

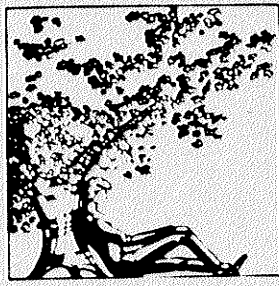
Identification of User Programs
and Conceptual Framework Plan for the
Arboretum of Prairie Farm Rehabilitation
Administration Tree Nursery at Indian Head, Saskatchewan

A Practicum
Submitted To The Faculty of Graduate Studies
In Partial Fulfillment Of The Requirements For
The Degree Of Masters of Landscape Architecture

by
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Winnipeg, Manitoba
1981^v

P.F.R.A. TREE
NURSERY *Arboricum*
Indian Head
Saskatchewan

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chapter	ACKNOWLEDGEMENTS
section	
subject	
division	

I would like to extend my special thanks to my advisory committee who have supervised the production of this practicum:

Professor Louis Lenz, Department of Plant Science, University of Manitoba; Professor Carl R. Nelson, Department of Landscape Architecture, University of Manitoba; Professor Charles H. Thomsen, Department of Landscape Architecture, University of Manitoba.

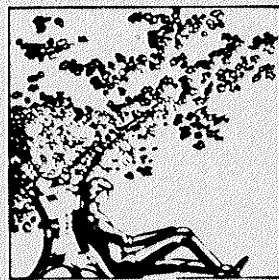
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Dr. J. A. G. Howe, Superintendent of the P.F.R.A. Tree Nursery of Indian Head, Saskatchewan; G. B. Neill, Investigation Section of the Indian Head P.F.R.A. Tree Nursery; Dr. G.G.C. Robinson and Dr. J.M. Stewart, Department of Botany, University of Manitoba; Dr. L. Sukava, Saskatchewan Tourism & Renewable Resources.

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chapter FORWARD

section

subject

division

An arboretum is an interpretive concept. Exhibit identification is the fundamental method of any interpretation; an interpretive system does not depend uniquely upon identification to establish a comprehensive and interesting communication between individual and exhibit. As an interpretive concept, an arboretum must be able to transmit to an individual the significance of woody plants on his everyday life.

When you talk about trees with members of the community of Indian Head, Saskatchewan, you have to talk about the Prairie Farm Rehabilitation Administration Tree Nursery. For the last seventy-nine years, the P.F.R.A. Tree Nursery has been playing an important social and economic role in the area of Indian Head.

Since the major objective of the nursery is to produce trees and shrubs for shelterbelts, it is logical that the future Arboretum concept, in this case, should transmit to the individuals of the area of Indian Head and to all visitors the significance of woody plant's production for shelterbelts on their everyday life; plant's uses and characteristics for shelterbelts, and their planting potential for home landscape and nature restoration.

The conceptual planning of the P.F.R.A. Tree Nursery Arboretum answers the unique conditions existing at this specific site: physical factors, drainage, water quality, wildlife, accessibility, land use, circulation and identification.

The elements composing the conceptual plan cannot be applied in their integrity to any other arboretum. The interpretation of woody plants must respond to the environment where any future arboretum will be: each case is a new case. Only the *planning process* of this practicum could be applied to other situations in our North American culture.

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chapter

ABSTRACT

section

subject

division

The Prairie Farm Rehabilitation Administration of Indian Head, Saskatchewan is a federal agency that has for a main objective the production of trees for shelterbelt purposes.

Since 1902, a portion of the nursery, reserved for the residence of the Superintendent and members of his crew, evolved into a collection of cultured trees of great interpretive potential.

Efforts were made to establish this portion of the nursery into a public ground. However, no conceptual plan was ever developed to optimize the visitor reception and education.

In May 1980, work began on the identification of user programs and the development of a conceptual framework plan for the public grounds of the nursery. Public participation was made possible from the beginning of the project by the use of questionnaires and interviews.

Using the results of public participation along with the nursery administrator's needs, the guidelines and the topics for development were established.

The generated conceptual plan organizes the public area into an arboretum. In using the self-guided tour techniques, the Arboretum offers to the visitors several possible programs, all showing different aspects of woody plants. The conceptual plan permits the use of the existing site and facilities to their full potential. The conceptual plan of this new Arboretum will allow to transmit the P.F.R.A. Tree Nursery public grounds as a useful legacy to future generations.

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 architecture
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chapter TABLE OF CONTENTS

section

subject

division

	<u>Page No.</u>
ACKNOWLEDGEMENTS	ii
FORWARD	iv
ABSTRACT	vi
TABLE OF CONTENTS	viii
GLOSSARY	xii
INTRODUCTION	2
1. BACKGROUND INFORMATION	
1.1. EVOLUTION OF ARBORETUM CONCEPT THROUGH THE CENTURIES	3
1.2. HISTORY OF THE PUBLIC GROUNDS OF THE P.F.R.A. TREE NURSERY	6
1.3. EXISTING PROGRAMS OF THE P.F.R.A. TREE NURSERY	7
1.3.1. TECHNICAL SERVICES PROGRAMS	8
1.3.2. RESEARCH PROGRAMS	9
1.3.3. PROGRAM EVALUATION	10
1.4. USER NEEDS	
1.4.1. INTRODUCTION	11
1.4.2. INTERVIEW	12
1.4.2.1. MATRIX OF TOPICS	12
1.4.2.2. TOPIC VOTING BALLOT	15
1.4.3. VISITOR QUESTIONNAIRE	18
1.4.3.1. INTERPRETATION OF THE RESULTS	20
1.4.4. 1971-1979 VISITOR SURVEY	22
1.4.5. CONCLUSION	23
1.5. EXISTING CONDITIONS	
1.5.1. INTRODUCTION	24
1.5.2. PHYSICAL FACTORS (Soil-Climate-Vegetation)	25
1.5.3. DRAINAGE AND WATER QUALITY	26
1.5.4. WILDLIFE	27
1.5.5. ACCESSIBILITY	28
1.5.6. LAND USE & CIRCULATION	29
1.5.7. IDENTIFICATION	32

P.F.R.A. TREE
NURSERY Arboretum
Indian Head
Saskatchewan

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faculty of architecture
dept. of landscape
architecture
university of manitoba



chapter	TABLE OF CONTENTS (cont'd)
section	
subject	
division	

1.5.8.	OTHER FACILITIES	33
1.5.9.	CONCLUSION	34
2.	DESIGN SYNTHESIS AND DEVELOPMENT	
2.1.	THE ARBORETUM CONCEPT FOR THE PUBLIC GROUNDS OF THE P.F.R.A. TREE NURSERY	36
2.2.	USER PROGRAMS	38
2.2.1.	THE TOURING PROGRAMS	38
2.2.1.1.	THE ARBORETUM TOURING PROGRAM	39
2.2.1.2.	THE GENERAL INTEREST TOURING PROGRAM	40
2.2.1.3.	THE HORTICULTURAL INTEREST TOURING PROGRAM	41
2.2.1.4.	THE EDUCATIONAL INTEREST TOURING PROGRAM	42
2.2.2.	THEMATIC AREAS AND POINTS OF INTEREST	43
2.2.2.1.	INTRODUCTION THEME	44
#1.	THE CAIRN	
#2.	THE INTERPRETIVE RAMP	
#3.	THE SHELTER	
#4.	THE THREE SISTERS	
#5.	THE PRIOR EQUIPMENT TRAIL	
2.2.2.2.	PLANT MUSEUM THEME (PART ONE)	49
#6.	DWARF CONIFER COLLECTION	
#7.	GROUNDCOVERS COLLECTION	
2.2.2.3.	SHELTERBELT TREE PRODUCTION THEME	55
#8.	DEMONSTRATION PLOT	
#9.	MATURE SHELTERBELT TREES	
#10.	CRAM COLLECTION	
#11.	RESTING AREA	
#12.	WALKER PROMENADE	
#13.	OLDER SHELTERBELT	
2.2.2.4.	PLANT MUSEUM THEME (PART TWO)	59
#14.	ROSE GARDEN	
#15.	INDIGENOUS PLANT GARDEN	
#16.	FRUIT TUNNEL	
#17.	THE MAZE	
#18.	RESTING AREA	
2.2.2.5.	HOME LANDSCAPE THEME	65
#19.	ARBORETUM	
#20.	SMALL LOT GARDENS	

P.F.R.A. TREE
NURSERY Arboretum
Indian Head
Saskatchewan

by **r. fréchette**
 faculty of architecture
 dept. of landscape
 architecture
 university of manitoba



chapter	TABLE OF CONTENTS (cont'd)
section	
subject	
division	

- #21. FORMAL GARDEN
- #22. ROCKERY
- #23. CRABAPPLE ALLEY
- #24. SPRING AREA
- #25. LAUNCHING AREA
- #26. MARSH AREA
- #27. RESTING AREA

2.2.2.6.	AFTER THE RAIN THEME	71
A.	THE WATERING SYSTEM	
B.	THE SUNBEAM CREEK	
C.	THE MOIST SHELTER	
D.	MOISTURIZING TECHNIQUES	
E.	THE PUMPHOUSE	
2.2.2.7.	MAN-MADE FLORA THEME	77
F.	THE ROADSIDE ENVIRONMENT	
G.	THE MOIST FOREST	

2.3 ENHANCEMENT OF THE EXISTING CONDITIONS

2.3.1.	PHYSICAL FACTORS	79
2.3.2.	DRAINAGE AND WATER QUALITY	80
2.3.3.	WILDLIFE	81
2.3.4.	ACCESSIBILITY	82
2.3.5.	LAND USE AND CIRCULATION	83
2.3.6.	IDENTIFICATION	84
2.3.7.	OTHER FACILITIES	85

2.4.	IMPLEMENTATION	86
------	--------------------------	----

2.5.	CONCLUSION	88
------	----------------------	----

APPENDICES

APPENDIX "A"	MAJOR MOMENTS OF THE ARBORETUM HISTORY	91
APPENDIX "B"	SUMMARIZED INTERVIEWS	97
APPENDIX "C"	RECOMMENDED ROADSIDE ENVIRONMENTS PLANTS	126
APPENDIX "D"	RECOMMENDED MOIST FOREST PLANTS	127
APPENDIX "E"	MAINTENANCE GUIDELINES	129
APPENDIX "F"	MINUTES OF PUBLIC PRESENTATION OF FIRST CONCEPTUAL DRAFT OF THE P.F.R.A. TREE NURSERY ARBORETUM	135

REFERENCES	138
----------------------	-----

BIBLIOGRAPHY	141
------------------------	-----

P.F.R.A. TREE
NURSERY Arboretum
Indian Head
Saskatchewan

by n. tréchette
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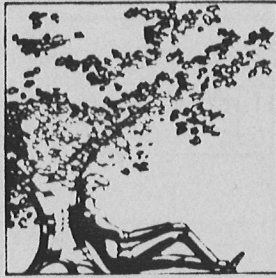


chapter	Glossary
section	
subject	
division	

- Anaerobic:* Living in the absence of free oxygen.
- Arboretum:* A collection of woody materials preserved for recreational and educational purposes. In this text the "old" or "prior" or "existing" arboretum refers to a prior portion of the Tree Nursery set aside as an arboretum in 1942.
- Belvedere:* A pavillion or the top of a hill open for the view and to admit the breeze.
- Boscage:* A small growth of trees and shrubs.
- Cram collection:* Caragana collection established in honor of Dr. W. Cram, superintendent of the Indian Head Tree Nursery between 1958 and 1977.
- Cultured Plants:* Plants reproduced and/or growing in a controlled environment.
- Exotic Plants:* Indigenous or cultured plants imported from distant countries or hardiness zones.
- Indigenous Plants:* Plants naturally produced by its species and growing naturally in an environment selected by its species.
- Informal Visitors:* Category of visitors that do not previously make arrangements for their visit to the public grounds of the Tree Nursery to receive a guided tour.
- Production Fields/Grounds:* Any portion of the Tree Nursery involved in the production process of the woody seedlings.
- Public Grounds:* The portion of the Tree Nursery open to the visitors from 8:00 A.M. to dusk, containing plant collections and picnic facilities. Prior portion of the nursery reserved for the Superintendent's residence and family life.

