western boundary lines along Thornhill Street i.e Route # 3 to the Town.

Gateway features offer the first opportunity to announce and celebrate entry to the community. The natural and built environment of Morden, it's cultural, socio-economic and development history and the community's vision, all should be key design determinants for gateway features. The design should incorporate landscape materials that recall the native vegetation and ecosystems of the community, and be designed in a manner to reflect a significant architectural element feature as the community icon.

Entrance Gateways to the Town of Morden should serve to achieve the following:

- To enhance the sense of arrival into Morden by enhancing the design and character at major entry points.
- To establish a positive first impression of Morden, and facilitate access to the community.
- To create identifiable entrance points incorporating the Town logo.
- Gateways should be designed consistent with the context, in which, they will be placed.
- Gateways should be connected to the pedestrian network.

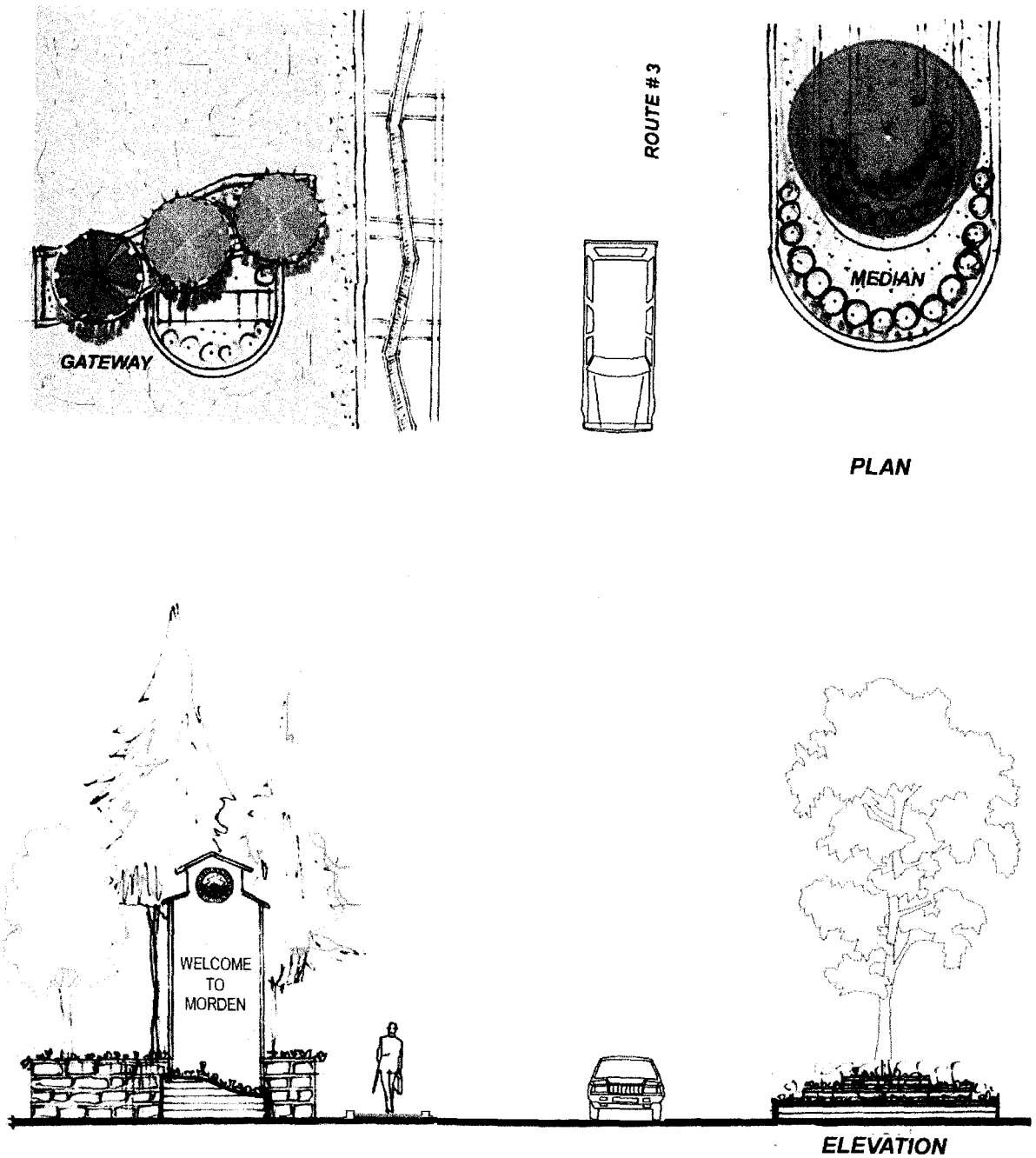
Fig. 4.11



PROJECT 1
ENTRANCE GATEWAY TO THE TOWN

(Source: Google ™, 2007)

Fig. 4.12



ENTRANCE GATEWAY TO THE TOWN

PROJECT 2: INTERCITY BUS SHELTER AND TOURIST INFORMATION BOOTH

Development Concept and Brief

The intercity bus shelter is the first destination point for the residents and visitors that come to the Town by bus. The bus shelter helps to define a new destination that reinforces Morden's sense of place. This could be fully accomplished, through coordinated development strategies with integrated design within the public realm. The bus shelter should be designed to give the visitor the impression of truly arriving in Morden.

Presently, there is just a bus stop located on Thornhill Street at the corner of Sixth Street and Thornhill Street. However, it can be relocated to a more appropriate site at the intersection of Nelson Street and Thornhill Street. The site is currently being used as a very big parking lot, and a portion of its land area could be reallocated to the proposed development.

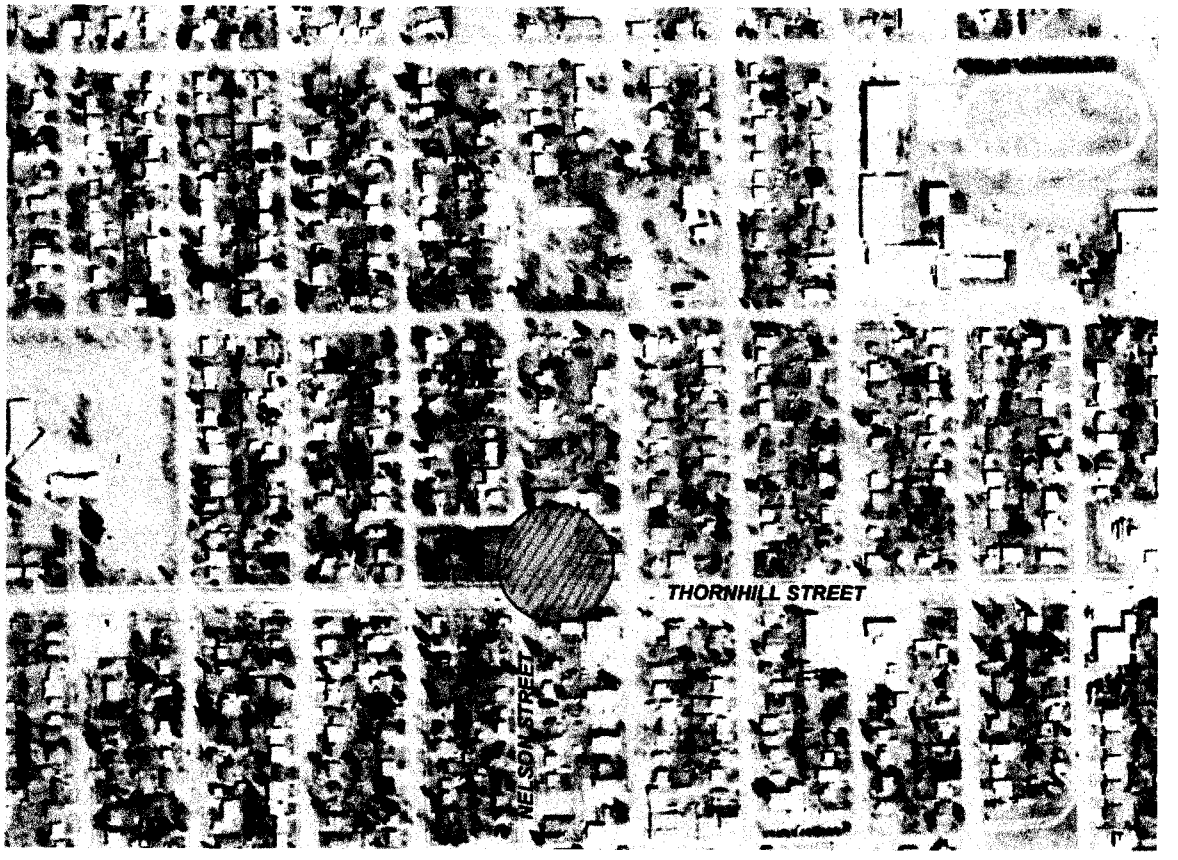
This concept should involve the use of vernacular building materials, and the blending of areas comprising both hardscape and softscape. Such an integrated design approach might also include unique landscaping, lighting, way finding kiosk and other furniture.