P.F.R.A. TREE
 NURSERY Arboretum
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chapter INTRODUCTION

section

subject

division

In landscape architecture, an understanding of the physical characteristics and the potential uses of woody plant material is essential. Most of the general public lacks a sufficient understanding of their value and proper care. This often leads to unconscious vandalism or failure of the planting design concept, and even destruction of the plants themselves.

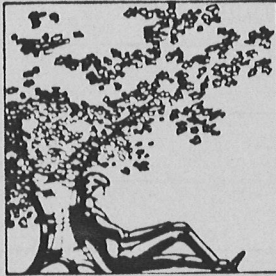
The arboretum concept, as an outdoor interpretive program with its educational and recreational goals, is a good way to raise the general public level of understanding of woody plant material. Using the arboretum concept as the theme of development of its public grounds the P.F.R.A. Tree Nursery has potential for transmitting in a recreative atmosphere this awareness to present and future generations.

This practicum on the Identification of User Programs and Conceptual Framework Plan for the Arboretum of the Prairie Farm Rehabilitation Administration Tree Nursery of Indian Head, Saskatchewan, contains no new debate or philosophy about arboreta. In fact during the last decade, several arboreta throughout North America have had either or both their management and their site designs altered to meet societies' needs and demands. This practicum undertook a similar review process for the public grounds of the P.F.R.A. Tree Nursery with the objective to develop guidelines as to how their public grounds may be better utilized to satisfy the current needs.

Investigations on the site of the P.F.R.A. Tree Nursery started with the survey of three types of users which lead to the identification of the user needs. These user needs were identified through personal observations, interviews, and questionnaires, together with a literature review and resulted in the identification of topics for the development of the points of interest. After an analysis of the existing site physical conditions (i.e. vegetation, drainage, wildlife, etc.) the feasible topics for development were integrated with the site in thematic areas. Each one of the thematic areas presents one aspect related to woody plants. The thematic areas are linked together by pathways that allows the visitors to choose among four suggested self-guided touring programs. The Arboretum conceptual plan proposes immediate development guidelines that can be modified in the future to the current user needs and demands.

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chapter 1.	Background Information
section 1.1.	Evolution of the Arboretum concept Through the Centuries
subject	
division	

The concept of the arboretum has existed long before its proper name appeared in written texts. The earliest recorded form of arboretum is the sacred grove of trees of the Summerian Ziggurat (5000 B.C.).* The Egyptians transformed the Ziggurat into a garden to live in (1500 B.C.) and into a source of raw material for the temple. The Greeks following the idea of the sacred grove developed the nymphaeum for open country living, the agora for the heart of the city, and the utilitarian garden (900-500 B.C.).

From the 15th to 17th centuries during the Renaissance, study of the classics such as Pliny the Younger brought about the return of the sacred grove of trees. The Renaissance replaced the sacred purpose of the tree grove by the ecclesiasticism of the royal botanists for exotic tree collections. These exotic tree collections flourished in Italy at Florence (1475), Milan (1500), Padua (1535), in France, at Touvoye (1550) and in England (1621). The tree collection concept reached North America in the 18th century with the Quaker pioneer John Bartram, in Philadelphia.

In the 19th century John Claudius Loudon christened the tree collection concept by the name of arboretum. In this Victorian gardenesque context he described the arboretum as being that portion of a garden or of a park reserved for the growth and the display of trees. In 1887, the Canadian federal government inaugurated the first Canadian arboretum: the Dominion Arboretum of Ottawa.

In the 20th century, the work of the Olmstead brothers, Landscape Architects; Donald Wyman, Horticulturalist of the Arnold Arboretum; Fred Lape, Manager of the George Landis Arboretum and of such planning firms as Jones and Jones who planned the Union Bay Arboretum, of the University of Washington have enlarged the Loudon definition of arboretum, and have adapted the arboretum concept to the contemporary preoccupations. The modern arboretum not only has a recreation and education function but has a conservation and preservation mandate as well.** The arboretum protects and assures the survival of unique collections of woody plants for future

* References no. 19, 20, 21.

** References no. 37

P.F.R.A. TREE
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chapter	1. Background Information
section	1.1. Evolution of the Arboretum concept Through the Centuries
subject	
division	

generations. The arboretum also promotes the use of woody plants by integrating recreational and educational programs to its fragile woody plant communities so that anybody can enjoy learning about woody plants. **

** For a further discussion of the historical development of Arboretum see Appendix A.

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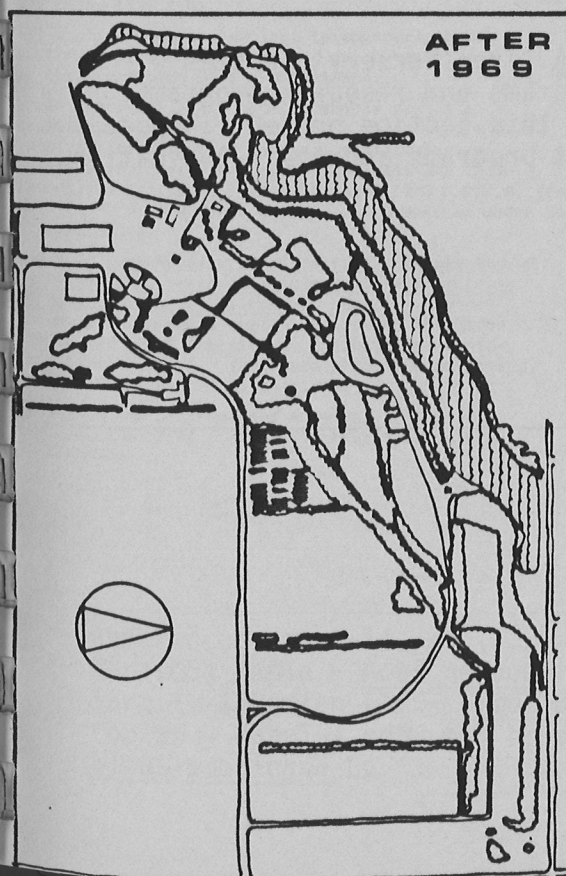
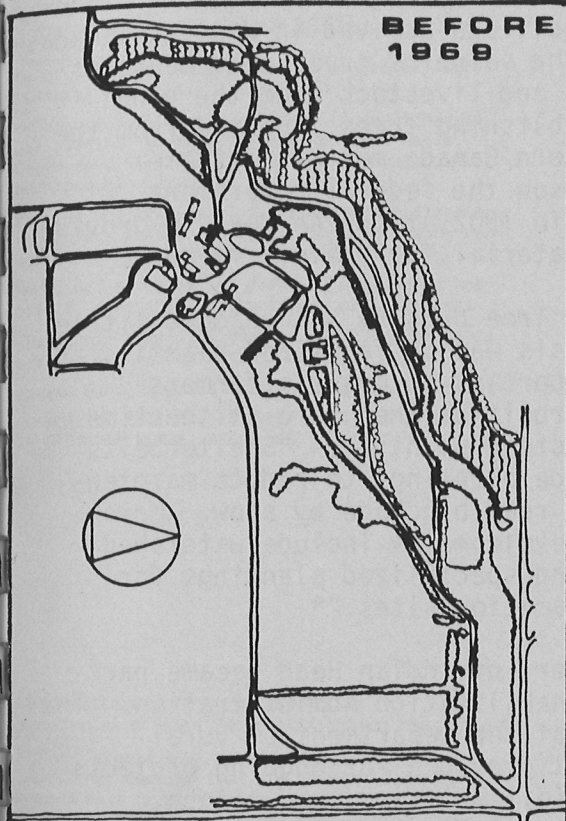


chapter 1. Background Information

section 1.2. History of the Public Grounds of
the P.F.R.A. Tree Nursery of Indian Head

subject

division



In the history of the nursery at Indian Head, the public grounds occupy only second priority. The public grounds are the results of planting around the private residence of the prior superintendents. When the residence was identified as unsafe by Crown Assets and the nursery authorities were forced to remove them, the public grounds were created.

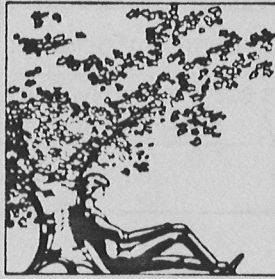
Since the main objective of the nursery is still to produce and distribute hardy trees for farm shelterbelts, it can be said that the prior superintendents applied their knowledge well to provide their private residence with the best examples of shelterbelts. Within these new public grounds are some of the best examples to illustrate techniques of establishing shelterbelts, as well as to stimulate and sensitize the farmers applying for trees and any visitors to the entire tree production system. It is a legacy and lesson that the nursery offers to provide our descendants with a better environment.

In 1902 the Superintendent, Norman Ross, was living on the nursery with his family. The Superintendent's residence was composed of a cafeteria, stables for horses and other domestic animals, and a boarding house. The section of land was bare; not a single tree was growing there. In planting to surround the buildings, Mr. and Mrs. Ross structured the open spaces of the existing public grounds. The evergreens have now reached an average height of 50 feet.

Under the superintendency of Dr. W. Cram, the Crown Assets had the Superintendent's buildings relocated outside the nursery. The original site of these buildings is now covered with a lawn. The access roads of the quarters are now pathways through mature stands of trees. In 1977, a cairn was edified by the hill where the private house of the Superintendent was once located. According to the 1969 Master Plan by B. W. Jablonski, Dr. Cram conducted the ground work necessary for establishment of a new main entrance, a visitors' driveway to the public grounds, a visitors' parking lot, a picnic shelter and an information board.

P.F.R.A. TREE
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chapter 1.	Background Information
section	1.3. Existing Programs of the P.F.R.A. Tree Nursery
subject	
division	

"When the first settlers arrived in Western Canada they soon discovered the value of trees as a means of protecting their homes and livestock from the wind. Early attempts at establishing trees imported from the United States and Eastern Canada met with little success. For this reason the federal government established a nursery in 1902 at Indian Head to provide hardy tree and shrub material for prairie farmers.

The policy of the Tree Nursery has changed little since 1902, when emphasis was on farmstead planting. Shelterbelts are as important to prairie farmers today for field shelterbelt as they were at the time of settlement for farmstead planting. "Shelterbelts are now used as roadside plantings to reduce maintenance costs and prevent road blockage by snow. More recent tree planting developments include watershed protection plantings and specialized plantings for wildlife and land reclamation sites."*

In 1963, the nursery of Indian Head became part of the Prairie Farm Rehabilitation Administration. P.F.R.A. is an agency of the Department of Rural Economic Expansion. It provides for ongoing projects to combat drought and soil drifting in Manitoba, Saskatchewan and Alberta.**

The actual P.F.R.A. Tree Nursery operates technical services programs and research programs. The following pages of this section present in more details their different programs and their evaluation.

* References no. 14.