The combined venue of the bus shelter together with the tourist information booth would reinforce each other. Realizing the vision of each establishment being an integrated part of the site, it should be reflective of the surrounding context and potential. This site gives a unique opportunity to create a landmark on Thornhill Street.

Intercity Bus Shelter and Tourist Information Booth should achieve the following goals to create a high-quality and memorable tourist spot:

- Create a focal point for tourist activity: The project provides an opportunity to create a lasting and lively center for the visitors. The design requirements should understand the needs of these users, and make a space that is comfortable and welcoming for everyone.
- Improve the aesthetic quality of the area: The design of the Bus Shelter and Tourist Information should create public spaces that are beautiful and highlight the role of the spot as a key landmark in Morden.
- Incorporate sustainable design and construction techniques: The design should incorporate natural elements and construction materials and techniques that are local vernacular and sustainable. It is foremost to protect the environment through the approach to landscaping, urban design, and architecture on the site.
- Reflect history of the area: The design should reflect the historic resources and heritage icons in the area and be in character with the rest of the town.
- Reflect the identity of the community: Opportunities to incorporate public art and unique visual elements should be pursued whenever possible.
- Connect directly to the pedestrian network.
- Create a destination within the pedestrian network.

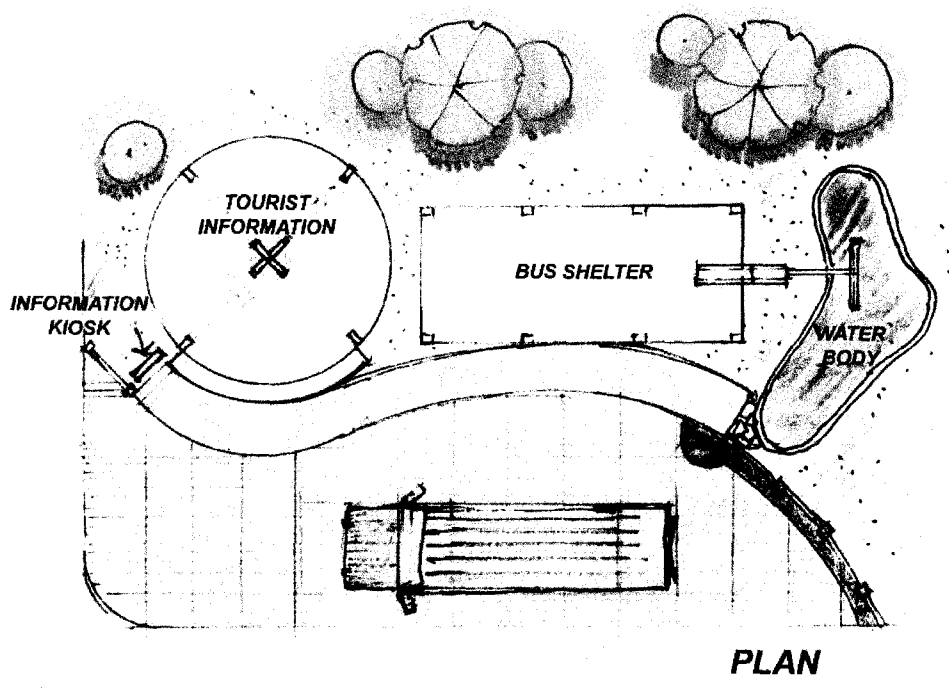
Fig. 4.13

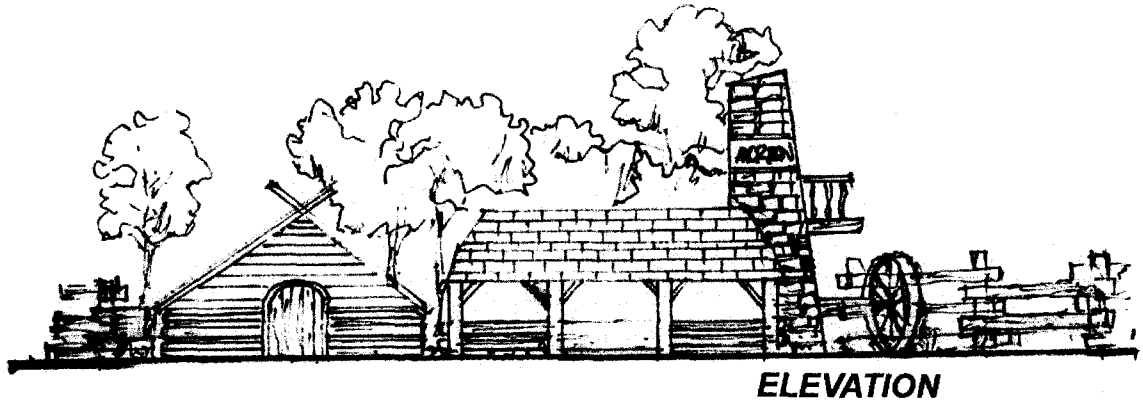


PROJECT 2
INTERCITY BUS SHELTER AND TOURIST INFORMATION BOOTH

(Source: *Google* ™, 2007)

Fig. 4.14





INTERCITY BUS SHELTER AND TOURIST INFORMATION BOOTH

PROJECT 3: GATEWAY TO THE HISTORIC CORE

Development Concept and Brief

A gateway expresses a sense of arrival and transition into the Town. The feature should be civic in emphasis and serve to promote the identity of the Urban Core. While serving as entryway, the gateway is an important directional and informational landmark to guide the visitors to their destinations. The visual design of gateways should be attractive, as well as, functional, conveying a ceremonial sense of entry that reflects the traditional importance of the historic core and conveys the unique identity of the civic core. The gateway to the historic core will serve a complementary function in relating to the primary gateways to the Town located along Route # 3.

Physical elements of the entry, including medians, signs, paving materials, and landscape planting materials, should function together to physically define the entry, and establish a positive first impression of the historic core. The landscape of the gateways should emphasize that one is entering a special place. Gateway elements should be envisioned from the heritage metaphors.

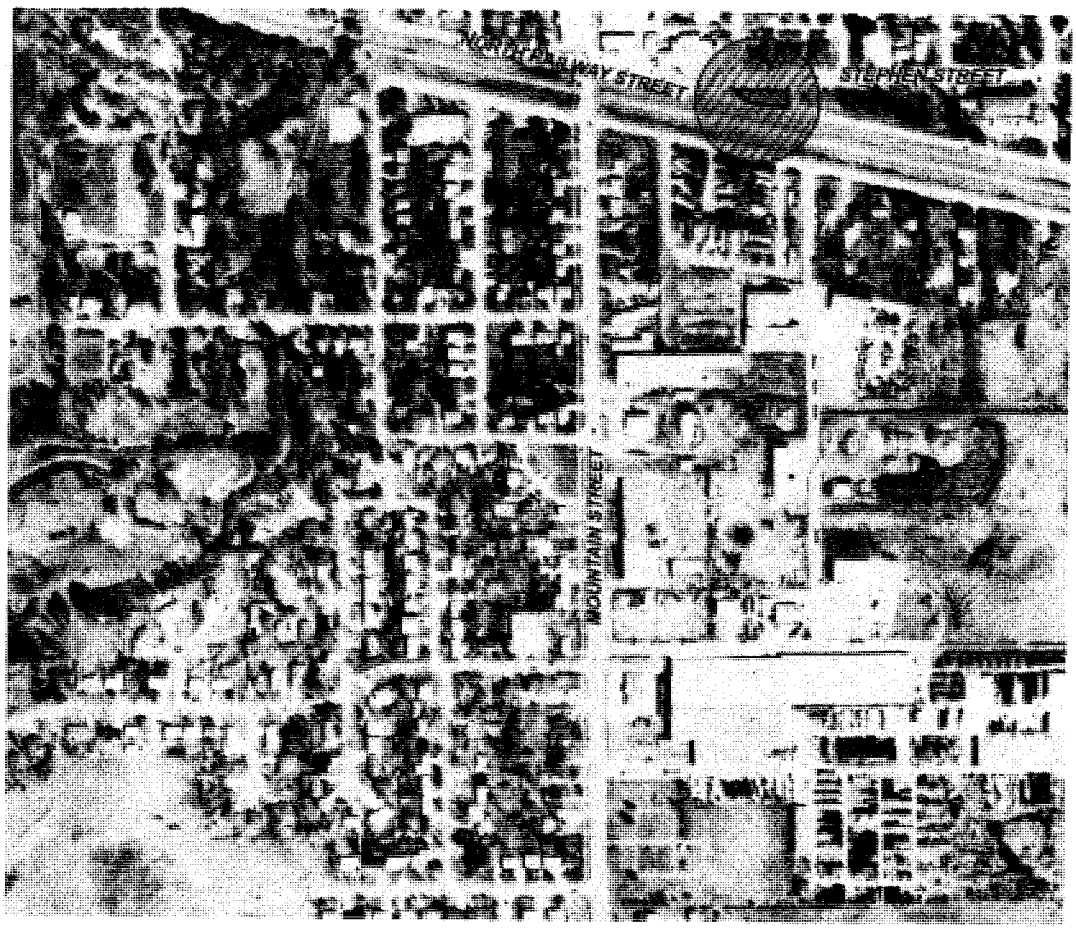
Presently there is triangular vacant parcel of potential land available for the proposed secondary entrance gateway at the intersection of North Railway Street and Stephen Street. The site location for the designated entry monuments/ features should be designed in a way to reinforce the desired image and character of the community historic core. The design should incorporate softscape materials like plantation, and hardscape materials like brick and

natural stone into the design, to create a cohesive palette of materials for the streetscape elements.