** References no. 24.

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chapter	1. Background Information
section	1.3. Existing Programs of the P.F.R.A. Tree Nursery
subject	1.3.1. Technical Services Programs *
division	

**P.F.R.A. TREE NURSERY
 TECHNICAL ASSISTANCE POLICY**

Who are eligible:

Bona-fide farmers and producers of primary agricultural products:

Owners of rural small holdings (1 to 39 acres) are eligible to receive only Manitoba Maple, Green Ash, Siberian Elm, Caragana, Poplar, Willow and American Elm; **

Federal and provincial departments for plantings on public, private or crown lands including conservation and reclamation plantings;

Municipal agencies for parks, playgrounds, hospitals, cemeteries, schools and similar uses;

Charitable organizations for plantings on lands serving the public without charge;

Indian Band Councils for plantings on Reserves;

COMMERCIAL ENTERPRISES AND PRIVATE LAND OWNERS IN URBAN OR RESORT AREAS ARE NOT ELIGIBLE.

Applications must be mailed to the provincial offices for certification and approval.

All applicants must specify the exact planting locations, certify that the plants will not be moved, sold or given to another party, and authorize PFRA staff to inspect the planted trees at any reasonable time.

All applications are subject to approval, based on the requirements stated and may be declined at the discretion of the department.

While every effort is made to supply eligible applicants with the species and numbers of plants required, distribution is made on a first-come, first-served basis, and certain species are occasionally unavailable. In such cases, the P.F.R.A. Tree Nursery makes the best substitution possible under the circumstances.

The PFRA Tree Nursery provides trees, shrubs and technical services to eligible residents in Saskatchewan and Manitoba, free of charge. Nominal transportation costs must be paid when the trees are picked up at the closest Agricultural Representative's office. Trees are shipped each spring, usually from late April to mid May.

To ensure the best use and survival of tree materials, the PFRA offers technical assistance to planters.

1. Planning assistance for farmers

On request a member of the nursery technical staff will visit sites of eligible applicants, evaluate the soil and topographical conditions and recommend effective shelterbelt plantings. A planting plan will be prepared during the winter and sent to the farmer for guidance.

2. Planning assistance for federal, provincial and municipal agencies

3. Public meetings and displays

The nursery will provide slide presentations for meetings. Short courses can be arranged for farmers and other interested groups. Topics include farm, field and roadside shelterbelts, conservation plantings, species, planting designs and maintenance practices. Technical literature is also provided. On request, an indoor display or a 24-foot display trailer can be made available for fairs and other agricultural events.

4. Arbor Day

In cooperation with the Saskatchewan and Manitoba Forestry Associations, the Tree Nursery supports an Arbor Day program for schools in both provinces, by providing trees and shrubs for school plantings. Slide programs are available on loan, illustrating the use of trees in conservation plantings in the two provinces.

5. Tours

Guided tours of the Nursery for organized groups are conducted by staff from spring to fall, Mondays to Fridays, inclusive. Arrangements must be made by mail or telephone, in advance. Visitors are welcome to the demonstration plantings and gardens at the nursery where picnic facilities are available on request.

* References no. 6-14, 23.

** Manitoba Maple - Acer negundo L.; Green Ash - Fraxinus pennsylvanica subintegerrima (Borkh Sarg.); Siberian Elm - Ulmus pumila L.; Common Caragana - Caragana arborescens L.; Poplar - Populus spp. and hybrids; Willow - Salix spp. and hybrids; American Elm - Ulmus americana L.

P.F.R.A. TREE
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Indian Head
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chapter 1. Background Information

section 1.3. Existing Program of the P.F.R.A.
 Tree Nursery

subject 1.3.2. Research Programs *

division

For many years, specialists in various fields have conducted investigative studies for production and distribution activities. Currently, studies are in progress on propagation and storage; weed, insect and disease control; plant nutrition and irrigation. New species and selections of shrubs and trees are being evaluated through regional tests, and herbicidal studies on weed control for prairie plantings are being conducted.

Seed maturity and viability studies have resulted in long-term storage production for several tree and shrub species, thereby ensuring annual production despite periodic seedcrop failure.

Other investigations have resulted in improvements in the packing, shipping and distribution of trees throughout the prairies.

* References no. 6-14, 23.

P.F.R.A. TREE
NURSERY *Arboretum*
Indian Head
Saskatchewan

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 dept. of landscape
 architecture
 university of manitoba



chapter	1.	Background Information
section	1.3.	Existing Program of the P.F.R.A. Tree Nursery
subject	1.3.3.	Program Evaluation
division		

In May 1980, an evaluation study of the Tree Nursery program was in the process of being finalized by the authorities at the Tree Nursery. The purpose of the evaluation was to examine ways of increasing the effectiveness and to identify research needed. Its content also included the results of previous surveys done on the topic of the tree planting in the prairies.

A previous survey was compiled in 1975.* The results were to provide future policy guidelines for the nursery operations.

Generally, since 1902, the P.F.R.A. technical services program has improved significantly the living conditions, the agricultural production and the conservation of resources on the prairies. Since the Indian Head Tree Nursery has played a major role in this improvement by producing the tree seedlings and furnishing the technical services, the evaluation surveys recommended the expansion of the production capacity of the P.F.R.A. Tree Nursery of Indian Head.

The program evaluation suggested a study of ways to increase the percentage survival of the seedlings. Also the demands from governmental agencies for technical directions, development and landscape plans are constantly increasing. The research program and expansion is seen not only as a means to complement the physical expansion of the nursery, but also as a means to present concrete evidence on the feasibility of new planting techniques and new shrub and tree species.

* Signey Sigurdson, A Study of Tree Planting in the Prairies, edited by the P.F.R.A. Tree Nursery, Indian Head, Saskatchewan 1975, (confidential).

P.F.R.A. TREE
NURSERY Arboretum
Indian Head
Saskatchewan

by *r. fréchette*
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chapter 1.	Background Information
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section 1.4.	User Needs
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subject 1.4.1.	Introduction
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division	
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The current users of the public grounds have three origins: the employees of the nursery, a number of Indian Head civic groups and seasonal visitors.

In order to identify the current user needs a survey was conducted by interviews and questionnaires to determine their ideas, opinions and suggestions about the existing public grounds and redevelopment.*

The personal interview method was used on the nursery employees and Indian Head civic group representatives. A questionnaire survey was used for a number of seasonal visitors to determine an immediate wide definition of the users. Also data on the seasonal visitors surveyed by the administration of the nursery since 1971 were compiled. This data complemented the data surveyed during the 1980 summer.

The surveys of the nursery administration must be considered as a study of the historical evolution of the public grounds users and the surveys, as a study of current public grounds users.

The results of the surveys were tabulated into redevelopment topic matrices and categorized according to the support. Through the planning process, newsletters were sent to refine the design ideas and to assure constant public participation. The public participation allowed to categorize the redevelopment topic according to their level of interest. Finally a public meeting was organized for a presentation and a team discussion on the first draft of the conceptual framework plan for the Arboretum of the P.F.R.A. Tree Nursery, Indian Head.

* These type of user surveys are referred to by Kevin Lynch as self-study methods.

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chapter 1.	Background Information
section 1.4.	User Needs
subject 1.4.2.	Interview
division 1.4.2.1.	Matrix of Topics

With the assistance of the nursery Superintendent, Dr. J. A. G. Howe, a list of possible interviews was compiled. The list included interviews with authorities representing the Tree Nursery employees, the Indian Head civic groups, and other personalities related by their interest or profession to the future of the public grounds of the nursery.

Twenty-one interviews were pursued (see List of Pursued Interviews). The location of the interview was determined by the availability of the personalities: it was either in a Tree Nursery office, their business office or at their private residence.

Even if the interviews were pursued without a pre-established list of precise questions, during all the interviews, the same topics of discussion were covered: the identity of the employee or of the civic group represented, the responsibilities attached to their position, and finally their opinions, ideas and suggestions for the redevelopment of the public grounds. The interviews have been summarized and are available in the Appendix B.

Even if the three last topics of discussion were approached in separate moments for each of the interviews, nobody made the desired subtle distinction:

- opinion: a belief on what seems probable;*
- idea: a vague sense of probability;*
- suggestion: a partly formed idea which if developed, would be the basis of a judgment;*

For this reason, the three above topics were simply recorded under the same title of "Redevelopment Topics of the P.F.R.A. Tree Nursery Public Grounds" and listed on matrices.

The topics were divided in two matrices: the first one, on TABLE IV, elaborated from the nursery employees' interviews, and the second one, on TABLE V elaborated from the civic groups and other related personalities' interviews. There was no other reason at this stage for dividing the topics on two matrices than that the results from the employees' interviews were available several weeks before the others.

LIST OF PURSUED INTERVIEW:

Dr. J.A.G. Howe, Superintendent Tree Nursery, PFRA Indian Head, Sask. SOC 2K0	Lyle K. Alperth, Herbicide Technician Investigation Section Tree Nursery, PFRA Indian Head, Sask. SOC 2K0
E.B. Hall, Head Investigation Section Tree Nursery, PFRA Indian Head, Sask. SOC 2K0	H.B. Jackson, Foreman Production and Maintenance Section Tree Nursery, PFRA Indian Head, Sask. SOC 2K0
S.M. Thompson, Head Distribution & Production Section Tree Nursery, PFRA Indian Head, Sask. SOC 2K0	Dave Gruber, Assistant Foreman Production and Maintenance Section Tree Nursery, PFRA Indian Head, Sask. SOC 2K0
M.L.M. McDonald, Head Administration Section Tree Nursery, PFRA Indian Head, Sask. SOC 2K0	Bill Wood (Business) Consultant for Outdoor Programs of the Regina School Board Division 9870 Lerma Street Regina, Sask. SAP 119 (Home) 44 Fleming Crescent Regina, Sask.
Pat Sembrath, Assistant Head Distribution & Production Section Tree Nursery, PFRA Indian Head, Sask. SOC 2K0	Larry Sukawa, Senior Planner Saskatchewan Tourism & Renewable Resources 3211 Albert St. Regina, Sask. S95 566
Cliff Harrier Distribution & Production Section Tree Nursery, PFRA Indian Head, Sask. SOC 2K0	Mr. George Shain Horticultural Society Indian Head, Sask. SOC 2K0
Don Walker Distribution & Production Section Tree Nursery, PFRA Indian Head, Sask. SOC 2K0	Dorva Thompson Scout Leader Indian Head, Sask. SOC 2K0
A. Charlie Thompson, Technician Investigation Section Tree Nursery, PFRA Indian Head, Sask. SOC 2K0	Mr. & Mrs. Lloyd Peterson Natural History Society Indian Head, Sask. SOC 2K0
M.A. Horden, Entomology Technician Investigation Section Tree Nursery, PFRA Indian Head, Sask. SOC 2K0	Mrs. Isabel Simpson Anti-Drug Leader Indian Head, Sask. SOC 2K0
Carl Lindquist, Propagation Technician Investigation Section Tree Nursery, PFRA Indian Head, Sask. SOC 2K0	Mr. D. Carlton, Principal Indian Head High School Indian Head, Sask. SOC 2K0
Mr. J. Sawkey, Principal Indian Head Elementary School Indian Head, Sask. SOC 2K0	

* O.C. Watson, Larousse
 Illustrated International
 Encyclopedia & Dictionary,
 published by McGraw-Hill
 International Book Co.,
 Paris, 1972, 1564 p.

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chapter 1. Background Information
 section 1.4 User Needs
 subject 1.4.2. Interview
 division 1.4.2.1. Matrix of Topics

To compose the matrices of topics, I have categorized the 75 topics, according to the support that they have received during the interviews. Because each topic is more or less supported by a number of interviewed users, the topics have been classified in five categories: the topics that are "supported" by more than one user; the topics that are "proposed" by only one user; the topics that are "conflictual" because they have been presented with positive and negative aspects; the topics that have been "rejected" because of their unsuitability; and finally the topics that will be "implemented" in the conceptual plan. At this stage only the caragana collection was made as a necessary topic to be implemented in the conceptual plan.