Secondary Gateways to the historic core should serve to achieve the following:

- The gateway should assist and enhance the visitors' experience when entering into the Urban Core area. These features serve as landmarks and should be of attractive design and materials.
- Incorporate the heritage themes representing history of the area.
- Design for extended durability, low maintenance, and resistance to vandalism.
- The gateway can also provide an opportunity for incorporating other architectural features, monuments, public art, banners, signs, and lighting features.
- The design should incorporate appropriate streetscape design elements, such as special paving, decorative lighting, and landscaping, as recommended for the character area in which the gateway is located.
- Incorporate public art and local artistic expression.
- The design of entry and way-finding features should be unique to the civic core area.
- The gateway would reinforce the importance of pedestrians in the urban core.

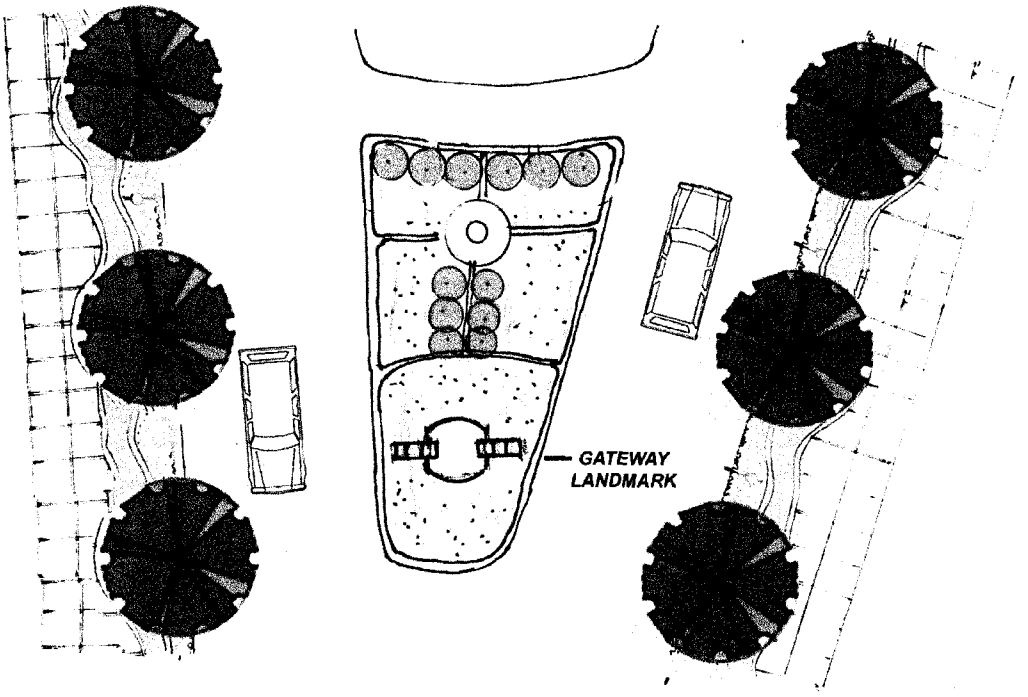
Fig. 4.15



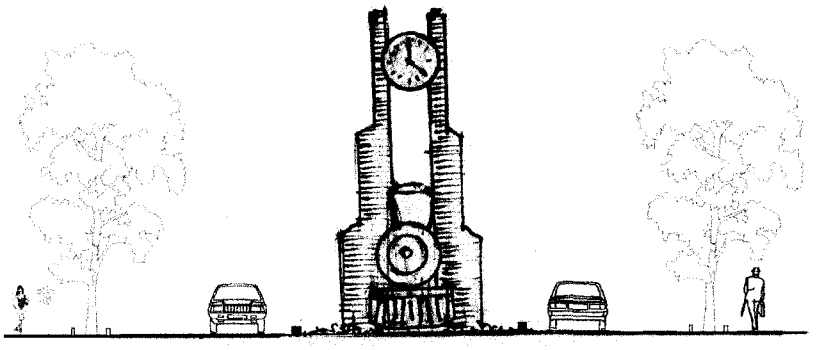
PROJECT 3
GATEWAY TO THE HISTORIC CORE

(Source: Google ™, 2007)

Fig. 4.16



PLAN



ELEVATION

GATEWAY TO THE HISTORIC CORE

PROJECT 4: CIVIC CENTRE PLAZA AND HERITAGE TRAIL

Development Concept and Brief

The potential site is a vacant land parcel located adjacent to the Civic Centre. Approaching to this proposed plaza, a heritage trail and tree-lined parkway is planned using some other vacant land parcels beside the Canadian Pacific Railway track. The proposed project is a realization of the commitment of the Town Council to improve the public realm within the historic core area, and a complementary intervention of the streetscape improvement project of Morden.

There is a need in the Civic Center location for recreational and community-centered activities. Also, outdoor recreational facilities for the growing population of senior citizens will eventually be needed. There is a fair amount of senior housing in the neighbourhood around this site. Senior citizens have been one of the largest demographic groups contributing to Morden's growth over the past decade. Based on the adjacent neighborhood context of the site, it gives an opportunity for above senior citizen group requirements. Combining a community demand with the senior facilities could be an attractive way to meet both of these needs, and hence the site could be an excellent location for a collective outdoor community facility.

The proposed intervention provides an opportunity for continuing the civic development of socio-cultural uses along Stephen Street. The development could have a prospective extension to Stephen Street with all of its socio-cultural, retail, dining, and entertainment facilities. The proximity of this site to a future recreational greenway trail along the railway

track will make this a very desirable place to develop as mixed prairie parkland with boardwalk. Adjacent parcels could be consolidated and redeveloped as part of this development project. Moreover, the development concept ensures prominent connectivity between the present Civic Centre, and the heritage site of historic railway station of Morden at North Railway and Sixth Street, where the town started its settlement.

Civic plaza is an essential part of a successful township. Designed appropriately, they can create a setting for liveable built environment and improve the quality of life for the workers, visitors and tourists. Social gathering spaces play a critical role in the character, identity, and functionality of urban commercial and residential districts. Community connectivity would be enhanced by the creation of a town square, and an urban forest to bring families together and create a greater sense of pride among residents- all within walking and cycling distance of the new and existing neighborhoods. These spaces often define the psychological perception that a visitor gains over the course of a single or frequent visits. Spaces like the proposed Civic Centre plaza could offer a range of pedestrian zones ranging from intimate to public in scale. Flexible and or temporary seating areas should be considered to accommodate both daily use and special event opportunities.

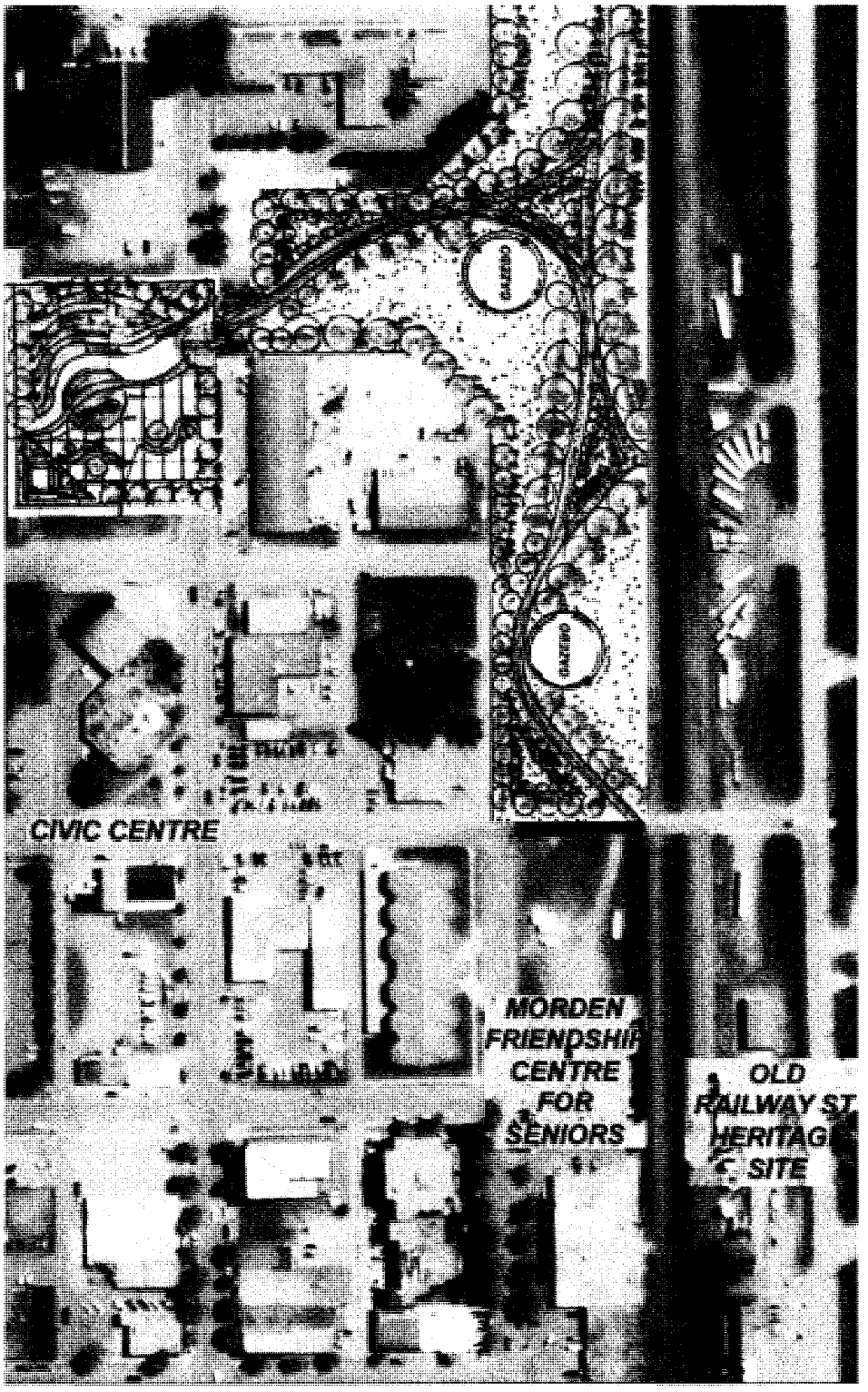
The proposed development would include a substantial amount of green space, water fountains with social gathering and recreational facility including an amphitheatre provided on the plaza. The street edges of properties in the Civic Center and adjacent streetscape should be designed to appeal to pedestrians.

The proposed Heritage Trail will be connected to the Civic Centre Plaza so as to serve as a linear park. Adjacent green open space should remain as a remnant of mixed prairie parkland, and boardwalk trails should link the places together. The prairie boardwalk would be linked with the proposed railway track greenway trail as a component of the pedestrian network. Gazebos and other furniture could help to highlight the utility of this resource.

Key concepts for possible development include:

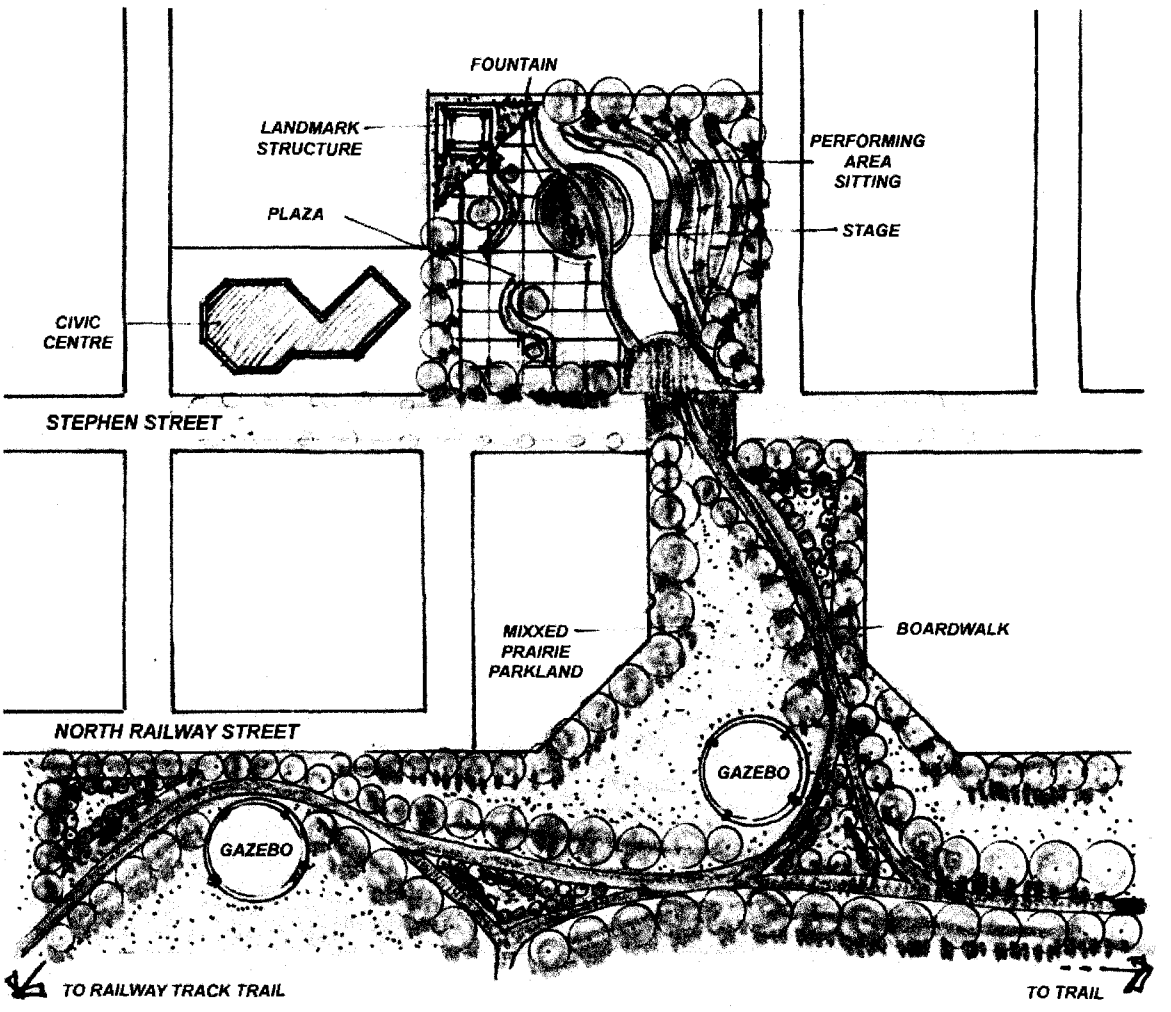
- The design solution would provide an accessible pedestrian connectivity through a mixed prairie natural corridor among the Civic Centre, heritage site of old railway station and the railway track greenway trail.
- The plaza should serve as a central gathering place in the historic core, which provides a safe, healthy, comfortable and attractive realm for people of all age, and accommodates a variety of public gatherings and seasonal events year round.
- The development concepts are required to achieve a broad range of objectives, including equitable access, visitor experience from different age group, visual amenity, landscape, ecology, and infrastructure requirements.
- The design provides a natural green corridor, as an appropriate design metaphor, indicating a journey of a prairie settlement through the time and corresponding events, and also combines expressive complex geometry with functional requirements.
- Recognize environmental stewardship.
- Be safe and inviting for all people at all hours.
- Be sustainable, durable, and low maintenance.
- Provide a dignified setting for a distinctive monument and public art.

Fig. 4.17



PROJECT 4
CIVIC CENTRE PLAZA AND HERITAGE TRAIL
(Source: Google ™, 2007)

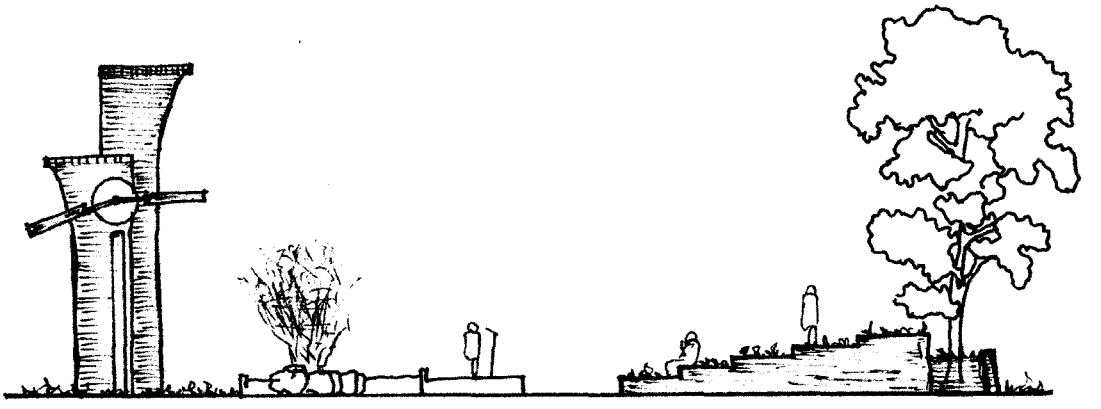
Fig. 4.18



PLAN

CIVIC CENTRE PLAZA AND HERITAGE TRAIL

Fig. 4.19



ELEVATION

CIVIC CENTRE PLAZA, PERFORMING AREA, FOUNTAIN AND LANDMARK

PROJECT 5: PEDESTRIAN BRIDGE OVER THORNHILL STREET

Development Concept and Brief

Thornhill Street divides the town into two distinct segments i.e. a Southern zone and a Northern zone. The Highway creates a disconnected pedestrian linkage between the zones. The idea of building a pedestrian bridge over Thornhill Street, linking the north side and the south side of Morden, has been under discussion for a long time. The Town discussed in different civic forum for the development of such a pedestrian bridge.