TABLE IV MATRIX OF REDEVELOPMENT TOPICS OF THE P.F.R.A. TREE NURSERY PUBLIC GROUNDS; ELABORATED FROM THE NURSERY EMPLOYEES INTERVIEWS

TOPICS	IMPLEMENTED	SUPPORTED	PROPOSED	CONFLICTUAL	REJECTED
1. Caragana collection in honour of Dr. Cram;	●				
2. Pruning, clearing and removal of poor value plant materials;		●			
3. Accomplishment of the ground work by the existing crews;			●		
4. Elaboration of programs as self-guided tours;		●			
5. Elimination of interference between vehicular circulation and visitors, for example, the staff parking lot should be buffered from the prior peonies and roses section;		●			
6. Development as a demonstration show piece for home planting and landscaping;			●		
7. Utilization of the interpretive grounds as a study area for students of forestry, botany, landscape, horticulture and gardening;		●			
8. Its utilization as a rest area with benches, observation points, for example, on reservoir #1;		●			
9. Evaluation and identification of insect and rodent damages per species of trees planted in blocks;			●		
10. Installation of ground structures such as fountain, gazebo, bridges, benches;		●			
11. Planting of poisonous plant identification plot;			●		
12. Planting of more flower beds with pictures to show outstanding seasonal characteristic of some species;		●			
13. Improvement of birds nesting area; Canada geese acquisitions;		●			
14. Increase of the plant collections: best flowering trees and shrubs, best fruit trees;		●			
15. Introduction of native materials;			●		
16. Yearndering pathways leading the visitors from one section to the other, with occasional signs for self-guided tours a colour code;		●			
17. Introduction of core hills, marshes area;			●		
18. Introduction of fall colour area;			●		
19. Introduction of a winter area for bark colours, weeping trees and hoar frost;			●		
20. Integration of cross-country trails to the visiting pathways;		●			
21. Improvement of the labelling system by appropriate label location, their attractiveness with common & scientific names and indication on their adaptability, uses, growth habit problems & restrictions;		●			
22. Location of interpretation boards;			●		
23. Development of a brochure relating to the plant species of the arboretum and containing instructions for a self-guided tour;			●		
24. Utilization of the large expanse of grass which is seldom used and is an eyesore when grass is dry;			●		
25. Expansion of picnic area in the Hordean Co-op test planting;				●	
26. Expansion of picnic area, for example, north of the main access road by adding bar-b-cues and tables;			●		
27. Expansion of arboretum in area east of pump-house used as a production field bed;				●	
28. Incorporation of the production plots to the summer self-guided tours;			●		
29. Demonstration in the interpretation grounds of single specimens of the tree species grown on the nursery;			●		
30. Demonstration of shelterbelts grown of different plant species and treated with herbicides; general shelterbelt maintenance;		●			
31. Weed identification plots;			●		
32. Solid log children's playground construction;				●	
33. Pavement of the picnic area road;			●		
34. Improvement of main entrance road;			●		
35. Construction of a rock garden;			●		
36. Lighting of the interpretive grounds;			●		
37. New demonstration hedges with indications relative to the spacing, branching density, height of growth and maintenance;		●			
38. Retention of the public grounds in the existing conditions;				●	
39. Need for a full time employee as supervisor, gardener, information officer			●		
40. Development of a nature trail, used during the winter for cross-country skiing;			●		
41. Display on the use of trees for energy conservation;			●		
42. Display on the history of the PFRA Nursery and trees production at the nursery;			●		
43. Construction of a simple interpretive building or modification of the existing kitchen as a focal point, a starting point, a warm shelter and a display enclosure;			●		
44. Installation of suitable signs along highway #1;		●			
45. Promotion of the interpretive grounds to the local civic groups;		●			
46. Need for providing an annual tour guide;		●			
47. The planning of a test site as an example of the research being carried out;			●		
48. The use of the self-guided tour to initiate the new tree nursery employees;			●		

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chapter	1.	Background Information
section	1.4.	User Needs
subject	1.4.2.	Interview
division	1.4.2.2.	Topic Voting Ballot

Following the interview stage, a newsletter* was addressed to the twenty-one persons previously interviewed. Along with the newsletter was joined a topic voting ballot**. The topic voting ballot allowed the persons previously interviewed to express their level of interest by voting on each of the seventy-five redevelopment topics appearing on TABLE IV and V (see 1.4.2.2. Matrix of Topics).

P.F.R.A. OUR FILE NO.: 142.101
 Tree Nursery, P.F.R.A.
 Indian Head, Saskatchewan
 S0G 2K0
 June 25, 1980

Re: NEWSLETTER

Since I was last in touch with you, a lot of research for the redevelopment of the interpretive grounds of the P.F.R.A. Tree Nursery of Indian Head has been accomplished. I have put in this newsletter, some information that might interest you: Visitor Surveys of 1971-1979 and Matrix of Topics.

To compile the topics, I have grouped your suggestions and ideas for the redevelopment of the interpretive grounds according to their similarity. Because each topic is more or less supported by a number of surveyed users, the topics have been classified into five categories:

1. "supported" - topics suggested by more than one user
2. "proposed" - topics suggested by only one user
3. "conflictual" - topics presented with both positive and negative aspects
4. "rejected" - topics that have been assessed unworkable
5. "implemented" - topics that will be incorporated into the master plan

I would now like to request that you carefully through the list of topics and record on the enclosed ballot, your degree of interests. Please note that the numbers adjacent to the topic match the ballot where you record your choice as being "very interesting", "interesting", "not interesting", "not interesting at all" or "indifferent". Please return the ballot to me by July 7th, 1980.

Thank you very much for your assistance.

Sincerely
 R. Fréchette
 Casual Tour Guide &
 Development Grounds Assistant
 RF/BJ
 (4)

TOPIC VOTING BALLOT **

TOPICS	VERY INTERESTING	INTERESTING	NOT INTERESTING	NOT INTERESTING AT ALL	INDIFFERENT	TOPICS	VERY INTERESTING	INTERESTING	NOT INTERESTING	NOT INTERESTING AT ALL	INDIFFERENT	TOPICS	VERY INTERESTING	INTERESTING	NOT INTERESTING	NOT INTERESTING AT ALL	INDIFFERENT
	1.							26.							51.		
2.						27.						52.					
3.						28.						53.					
4.						29.						54.					
5.						30.						55.					
6.						31.						56.					
7.						32.						57.					
8.						33.						58.					
9.						34.						59.					
10.						35.						60.					
11.						36.						61.					
12.						37.						62.					
13.						38.						63.					
14.						39.						64.					
15.						40.						65.					
16.						41.						66.					
17.						42.						67.					
18.						43.						68.					
19.						44.						69.					
20.						45.						70.					
21.						46.						71.					
22.						47.						72.					
23.						48.						73.					
24.						49.						74.					
25.						50.						75.					

By comparing the number of votes given to the same topic under the five different levels of interest, it was possible to determine the specific level of interest of all the people that have been interviewed for each redevelopment topic.

TABLE VI BALLOT RESULTS ON THE REDEVELOPMENT TOPICS CATEGORIZED ACCORDING TO AN INTEREST SCALE.

topics	categories				
	very interesting	interesting	not interesting	not interesting at all	indifferent
1. Carapace collection in honour of Dr. Cras.	5	7	1	1	0
2. Pruning, clearing and removal of poor value plant materials.	2	4	1	0	1
3. Accomplishment of the ground work by the existing crews.	2	1	1	0	4
4. Elaboration of programs as self-guided tours.	3	7	1	0	0
5. Elimination of interference between vehicular circulation and visitors, for example, the staff parking lot should be buffered from the prior picnic and roses section.	5	3	0	2	3
6. Development as a demonstration show place for home planting and landscaping.	3	7	1	0	0
7. Utilization of the interpretive grounds as a study area for students of forestry, botany, landscape, horticulture and gardening.	7	3	1	0	2
8. Site utilization as a rest area with benches, observation points, for example, on reservoir #1.	5	7	0	0	1
9. Evaluation and identification of insect and rodent damages per species of trees planted in blocks.	3	3	3	0	4

P.F.R.A. NURSERY
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chapter	1.	Background Information
section	1.4.	User Needs
subject	1.4.2.	Interview
division	1.4.2.2.	Topic Voting Ballot

TABLE VI BALLOT RESULTS ON THE REDEVELOPMENT TOPICS CATEGORIZED ACCORDING TO AN INTEREST SCALE.

topics	very interesting	interesting	not interesting	not interesting at all	indifferent
11. Installation of ground structures such as fountain, gazebo, bridges, benches.	5	6	0	2	0
12. Planting of poisonous plant identification plot.	4	3	1	2	0
13. Planting of core flower beds with pictures to show outstanding seasonal characteristic of some species.	3	5	2	1	2
14. Improvement of birds nesting area, Canada geese acquisitions.	4	4	1	2	1
15. Increase of the plant collections: best flowering trees and shrubs, best fruit trees.	6	0	0	0	1
16. Introduction of native materials.	7	5	0	0	1
17. Feederling pathways leading the visitors from one section to the other, with occasional signs for self-guided tours a colour code.	8	3	0	0	1
18. Introduction of core hills, marshes area.	3	5	2	1	2
19. Introduction of fall colour areas.	3	8	0	0	2
20. Introduction of a winter area for bark colours, weeping trees and hoar frost.	3	0	1	0	3
21. Integration of cross-country trails to the visiting pathways.	6	4	0	2	1
22. Improvement of the labelling system by appropriate label location, their attractiveness with common & scientific names and indication of their adaptability, uses, growth habit, problems & restrictions.	7	6	0	0	0
23. Location of interpretation boards.	3	6	0	0	2
24. Development of a brochure relating to the plant species of the arboretum and containing instructions for a self-guided tour.	10	2	0	0	1
25. Utilization of the large expanse of grass which is seldom used and is at a waste when grass is dry.	5	2	2	0	4
26. Expansion of picnic area in the Morden Co-op test planting.	2	0	5	0	6
27. Expansion of picnic area, for example, north of the main access road: adding benches and tables.	3	3	4	1	2
28. Expansion of arboretum in area east of pump-house used as a production field bed.	2	1	4	3	3
29. Incorporation of the production plots to the summer self-guided tours.	3	9	0	0	1
30. Demonstrator in the interpretation grounds of single specimens of the tree species grown on the nursery.	4	8	0	0	1
31. Demonstrator of shelterbelts grown of different plant species and treated with herbicides, general shelterbelt maintenance.	5	4	2	0	2
32. Wood identification plots.	4	5	2	1	1
33. Solid log children's playground construction.	3	5	1	2	2
34. Paving of the picnic area road.	3	1	2	2	3
35. Improvement of main entrance road.	4	5	2	2	2
36. Construction of a rock garden.	4	1	2	3	0
37. Lighting of the interpretive grounds.	2	2	6	2	4
38. New demonstration hedges with indications relative to the spacing, branching density, height of growth and maintenance.	7	3	1	0	2
39. Retention of the public grounds in the existing conditions.	0	0	1	7	5
40. Need for a full time employee as supervisor, gardener, information officer.	3	4	2	2	2
41. Development of a nature trail, used during the winter for cross-country skiing.	6	4	1	0	2
42. Display on the history of the PFRA Nursery and trees production at the nursery.	5	4	1	1	2
43. Construction of a simple interpretive building or modification of the existing kitchen as a focal point, a starting point, a user shelter and a display enclosure.	0	6	0	0	1
44. Installation of suitable signs along highway #1.	5	7	0	0	1
45. Promotion of the interpretive grounds to the local civic groups.	7	2	1	0	3
46. Need for providing an annual tour guide.	3	0	1	0	3
47. The planning of a test site as an example of the research being carried out.	6	5	1	0	1
48. The use of the self-guided tour to initiate the new tree nursery employees.	2	6	2	0	3
49. Development of a shelter suitable for use during the fall, winter and spring days as a meeting place.	2	4	3	1	2
50. Participate to the development of a bird feeding area.	4	6	0	1	2
51. Participate to the development of a nature trail.	0	3	2	0	2
52. Development of observation points on flora and fauna.	3	7	0	0	3
53. Development of a display area for the use of civic groups.	3	5	1	1	3
54. Participation to a planting day.	2	1	3	2	5
55. Development of nature reserve land, improvement of wildlife habitat.	2	0	0	1	2
56. Increase of number and variety of flower beds.	1	5	2	1	4
57. Paving of the gravel road located between #1 highway and the nursery entrance.	11	0	1	1	1
58. Development of fruit and vegetable garden.	3	2	3	3	2
59. Interpretation of trees: their soil, light, moisture requirements, their growth habit, their flowering time, their fruit colours, their role in the fauna and flora.	6	3	1	1	3
60. Establishment of a hobby farm.	0	0	0	6	4
61. The use of a research and observation room.	0	0	3	4	1
62. Development of outdoor cooking facilities.	0	0	1	2	2
63. Planning of a cross-country ski trail.	0	0	2	1	3
64. Development of facilities for band concerts.	0	0	2	2	2
65. No need for duplicating the facilities offered at the Experimental Farm.	0	0	1	2	2
66. Layout of a baseball field.	0	0	0	4	2
67. Layout of horse shoes game.	0	0	0	3	2
68. Layout of a lawn croquet.	0	0	1	2	3
69. Layout of a horse back riding trail.	0	0	2	3	3
70. Compilation of an information kit for guided tours.	7	3	0	0	1
71. Summary of the guided tours.	3	3	0	0	3
72. Compilation of a tree index.	6	5	0	0	2
73. Establishment of a spring tour for teachers interested in PFRA tours.	3	5	2	0	3
74. Diversification of the topics for the tours: shape of trees, leaves, branches, shadows, tree ages, maintenance techniques such as pruning, planting, seed collecting etc.	4	7	0	0	2
75. Development of themes for the herbaceous plants: poisonous, edible, medicinal.	3	4	1	2	3

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chapter 1.	Background Information
section 1.4.	User Needs
subject 1.4.2.	Interview
division 1.4.2.2.	Topic Voting Ballot

The ballot results also permitted to summarize the list of the seventy-five topics down to thirty-nine topics***. This transformation was possible by regrouping the topics that were covering a similar subject and that were presenting, according to the ballot results, the same predominant category of interest.

TABLE XI MATRIX OF DEVELOPMENT TOPICS OF THE P.F.R.A. TREE NURSERY PUBLIC GROUNDS.		CATEGORIES
TOPICS		
1.	Retention of the public grounds in the existing state	
2.	Design of facilities unlike the ones of the Exp. Farm	
3.	Promotion of the interpretive grounds to the local civic groups	
4.	Participation of local people to planting days at the Nursery	
5.	Layout of multi-purpose rooms for year round use by civic groups	
6.	Spring tour for teachers interested in PFRA guided tours	
7.	Utilization of the interpretive grounds as a study area for students of forestry, botany, landscape, horticulture and gardening	
8.	Samples of insect and rodent damage per species of trees	
9.	Improvement of the labelling system	
10.	Expansion of arboretum	
11.	Demonstration area for the single tree species grown on the nursery	
12.	Demonstration of shelterbelts and their maintenance	
13.	Interpretation area on hedges	
14.	Need for a full time employee for the interpretive grounds	
15.	Display on energy conservation by the use of trees	
16.	Display on the history of the PFRA Nursery	
17.	Improvement of nature reserve land for wildlife habitat	
18.	Interpretation on trees: their soil, light, moisture requirements, growth habit, flowering time, fruit colours, role in biosphere	
19.	Expansion of the picnic area	
20.	Construction of children's solid log playground	
21.	Establishment of a hobby farm	
22.	Development of outdoor cooking facilities	
23.	Planning a cross-country ski trail	
24.	Development of facilities for outdoor shows	
25.	Layout for outdoor games (baseball, croquet, horse shoes)	
26.	Layout of a horse back riding trail	
27.	Planting of a caragana collection in honour of Dr. Cram	
28.	Development of home planting and landscaping area	
29.	Introduction of seasonal areas (fall, winter, spring)	
30.	Development of themes for the herbaceous plant beds: poisonous, edible, medicinal, prairie tested, native, outstanding flowers, fruits and vegetables	
31.	Elaboration of user programs for self-guided tours	
32.	Development of rest areas with benches, observation points, canoe launching area	
33.	Design of a brochure with a plant index, maps and indications for self guided tour	
34.	Need to hire each year, a casual employee as a tour guide	
35.	Conflict elimination between vehicular circulation and visitors	
36.	Suitable sign location along HWY.1 to announce the PFRA Tree Nursery	
37.	Pavement of access roads	
38.	Site furniture placement such as fountain, gazebo, bridges, rock garden	
39.	Introduction of topographic changes	

P.F.R.A. TREE NURSERY
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chapter	1. Background Information
section	1.4. User Needs
subject	1.4.3. Visitor Questionnaire
division	

QUESTIONNAIRE ?

Dear friends of the P.F.R.A. Tree Nursery:
 We are in the process of redeveloping the interpretive grounds of our Tree Nursery for you. You can help us in this task by answering the following questions. Thank you very much.

Richard Fréchette, Tour Guide & Development Grounds Assistant.

1. Sex: M F 2. Age:
 3. Status: single married 3. Occupation:

5. How long have you been travelling to get here:
 less than one hour
 between 1 & 2 hours
 between 2 & 3 hours
 between 3 & 4 hours
 more than 4 hours

Give the location of your departure point:

6. How many times per year do you visit the grounds of the PFRA Tree Nursery?
 2 3 more

7. Did you get to know the existence of the P.F.R.A. Tree Nursery tours by:
 publicity
 friends
 family
 others specify

8. For which of the following reason(s) do you visit the grounds of the PFRA Tree Nursery:
 .for pleasure
 .for picnics
 .for general interest in plants
 .to look for some particular plants
 .for scientific purpose
 .because of the guided tour
 .to get information on shelterbelts
 .others

specify:

9. Did you enjoy your visit to the grounds of the PFRA Tree Nursery? yes no
 Specify the reasons:

10. Put an "X" in the appropriate case to express your level of interest for each of the following items:

	Espe- cially Inter- esting	Very Inter- esting	Inter- esting	Not Inter- esting	Not Inter- esting At All	Dis- like See
.picnic grounds						
.decid evergreens						
.demonstration hedges						
.production fields						
.nursery equipment						
.formal flower beds						
.reebloom crabs & lilacs						
.peonies & roses						
.arboretum						
.water reservoirs						
.shelterbelts						
.planting fields						
.specify others						

Among the first stages designated to identify the categories of user of the existing interpretation grounds of the Tree Nursery, I put together a questionnaire for the visitors.

The questionnaire was composed of closed questions to identify the visitor and his level of interest, and of open questions to get his ideas, opinions and suggestions.

In the questionnaire, I have formed precise and pre-establishing questions that will control the answers of the interviewed and to limit the answering and the compilation stages to a short period of time.*

* References no. 35

The questionnaire has been given to one hundred and twenty-five visitors to the P.F.R.A. Tree Nursery. All these visitors came to the nursery on organized tours for which, most of the time, I have been assigned as their tour guide. Of one hundred and twenty-five questionnaires, one hundred of them have been answered and received to be compiled.

In the compilation, a number of questions have been occasionally left unanswered. To present this number of unanswered questions, the category "P" appears in the compilation data.

The results of each question have been calculated in percentage. Except the questions number 7, 8 and 10, only one answer was possible per question, so the percentage is equal to the number of answers given for each category. For questions number 7 and 8, the percentages were calculated from the total number of answers. For question number 10, the percentages were calculated from the total number of answers for each of the items.

1. Sex:	male 37%	2. Age:	Years	%	3. Status:	single 61%
	female 62%		5-10	0		married 37%
			11-15	33	4. Occupation:	Student 43%
			16-20	10		Housewife 15%
			21-25	17		Operator 1%
			26-35	10		Technician 2%
			36-45	12		Clerk 9
			46-55	1		Professional 12%
			56-65	3		Self Employed 3%
			66+	7		Retired 2%
			R	7		

5. How long have you been travelling to get here:

less than one hour	33%
between 1 & 2 hours	37%
between 2 & 3 hours	3%
between 3 & 4 hours	0%
more than 4 hours	27%

Give the location of your departure point:

Vibank, Sask.	Balcarres, Sask.	Camp Monahan, Sask.
Strathclair, Man.	Battleford, Sask.	Lebret, Sask.
Fort Qu'Appelle, Sask.	Katepwa, Sask.	Lisieux, Sask.
Montmartre, Sask.	Regina, Sask.	

6. How many times per year do you visit the grounds of the PFRA Tree Nursery?

1	2	3	more	R
93%	1%	0%	3%	3%

7. Did you get to know the existence of the P.F.R.A. Tree Nursery tours by:

publicity:	24.4%
friends:	21.0%
family:	10.1%
others:	
.R:	1.7%
work:	13.4%
school:	27.7%
Hort. Soc.:	1.7%

8. For which of the following reason(s) do you visit the grounds of the PFRA Tree Nursery:

for pleasure:	17.6%
for picnics:	8.1%
for general interest in plants:	21.0%
to look for some particular plants:	2.4%
for scientific purpose:	9.6%
because of the guided tour	25.2%
to get information on shelterbelts:	8.6%
others:	
learning experience:	3.8%
assigned to:	2.4%
.R:	0.4%
wildlife habitat:	0.9%

9. Did you enjoy your visit to the grounds of the PFRA Tree Nursery?

yes:	no:	P:
94%	2%	4%

Specify Reason: informative

.good commentary	.got trees from the PFRA
.interested in getting trees	.contact with nature
.good tour guide	.inspiration for home planting
.interested in plants	.well-kept
.knowledgeable tour guide	.saw how the trees are propagated
.beautiful trees	.the history of the Nursery
.relaxing atmosphere	

P.F.R.A. TREE NURSERY
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chapter 1.	Background Information
section 1.4.	User Needs
subject 1.4.3.	Visitor Questionnaire
division 1.4.3.1.	Interpretation of Results

10. Put an "X" in the appropriate case to express your level of interest for each of the following items:

	Especially Interesting	Very Interesting	Inter-esting	Not Inter-esting	Not Inter-esting At All	Did Not See
picnic grounds	18.0%	31.0	36.0	2.0	0.0	13.0
dwarf evergreens	10.3	33.3	32.0	2.6	0.0	21.8
demonstration hedges	19.4	36.4	30.3	2.6	0.0	1.3
production fields	20.5	31.7	37.0	1.4	0.0	0.0
nursery equipment	7.1	20.0	32.9	12.9	0.0	7.1
formal flower beds	17.6	35.3	21.6	10.8	0.0	21.6
rosybloom crebs	13.4	17.9	28.4	6.0	0.0	34.3
peonies & roses	7.4	22.4	23.9	6.0	0.0	30.3
arboretum	10.8	26.2	33.8	1.5	1.5	26.2
water reservoirs	14.9	14.9	33.3	17.9	1.5	7.5
shelterbelts	22.7	30.0	34.7	0.0	1.3	1.3
planting fields	28.5	31.2	37.7	2.6	0.0	0.0
specify others:						
weed control plots	(1 person)					
reservoir road	(1 ")					
ash beds	(1 ")					
older trees	(1 ")					
scenery	(1 ")					
coniferous beds	(3 persons)					

* Identified through personal observations and answers to question No. 2

With the results of the first three answers we can conclude that the tours of the Tree Nursery attract mostly single women. These single women are a cross section of all the age groups, from 16 to 66+ years' old.