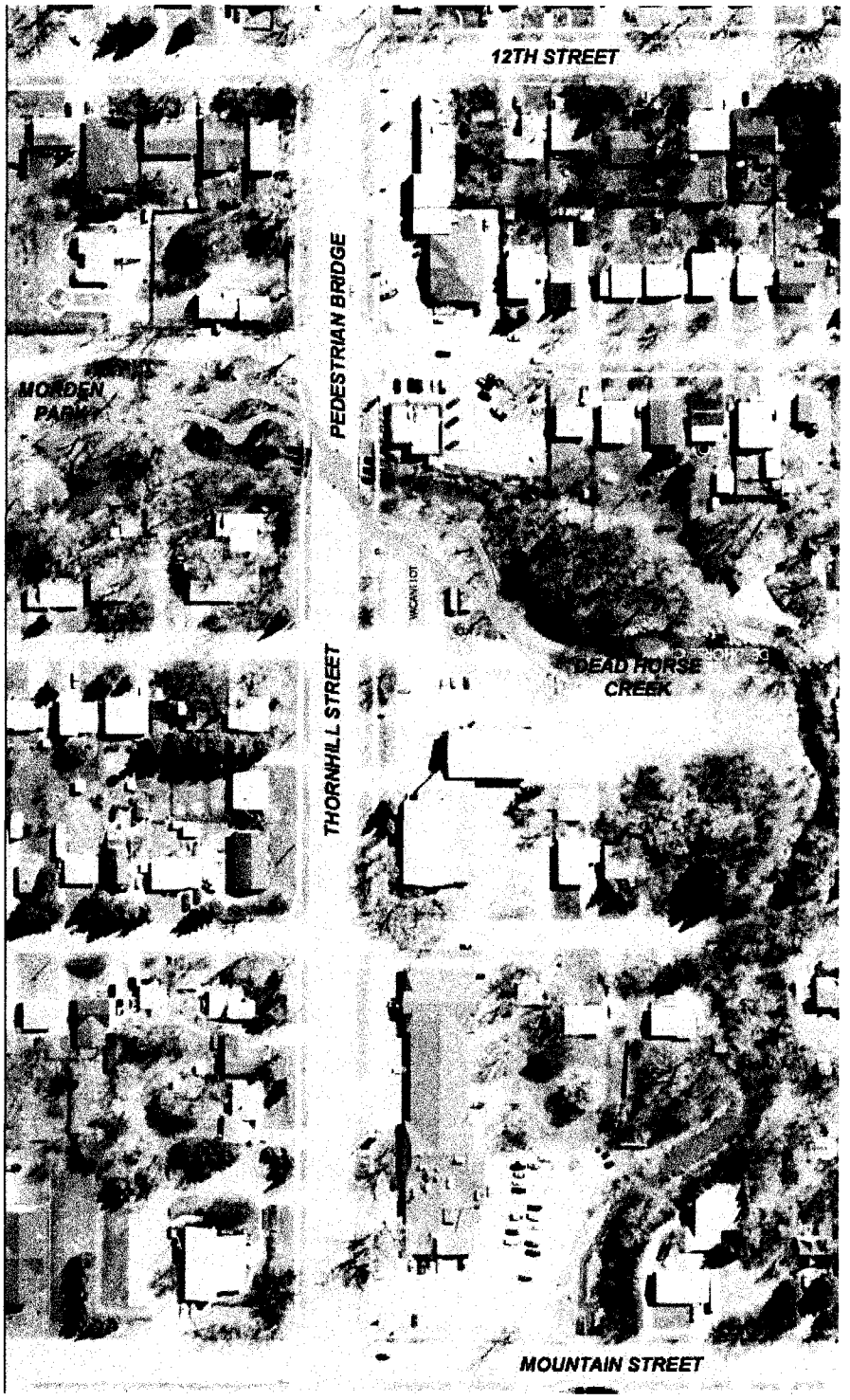
Morden Park on the north side and a vacant land parcel on the south side, offer an excellent and appropriate opportunity to develop the pedestrian bridge harmonized with the natural settings. Primary purposes for the proposed bridge are:

- Create connectivity to the pedestrian network
- Connect the trail system within the pedestrian system
- Establish a community identity and landmark
- Promote active living through encouraging residents to walk to work, leisure and recreation.
- Improve pedestrian safety

This bridge should be designed as a prominent landmark in Morden, and a key link to connect the east-west/north-south trails in the area. Design of the Pedestrian Bridge should be based on the following key concepts:

- Enhance walkability
- Creating a landmark and Identity feature
- Creating a social node and recreational/ leisure spot
- Connecting northern and southern Morden
- Using natural opportunities/themes
- Connecting creek and natural areas
- Connecting missing pedestrian linkages
- Sustainability
- Accessible design standards

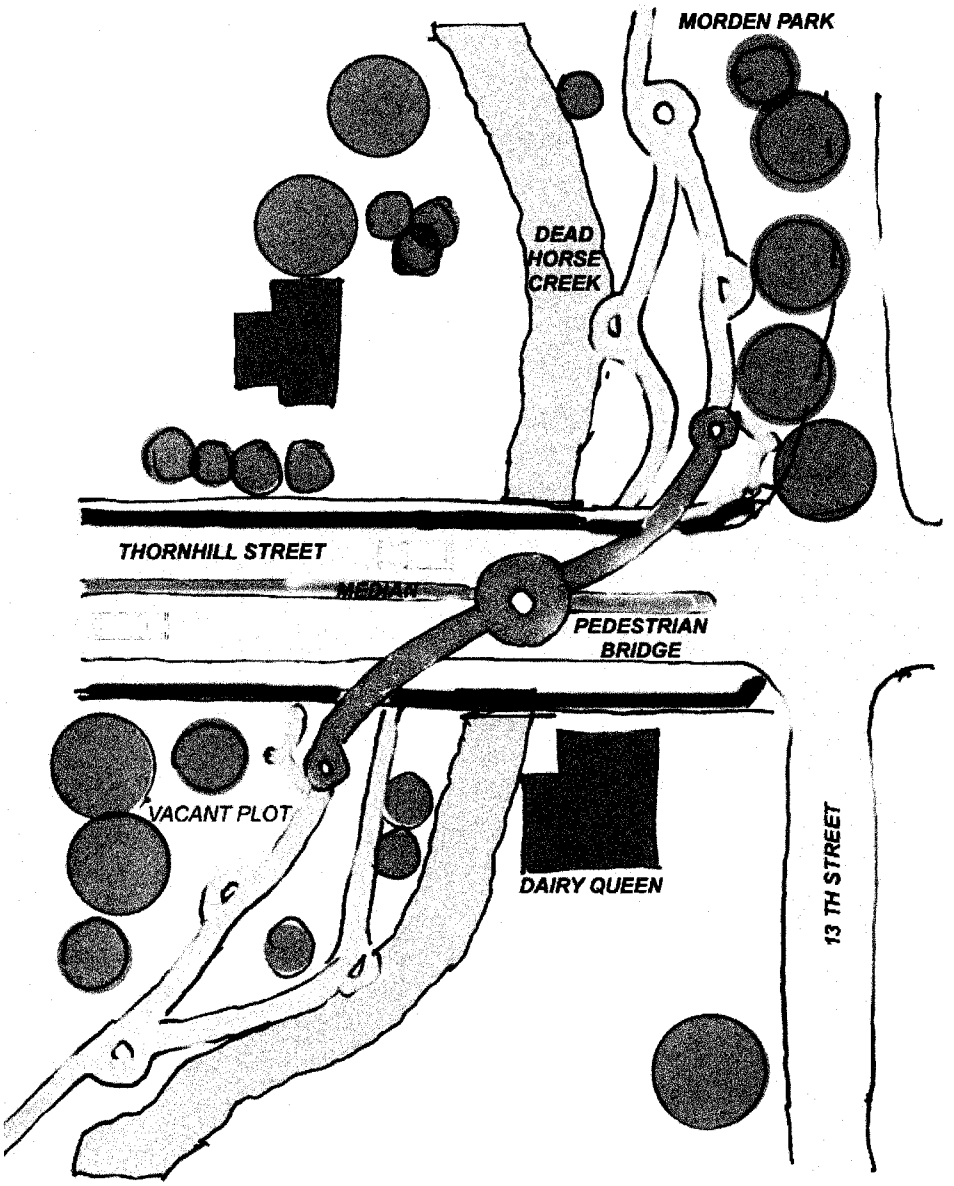
Fig. 4.20



PROJECT 5
PEDESTRIAN BRIDGE OVER THORNHILL STREET

(Source: Google ™, 2007)

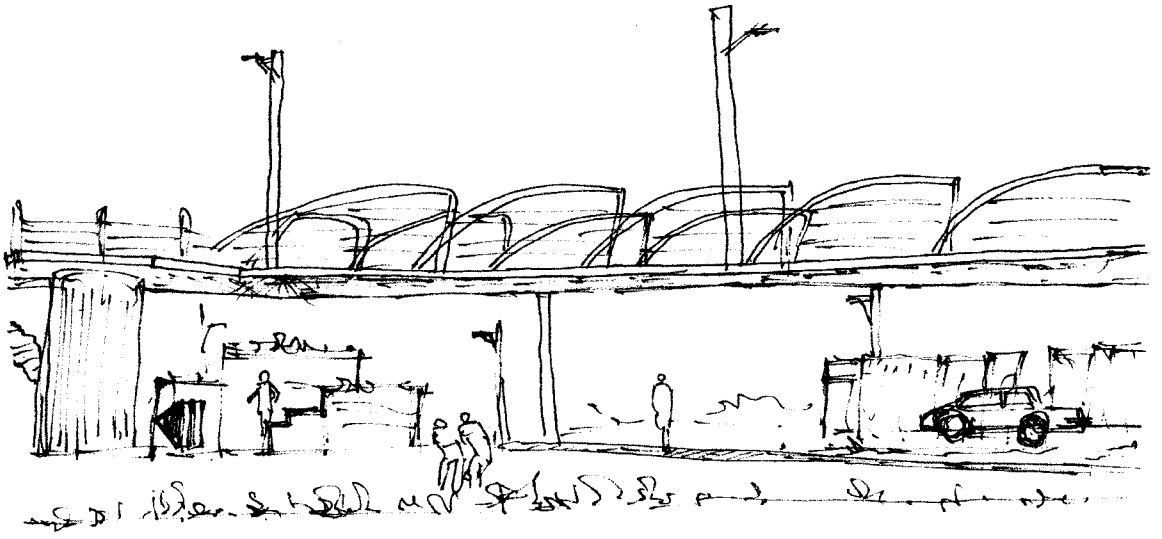
Fig. 4.21



PLAN

PEDESTRIAN BRIDGE OVER THORNHILL STREET

Fig. 4.22



PEDESTRIAN BRIDGE OVER THORNHILL STREET

PROJECT 6: CREEK FRONT DEVELOPMENT

Development Concept and Brief

Dead Horse Creek and the adjacent public open space is one of the most distinctive and significant natural features in Morden and should become developed as a visual and recreational centerpiece of the community. Development of nodes with recreational amenities, and social gathering places would improve the appearance and function of the creek, making it a desirable destination, and serving as a catalyst for pedestrian network development within the town. As part of the pedestrian network planning, improvements have been recommended that would serve to enhance the connections along the creek, improve the image and character of the open space, linear park and creek trails, improve and restore the vegetation zone and riparian edge of the river, and celebrate the history and beauty that is the Dead Horse Creek. Along with connected pedestrian walkways, and other trails, the creek trail is a unique pedestrian experience, which contributes to the overall character of Morden.

The conceptual development of revitalizing the creek front would support the principles and goals of the pedestrian planning for Morden. The vision for the project will restore the natural habitat and its connection to the landscape of Pembina Valley. It is more than just reconnecting the town with the water- it is an opportunity to explore a new dimension of cultural landscape that will celebrate the history and heritage, and define Morden's unique location within its incredible natural resources. The community will continue to promote the creek trails as significant pedestrian ways and components of the pedestrian network.

The developments of creek trails and pedestrian nodes will provide significant opportunities to promote public arts. The project will use boardwalk and natural elements with a blending of stone retaining walls and decorative railings, throughout the creek front. The details will promote the trail, as being visually connected to the early settlement. The next step for creek front planning will be the development of a more detailed public realm plan, which will define the civic spaces at the nodes along the creek. Public amenities provide multiple and layered expressions of local history and culture, and help shape the unique identity and qualities of a place. To create distinct places along the creek front, consistency and thematic quality should mark the placement and design of civic amenities. The design elements will be the basis for creating a place, which links other potential development projects into a coherent whole. Moreover, the Town will devise long term strategic plans to control and revitalize this significant natural resource.

Key concepts for possible creek front development should include:

- Protect, enhance and promote the natural, cultural and heritage resources of Morden's creek front.
- Establish public spaces for people to gather, interact celebrate, learn, discover and remember that would enhance the socio cultural activity and civic life of Morden.
- Design a cultural zone with the creek front to make it an important destination for the visitors and to enhance the quality of life for the residents, as well.

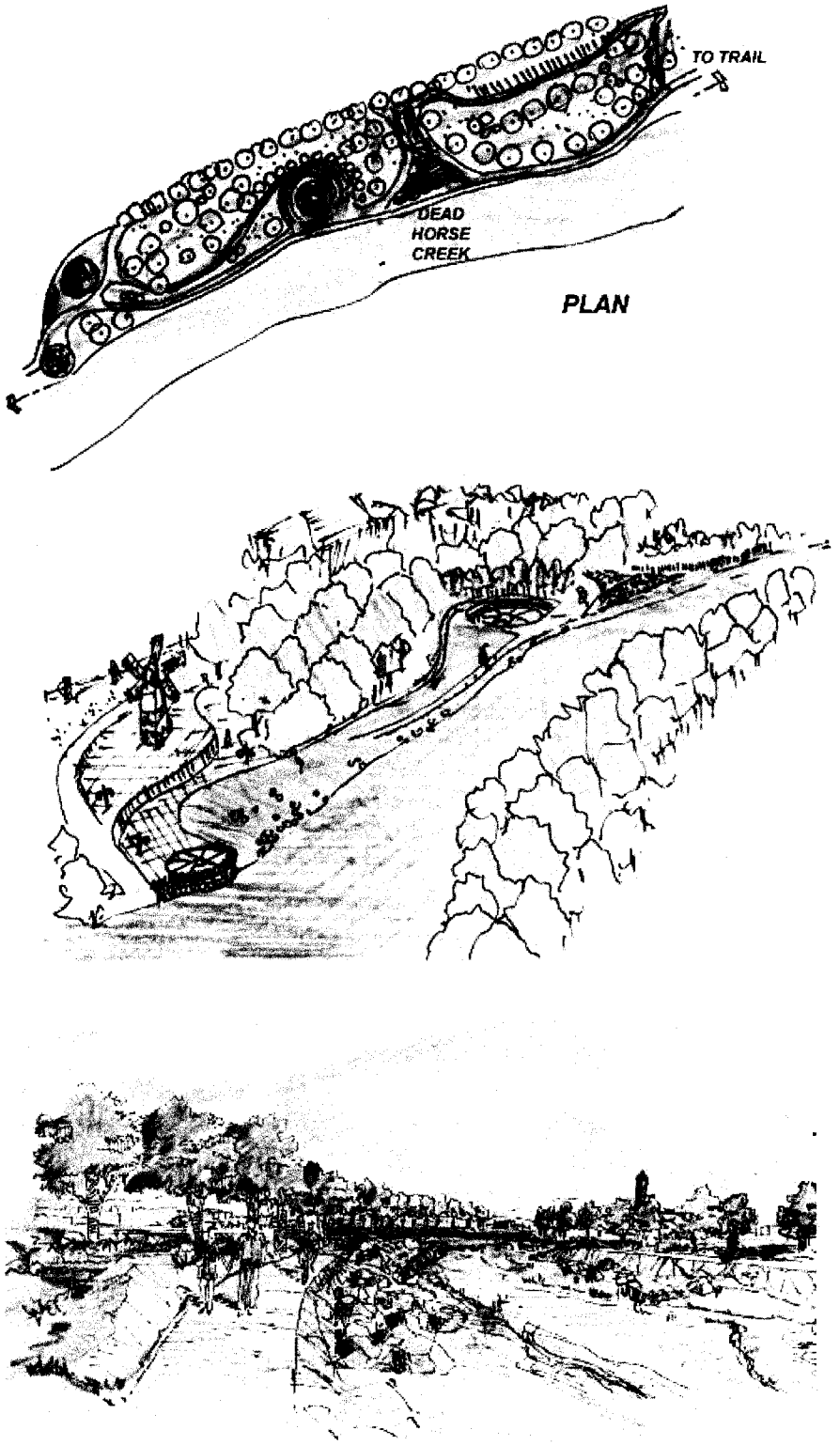
- Create a distinctive framework to revitalize the cultural landscape of Dead Horse Creek front and integrate it with important cultural and heritage resources in Morden to enhance the quality of life for the residents.
- Establish a strong visual identity for the entire creek front.
- Strengthen the connections between the creek front and the Town through historically and/or culturally significant corridors.
- Support artistic and cultural expression in infrastructure, in urban ecological processes and in green and open spaces.