The dominant age group visiting the nursery is children between 11 and 15 years old. These children belong mostly to grades seven and eight. The next dominant age group is 5-10 year olds followed by people between 21 and 25 years old; most of these people in the latter category have occupations such as operators - one percent, technicians - twenty percent, clerical - twenty-two percent, or professional - twelve percent.

Without doubt the main users of the public grounds are students, clerical employees, housewives and professionals. The first position of the student group as user is also supported by the Visitor Survey of 1971-1979; the percentage of students of any grade totalled forty-three percent over the total of the visitor group categories.

The answers to question No. 5 shows that the visitors come from a wide variety of distances from the nursery. By the sub-question of No. 5 which asks to specify the location of the departure point, eleven locations were listed; seven of these locations can be reach within one hour's drive from Indian Head.

The answers to question No. 6 show that only three percent of the visitors come to the nursery more than one time per year; they are elderly people living with a one-hour drive from Indian Head.*

Since we are dealing with organized groups composed mainly of students, it is not a surprise to see in the answers of question No. 7 that 27.7 percent of the visitors heard about the nursery by the school. 24.4 percent of the visitors heard of the nursery through general publicity: this publicity had probably occurred by the activities of the Distribution and Development Section (public relations) of the P.F.R.A. Tree Nursery of Indian Head with their slide shows for farmers and agricultural personnel, announcements on radio, news releases and television. Twenty-one percent of the visitors have heard of the nursery from friends.

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chapter 1.	Background Information
section 1.4.	User Needs
subject 1.4.3.	Visitor Questionnaire
division 1.4.3.1.	Interpretation of the Results

The answers to question No. 8 indicate that 25.2 percent of the visitors come to the nursery because there is a guided tour available. Twenty-one percent of the visitors have a general interest in plants. It is followed by 17.6 percent of the visitors looking for the pleasure of site-seeing. Ninety-four percent of the visitors enjoyed their tour, mainly because of the narrative presented by the tour guides.

In the results of question No. 10 there is a larger interest in visiting the production fields and shelterbelts rather than the formal flower beds, the rosybloom crab, the lilac, the peonies or the rose beds: The flowering season of the crabs and lilacs is over when the tour season starts. Most of the groups do not take time to walk in the public grounds after their guided tour. Many visitors see only the cairn, the picnic shelter and the parking lot because they do not get out of their bus, after having received a guided tour of the production fields using their bus as touring transportation.

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Arboretum Head



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chapter	1. Background Information
section	1.4. User Needs
subject	1.4.4. 1971-1979 Visitor Survey
division	

TABLE I VISITOR ATTENDANCE, 1971 - 1979

YEAR	org. grp. totals	org. grp. attendance	org. grp. picnics	org. grp. guided tours	org. grp. picnics
1971	20	866	25 %	50 %	25 %
1972	18	1,073	22	50	28
1973	14	600	35	35	30
1974	16	761	37.5	37.5	25
1975	19	1,146	42.1	42.1	15.8
1976	27	713	3.7	85.1	11.2
1977	37	2,553	8	70	22
1978	31	702	9.6	77.4	13
1979	38	832	10.5	76.4	13.1
TOTALS	220	9,248	193.4	523.5	183.1
AVERAGE	24.4	1,027.5	21.5%	58.2%	20.3%

Since the establishment of the visitor parking lots and the picnic shelter between 1969 and 1971, the nursery administration has been recording the use of the public grounds. The reason for compiling this information is to document the users survey. The records contain the dates, the type of organized groups, their name, the attendance, their origin and the purpose of their visit. Along with these records are car counter surveys also done since 1971. The gathered data was easily compiled and the results provide important factors in developing design guidelines.

Since 1971, the total attendance of visitors to the public grounds in organized groups, either for picnicking or touring, has slightly decreased. Although the popularity of the guided tours for organized groups is increasing, the number of organized groups using the public grounds for picnicking is decreasing.

The organized groups attendance represent an average of 24.4 tours per year or an equivalent of 1,025 persons.

Besides the organized groups, a number of informal visitors come to the public grounds seven days a week. According to the car counters survey, started in 1971, we can say that the public grounds is weekly frequented by an average of 31 two-axle vehicles. Therefore, we can conclude that informal visits are the most popular fashion of visiting the public grounds.

The same data also permitted the identification of the three major types of organized groups who have been coming to the nursery between 1971 and 1979. The three leading visitor groups were professional groups, older civic groups and elementary school groups.

The interpretive grounds are opened until dusk each day, weekends included. Numbers of visitors come to the picnic grounds during the weekends and are not surveyed. Since 1973, car counters have been installed to monitor the number of cars getting into the picnic area at any time, although the total number of cars monitored has not been adjusted to allow for the nursery employees passing in this area. According to the seven years of monitoring we could conclude that an average of 4,041.1 carloads per year are registered for the interpretive grounds (see Table II). After subtracting 10% for the passage of employee vehicles, the annual average number of organized groups (arrival and departure from/to picnic grounds, arrival and departure for guided tours), we have an average of 836.0 two axle vehicles per year getting into the picnic grounds parking (or 30.9 two axle vehicles per week).

According to these numbers, informal visits to the interpretive grounds are still the most popular type of visit. These numbers are subject to any sort of revision because of environmental factors such as children jumping on the car counter pipe, the passage of crews higher than 10%, the passage of three axle vehicles etc.

TABLE II CARLOADS OF VISITORS

YEAR	NUMBER OF CARLOADS
1973	9,640
1974	4,950
1975	5,100
1976	2,363
1977	1,281
1978	2,577
1979	2,377
TOTAL	28,288*
AVERAGE	4,041.1

* 2 carloads=one 2 axle vehicle

TABLE III VISITOR GROUP CATEGORIES 1971 - 1979

VISITOR GROUP CATEGORIES	%
Pre-School Children	.5
Elementary School	18.6
Junior High School	8.2
High School	6.4
University	2.3
Youth Civic Group	5.
Family	4.
Professional	28.6
Older Civic Group	21.4
Senior Citizen	5.

The professional groups have only been registered since 1975 but are now the leading group.

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chapter	1. Background Information
section	1.4. User Needs
subject	1.4.5. Conclusion
division	

The questionnaire and the 1971-79 visitor surveys revealed an increase of popularity of the organized groups for guided tours of the nursery. The organized groups are composed mainly of three categories: students, especially of elementary school level, professionals, and civic groups composed mostly of housewives. These organized groups rarely come from beyond one hour's drive and are more interested in receiving a guided tour than strolling around the public grounds or having a picnic.

Informal visitors, on the other hand, come to the public grounds for a stroll, a picnic, or to admire the scenery and to take pictures. The total number of visitors each year is divided equally between organized groups and informal visitors. I observed that a greater part of the informal visitors come from the Qu'Appelle valley area, are transients from the Trans-Canada Highway, or residents of Regina.

The opinion of the nursery administration is strong: the Cram collection must be developed and maintained, and the physical development of the public grounds cannot interfere with the nursery operations and must be contained inside of the boundaries of the existing public grounds.

According to the general meeting response to the conceptual plan first draft, the representatives of local civic groups have shown that the community of Indian Head is hesitating to participate; they are waiting for evident gestures from the nursery authorities in regard to the start of the development stage before offering their services.

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chapter 1. Background Information

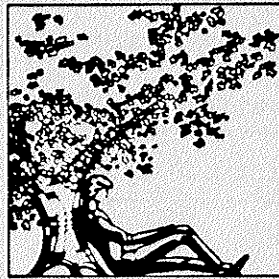
section 1.5. Existing Conditions

subject 1.5.1. Introduction

division

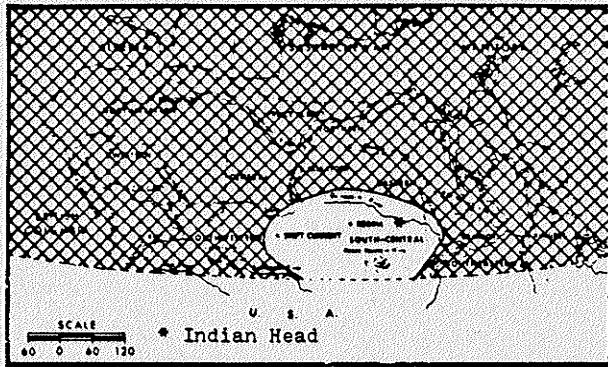
This section stresses the inventory of the public ground's physical features, their respective qualities and their weaknesses. The inventory covers such components as site drainage, layout, wildlife, identification system, accessibility, and general facilities. A comprehension of the site's physical features is necessary in developing a unified site plan.

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chapter 1. Background Information
 section 1.5. Existing Conditions
 subject 1.5.2. Physical Factors (Soil/Climate/
 Vegetation)
 division

ZONES OF VEGETATION **



Indian Head is situated in the prairie grasslands region. Even if it is not a forest region, the grasslands supports such woody species as the trembling aspen (*Populus tremuloides* Michx.) which forms groves around wet depressions. Two types of poplars,* willows, white spruce (*Picea glauca* (Moench) Voss) are associated along rivers. Occasionally one can find stands of white birch (*Betula papyrifera* Marsh.), Manitoba maple (*Acer negundo* L.), bur oak (*Quercus macrocarpa* Michx.), and ash (*Fraxinus campestris*, Britton). The Tree Nursery had, up to the summer of 1981, one cluster of indigenous vegetation along the Sunbeam Creek entrance. At the end of summer 1981, work had begun removing the vegetation in order to prepare the site for a third retention lake. Gradually indigenous plants are colonizing the shoreline of the retention lake #1. Water level fluctuations have created over the years a marsh condition and the shallow part of the retention lakes has been colonized by sedges, Canada thistles, willows, cattails and arrow-leaved arrowheads (*Sagittaria cuneata*, Sheldon). Generally the nursery has been planted with cultured plants which occasionally have reproduced themselves.