Fig. 4.23

PROJECT 6
CREEK FRONT DEVELOPMENT

(Source: Google ™, 2007)

Fig. 4.24



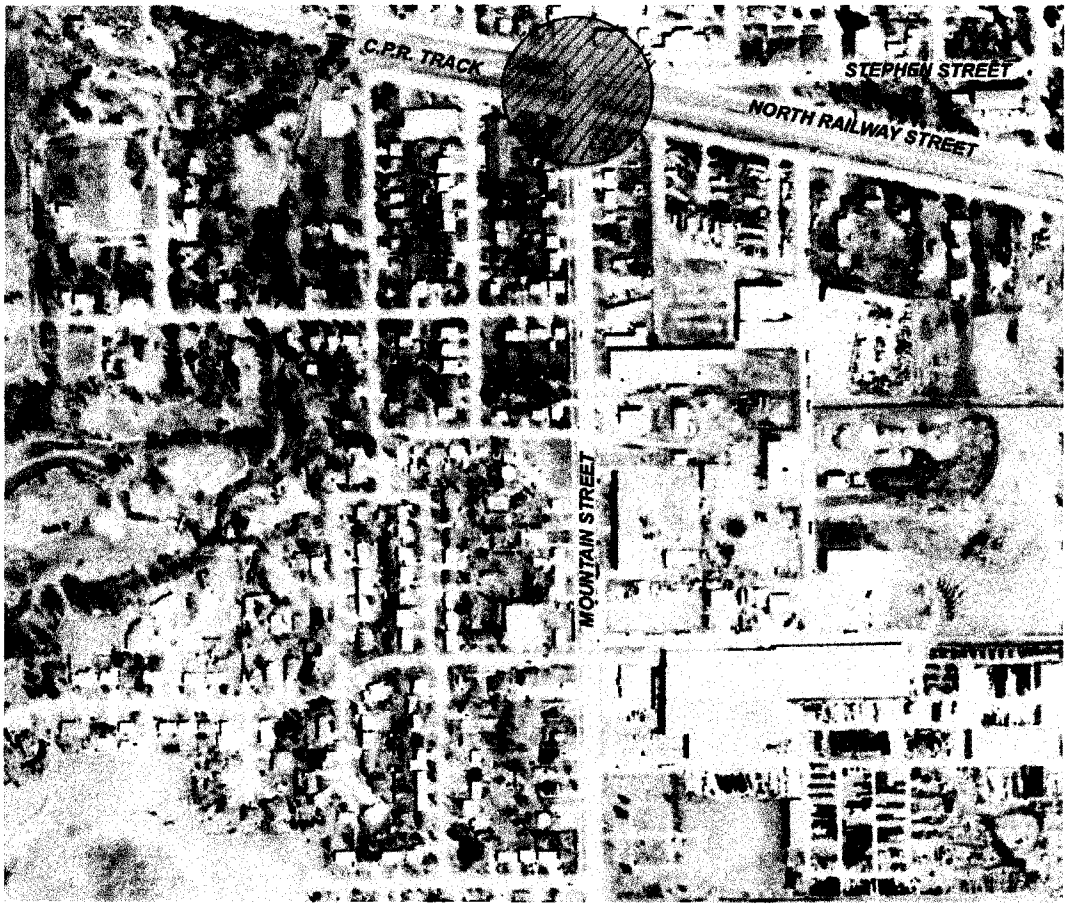
CREEK FRONT DEVELOPMENT

PROJECT 7: ON-GRADE RAILWAY CROSSING ENHANCEMENT

Development Concept and Brief

Although the existing railroad is a significant resource for Morden's heritage, its presence along the east-west direction creates a barrier for pedestrian access. Where existing roadway crossings exist, there needs to be further enhancement to promote pedestrian connectivity between the adjacent neighborhoods and historic core area of Morden. Continuous pedestrian walkways, crossings, highlighted pavements, lighting, bollards and safety gates are improvements which would support the principles and goals of the pedestrian network planning in Morden.

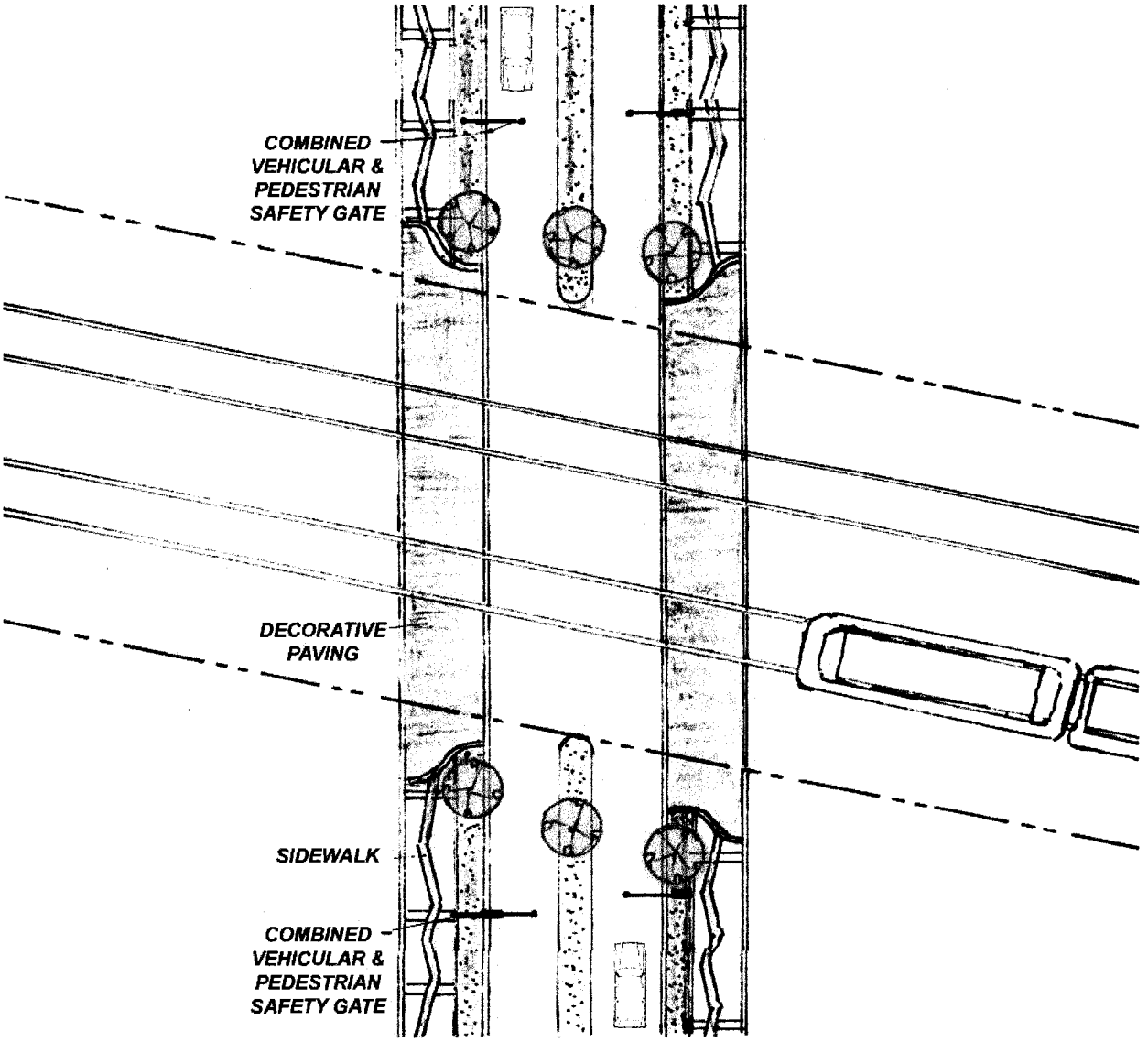
Fig. 4.25



PROJECT 7
ON-GRADE RAILWAY CROSSING ENHANCEMENT

(Source: Google ™, 2007)