	MEAN TEMPERATURE CELSIUS				MEAN PRECIPITATION MM.				DOMINATING WIND			
	INDIAN HEAD	REGINA	WINNIPEG	CALGARY	INDIAN HEAD	REGINA	WINNIPEG	CALGARY	INDIAN HEAD	REGINA	WINNIPEG	CALGARY
JAN	-17.0	-17.3	-18.3	-10.9	19.3	21.1	23.6	17.0	NW	SE	SW	W
FEB	-14.1	-14.3	-15.7	-7.4	11.0	14.2	19.1	19.8	NW	SE	SW	W
MAR	-7.9	-8.3	-8.1	-4.3	19.3	21.1	26.2	20.3	NW	SE	SW	W
APR	3.1	3.1	3.1	3.1	21.8	26.2	32.1	29.8	NW	SE	SW	W
MAY	10.4	10.6	10.8	3.1	24.2	28.2	37.2	39.8	NW	SE	SW	W
JUN	15.3	15.3	16.5	13.2	28.7	24.4	80.3	91.2	SE	SE	SE	W
JUL	18.9	18.9	19.7	16.5	51.8	59.2	80.3	68.3	SE	SE	SE	W
AUG	17.9	17.9	18.7	15.2	58.4	56.9	23.7	55.9	SE	SE	SE	W
SEP	11.7	11.6	12.8	10.7	34.8	35.4	52.6	35.3	SE	SE	SE	W
OCT	5.6	5.1	6.6	5.7	22.9	17.3	34.8	18.8	SE	SE	SE	W
NOV	-5.0	-5.2	-4.4	-2.6	19.6	21.4	27.2	16.0	NW	SE	SW	W
DEC	-12.9	-12.9	-13.7	-7.8	15.7	17.5	22.9	14.7	SW	SE	SW	W
AV.	2.2	2.1	2.3	3.4								
DT.					109.5	103.6	115.2	117.1				
DAYS WITH FROST					198	207	195	201				

The soil of the nursery is of a clay-loam type.*** Because of its organic content, the soil of the public grounds is the most fertile area of the nursery. The nursery authorities are well aware of this dilemma. During the sixties the entire top soil from the production fields, with the exception of the three plots located in the public grounds area, were removed and mixed with peat moss and peat gravel. This costly operation was seen as necessary to reduce the high salinity level brought on by capillary action from the lower water table during extended dry periods.

Canadian Plant Hardiness Zone Map



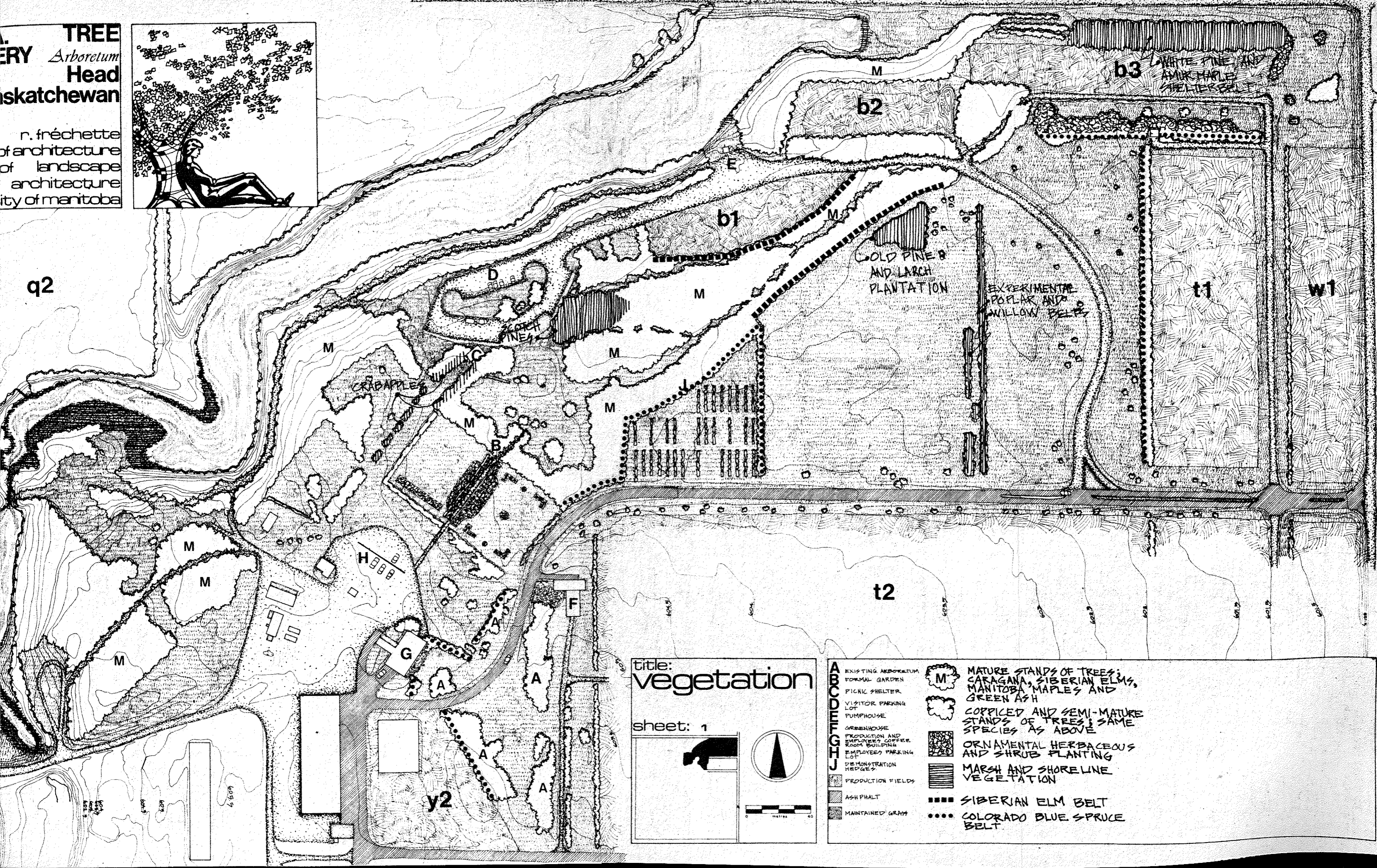
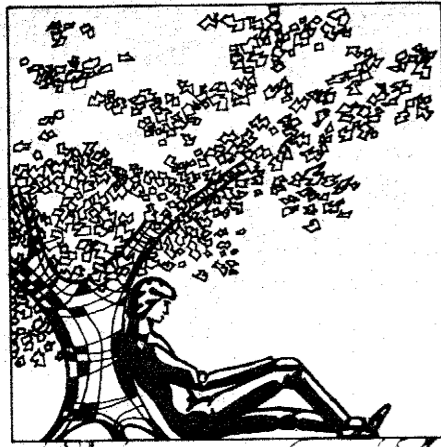
*Indian Head

Indian Head is located on the 50.5° North latitude in the Saskatchewan Plains. The location puts Indian Head in zone 2b of the Canadian vegetation hardiness map.

- * Balsam Poplar - *Populus balsamifera* L.; Aspen Poplar - *Populus tremuloides* Michx.
- ** Archibald C. Budd, Keith F. Best, *Wild Plants of the Canadian Prairies*, published by the Research Branch, Canada Department of Agriculture, Ottawa, 1969, p. 2.
- *** P.F.R.A. Indian Head Tree Nursery Laboratory soil analysis.
- **** References No. 28, 29, 30.
- ***** Reference 38.

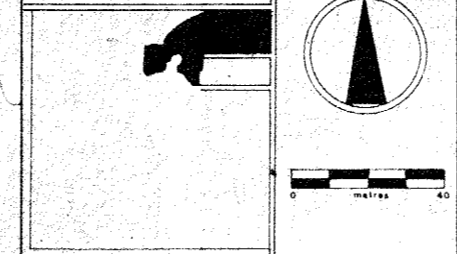
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Vegetation

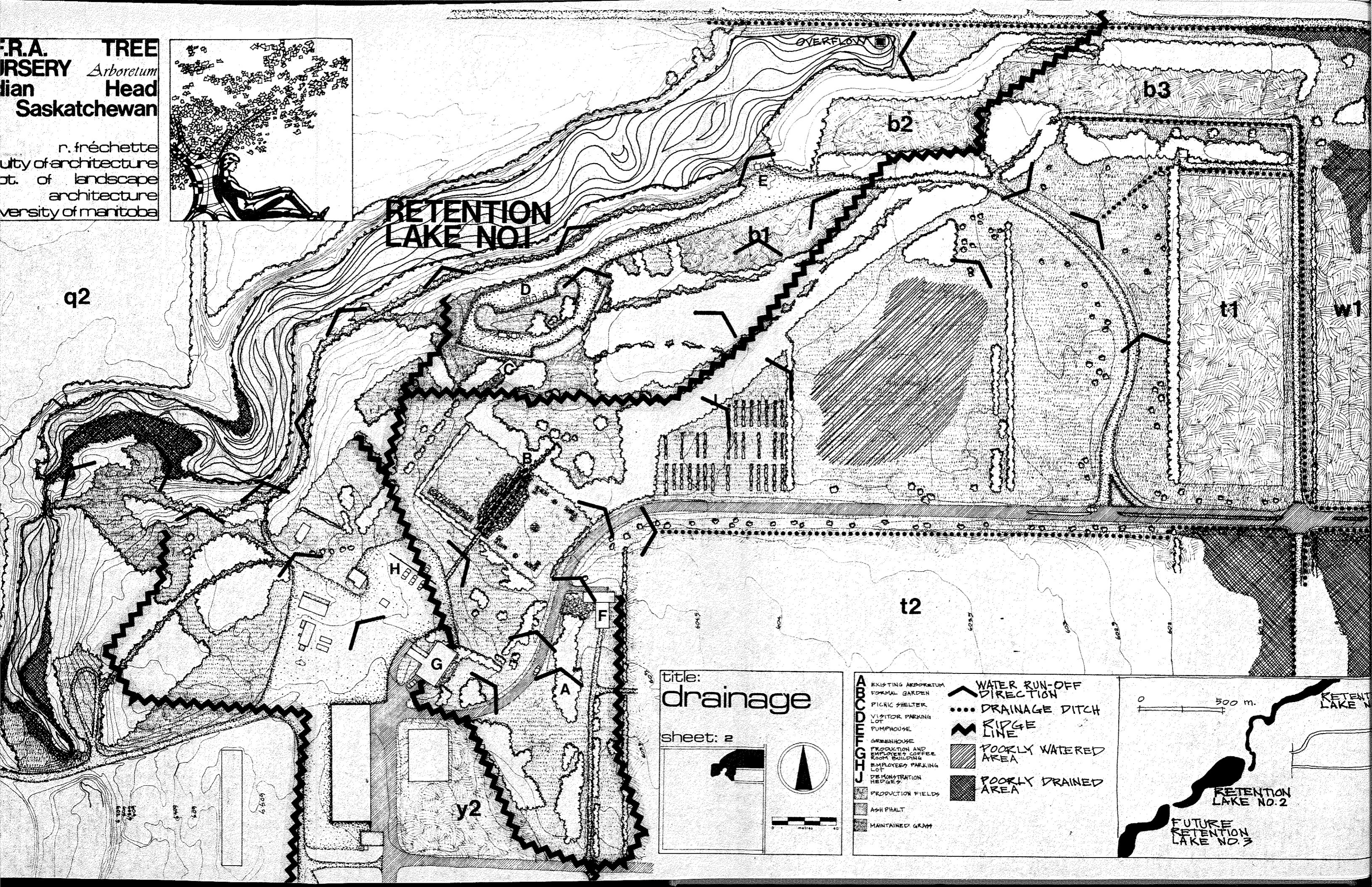
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A	EXISTING ARBORETUM	M	MATURE STANDS OF TREES; CARAGANA, SIBERIAN ELMS, MANITOBA MAPLES AND GREEN ASH
B	FORMAL GARDEN	☁	COPICED AND SEMI-MATURE STANDS OF TREES; SAME SPECIES AS ABOVE
C	PICKIC SHELTER	▨	ORNAMENTAL HERBACEOUS AND SHRUB PLANTING
D	VISITOR PARKING LOT	▨	MARSH AND SHORELINE VEGETATION
E	PUMPHOUSE	▬▬▬	SIBERIAN ELM BELT
F	GREENHOUSE	⋯⋯⋯	COLORADO BLUE SPRUCE BELT
G	PRODUCTION AND EMPLOYEES COFFEE ROOM BUILDING		
H	EMPLOYEES PARKING LOT		
I	DEMONSTRATION HEDGES		
J	PRODUCTION FIELDS		
	ASH PAVLT		
	MAINTAINED GRASS		