Fig. 4.26



ON-GRADE RAILWAY CROSSING ENHANCEMENT

PROJECT 8: GREEN STREET DEVELOPMENT

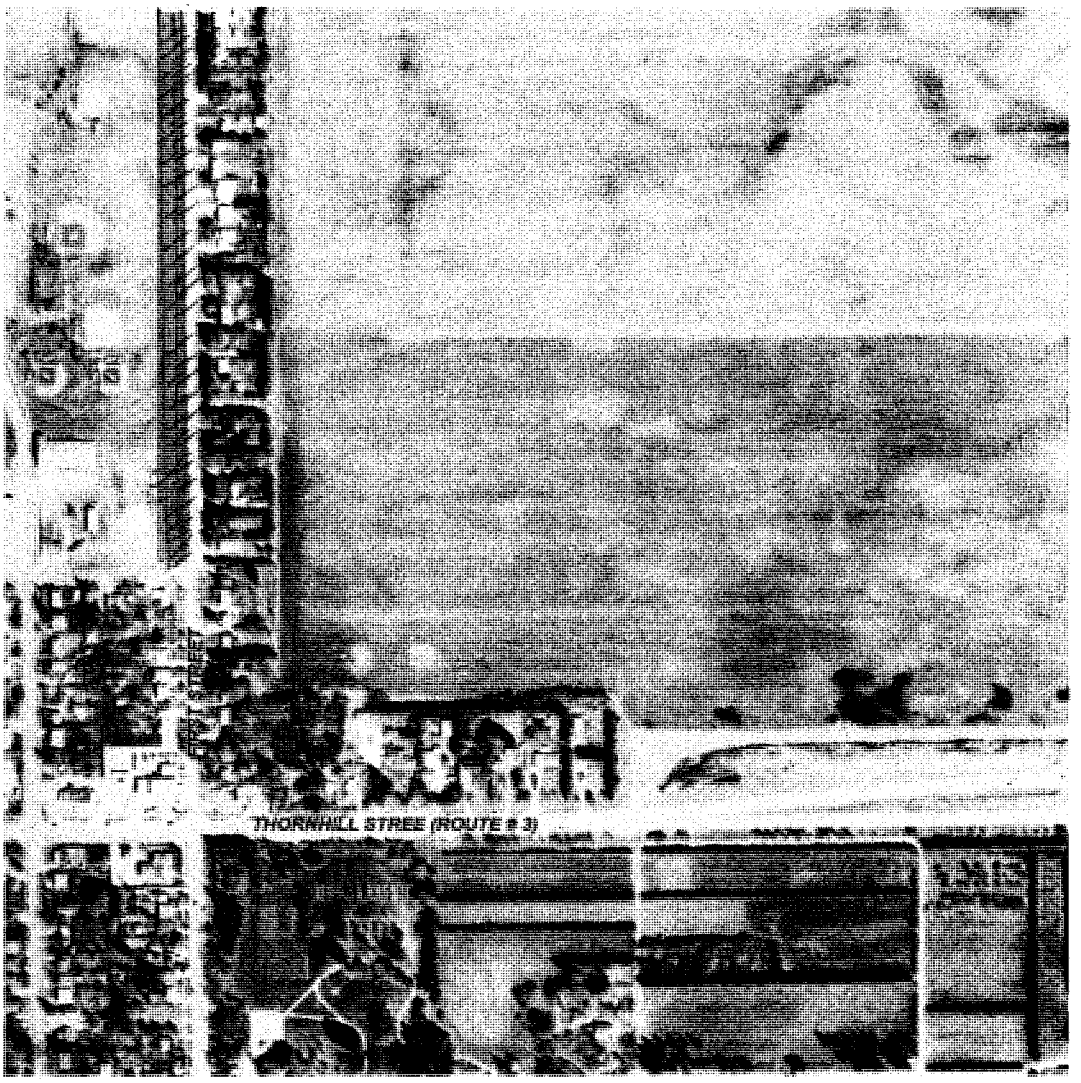
Development Concept and Brief

The northern segment of First Street after Thornhill Street crossing features a ROW flanked by vegetated swales. As a result, much of the storm water runoff is retained in the vegetative areas, potentially polluting the area with sediments and other harmful components of runoff.

Storm water systems can be designed as an amenity, a multiple use civic infrastructure that makes water processes legible, sustainable, and expressive. If storm water is perceived as a replenishing amenity and resource, rather than a waste that should be hidden away, storm water systems can incorporate earth and vegetation to serve as cleansing filters.

Several innovative technologies would be incorporated throughout the area to ameliorate poor storm water quality. These technologies include bio-infiltration swales, upland vegetative filters and media filters. As a result, the runoff systems can be protected from rain-induced volume surges and the rainwater filtered naturally rather than the roadway runoff being directly discharged into the swales.

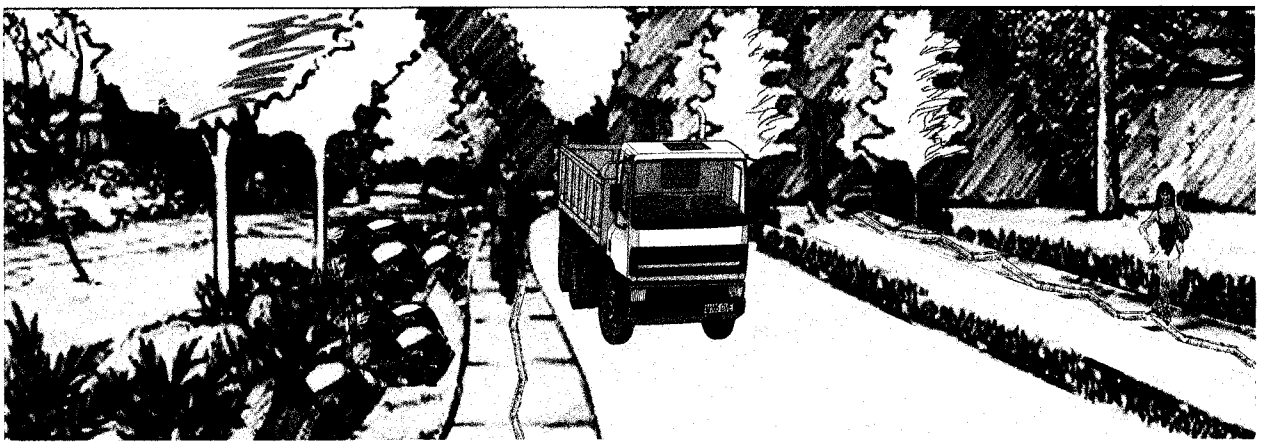
Fig. 4.27



PROJECT 8
GREEN STREET DEVELOPMENT

(Source: Google ™, 2007)

Fig. 4.28



GREEN STREET DEVELOPMENT

CONCLUSION

The vision of enhancing the livable environment of Morden is to provide a safe, healthy, attractive, and sustainable pedestrian realm that would attract increasing number of pedestrians. This Practicum provides an overview of existing conditions, and establishes goals, objectives and strategies to achieve the vision for a pedestrian friendly community. The expectation is that a properly developed project would not be considered as simply a transportation facility, but a community asset that would be consistent with local cultural values, heritage, and aesthetics. In recognition of the community's preferences, the practicum identifies a series of pedestrian improvements related to urban design and streetscape that will help to create a vibrant pedestrian-friendly environment for the entire community. Implementation of the design interventions and recommended guidelines will encourage more people to walk and more outdoor activities in the street precincts, ultimately which will benefit the health, safety, and general welfare of the residents.

Morden has many enduring strengths and assets which will continue to form the basis of its distinctive character and appeal as a countryside living destination. There are also unique opportunities that can be realized and diverse challenges which need to be confronted and overcome to ensure the sustainable development of the Town. It is an ongoing process and will evolve as Morden develops and implements the strategic directions. The design elements and tools suggested in this practicum are focused on developing a unified approach, which over time will add greatly to a cohesive, unified urban character in Morden. The recommendations and design principles are intended as a guide only, and it is assumed that the application of these elements in specific locations will occur as part of a project-specific

design process. This guide provides a broad overview of urban design processes and principles appropriate to Morden. The value and competitive edge generated by urban design based on sustainable development principles has much to offer: more liveable urban communities, increased expectations of communities being more liveable, and increased interest and debate on urban issues.

It has become apparent that a set of design guidelines developed in this study, which addresses the issues discussed, should positively direct the creation of a continuous pedestrian network in Morden. The Town will benefit from a series of consistent and planned streetscape interventions. In this process, community participation, careful planning and comprehensive enforcement will be required. As new properties are developed, strict implementation guidelines must be adhered to and delivered consistently to ensure that an overall pedestrian network is developed. The overall governance system comprising the statutory planning framework and the infrastructure delivery model will be critical to the successful implementation of the pedestrian network policy goals. Strategies and guiding principles developed in this Practicum should assist Morden to offer choices in development, protect and enhance the natural resources, honour shared culture and heritage, protect the health of the public, and create a safe and livable community for everyone.

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