F.R.A. TREE
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Head
Saskatchewan

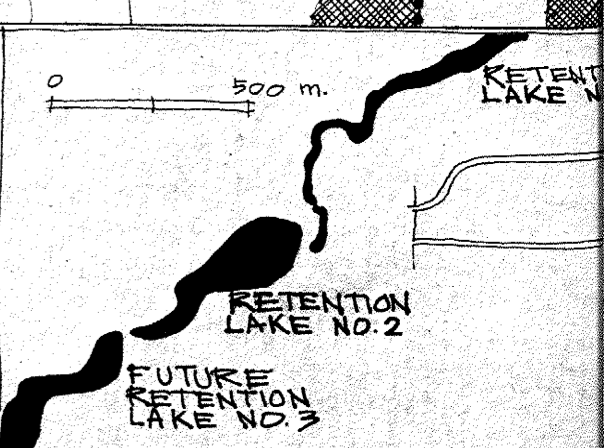
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A EXISTING ARBORETUM	WATER RUN-OFF DIRECTION
B FORMAL GARDEN	DRAINAGE DITCH
C PICNIC SHELTER	RIDGE LINE
D VISITOR PARKING LOT	POORLY WATERED AREA
E PUMPHOUSE	POORLY DRAINED AREA
F GREENHOUSE	G PRODUCTION AND EMPLOYEES COFFEE ROOM BUILDING
G EMPLOYEES PARKING LOT	H DEMONSTRATION HEDGES
H PRODUCTION FIELDS	I ASHPHALT
I ASHPHALT	J MAINTAINED GRASS



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chapter	1. Background Information
section	1.5. Existing Conditions
subject	1.5.3. Drainage and Water Quality
division	

The topographic form of the nursery is typical of the prairies' landscape: mostly flat with a gentle slope towards Sunbeam creek, which crosses the site. In the production fields, the land has been cultivated to a point where there's no longer the possibility of spring pot holes. To avoid salt build-up in the lake water, storm runoff from the production fields are carried by drainage ditches to the outside perimeter of the nursery site. In the public grounds, excess spring runoff drains to the creek. A retention lake system on the creek supplies the watering needs of the production fields and the public grounds.

There is no set schedule for the watering of the interpretative grounds. It can occur at any time. As a result visitors are often prevented from visiting the grounds during the week; either the grounds are too wet, or the blue algae water pumped from the retention lakes through the sprinklers puts an unpleasant smell into the air. Lake #1, located by the public grounds, has been excavated to a depth of 12 feet seven inches and has a capacity of 38.8 acre-feet of water. Lake #2, located in the middle of the production fields, has been dammed to provide a depth of 19 feet 11 inches and a capacity of 110 acre-feet of water. Lake #2 flows into Lake #1 by a controlled outflow. Only very heavy spring precipitation brings the water to flow from one to the other. During the entire summer period the water is stagnant. Also, the water is rich in nutrients; first, from the agricultural fertilizers leaching into the creek, and second, from the organic decomposition of dead leaves from the surrounding deciduous plants. These conditions promote a bloom of blue algae. The level of the water is lowered to at least half of the lake depth during the summer months by nursery operations. This results in an unpleasant anaerobic condition in Lake #1.

The Sunbeam Creek was reported to provide in March, 1977, 100 gallons per minute of water to the retention lakes. During the summer, the creek is dry and only occasional precipitations bring water to the lakes. The water quality is suitable to algae bloom and for reducing its growth, copper sulfate is being used on a regular basis. The constituents concentration of the water vary during the summer.

Comparison of irrigation water analysis over several years indicated that the concentrations of the main constituents remained relatively stable.

IRRIGATION WATER ANALYSIS 1961 - 1978

Constituents	1961 (June)	1974 (August)	1978 (July)
pH	8.2	7.5	8.0
EC (mmhos/cm)	0.75	0.95	0.85
Calcium (meq/L)	3.4	3.3	2.2
Magnesium (meq/L)	4.5	6.1	4.9
Sodium (meq/L)	1.1	2.0	1.4
Potassium (meq/L)	ND	0.3	0.2
Bicarbonate (meq/L)	5.3	3.4	ND
Sulphate (meq/L)	3.7	3.2	6.6
Chloride (meq/L)	zero	3.2	0.2
Copper (ppm)	ND	ND	0.05

In general a low sodium hazard is present but the constant salinity level of just under 1.0 mmhos/cm does indicate a possible salinity hazard unless sufficient leaching occurs. For example, 200 mm of irrigation applied over the growing season would deposit 170 kg of salt per transplant plot (183 X 7.3 m.). A slight enrichment of the irrigation water with copper in comparison to other trace elements is probably due to the addition of copper sulphate.

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chapter	1. Background Information
section	1.5. Existing Conditions
subject	1.5.4. Wildlife
division	

The area surrounding the retention lakes are favored by wildlife. Squirrels, weasels, beavers, frogs, muskrats, jack rabbits are commonly seen. On occasion, red fox, coyotes and white tail deer have also been observed along the creek valley by the local farmers.

Beaver, squirrels and rabbits are considered pests by the nursery authorities, since they either build dams on the creek, cut down valuable trees, or feed on the numerous trees and seedlings grown by the nursery. Because the conservation authorities no longer relocate beavers, trapping has become the current nursery practice.

In 1924, the Tree Nursery received its status as a bird sanctuary. Since then they acquired several Canada geese, but have had little success in attracting them back from their migration. The retention lakes have also been visited by tame ducks and mallards. The mammal and bird populations are kept low by a large community of carnivorous magpies.

For the visitor the only veritable pests are the mosquitoes and wood ticks, especially in the grassy wet lands.

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chapter 1. Background Information

section 1.5. Existing Conditions

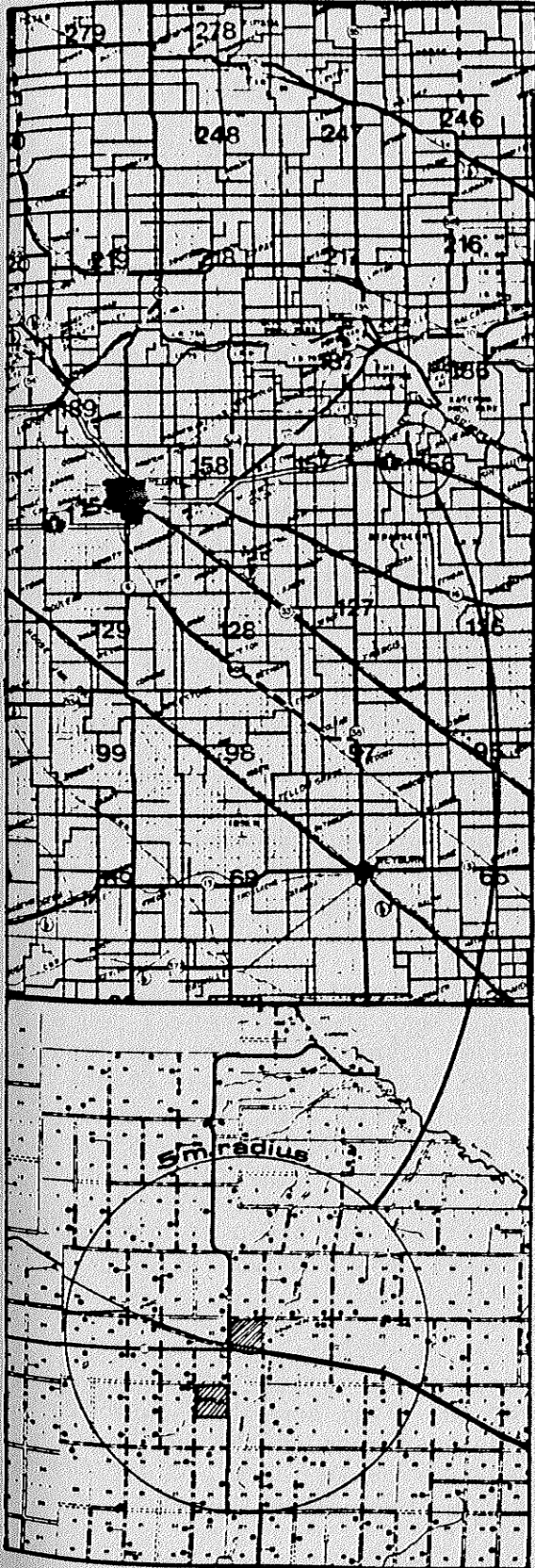
subject 1.5.5. Accessibility

division

The nursery is located 1.6 km. south of the Trans Canada Highway, three km. southwest of the town centre of Indian Head, 30 km. from the Qu'Appelle Valley and 95 km. from Regina.

Despite the close proximity to the nursery, the community of Indian Head is not the major user group of the public grounds. According to the interviews, the people of Indian Head do not like the gravel road that links the nursery to the town. During the dry period, the gravel road is a source of dust and during the rainy days it becomes a thick layer of slippery mud. Further, the nursery being located on the opposite side of the highway from the town of Indian Head, high speed traffic scares pedestrians and bikers from crossing the highway. Despite this danger, it is not unusual to see children riding their bikes through the public grounds and joggers running from the town to the production fields of the nursery.

Situated along the Trans Canada Highway, the P.F.R.A. Tree Nursery is located along one of the major routes used by vacationers travelling across the prairies. Numerous vacationers are heading to the summer resort centre of the Qu'Appelle Valley or points west, and most of the time are not aware of the presence of the Indian Head nursery. The only indication of the nursery is a sign post located right at the exit from the Trans-Canada Highway where the driver can turn.



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chapter	1. Background Information
section	1.5. Existing Conditions
subject	1.5.6. Land Use and Circulation
division	

The contemporary era of public grounds of the nursery started with the 1969-71 layout plan. The design of the layout plan came about to facilitate access to the public grounds, especially the picnic grounds. Obviously the layout plan gives priority to production efficiency: the main entrance leads directly into the service yard causing visitors to try to park their vehicles by the production buildings.

Past the gate, if the visitors follow the main entrance road into the heart of the nursery, here is what they will see: on the south side of the road are some of the conifer production fields (t2)^{***}, a green house (F) used for the production of seedlings in containers, the arboretum (A) where a new administration complex will be built, and on the corner, a heeling-in plot (y2) where an equipment storage building is being built. On the north side of the road are: conifer seedling plots (w1, t1), a poplar and a willow belt, a grassed field referred as the salt field, the demonstration hedge section, the formal garden, the arboretum and, on the corner, the production and employees coffee room building (G).

Past this corner, the visitor is in the heart of the nursery. There he can see the employees parking lot (H), the cold storage and packing building and the general office. West of this centre are retention lake #2 and the production fields.

The visitor service road meets at right angles the main entrance and curves around an experimental poplar planting and an old conifer plantation. Besides leading to the visitor parking lot (D), this road gives also access to three conifer production fields (b1, b2, b3) located in the public grounds zone. The visitor parking lot is half surrounded by a planting of Scotch pines* and Manitoba maples. The parking lot opens up without any zone of transition into the picnic grounds, and for this reason provides only limited intimacy and security.

The picnic grounds are grassed and planted with tree clusters without understory vegetation.** Because this was the location of the first home landscape it contains the biggest tree specimens of the nursery. The building was removed in 1969 to leave a place for a mound of 1. to 1.5 meters high. Near the mound, a

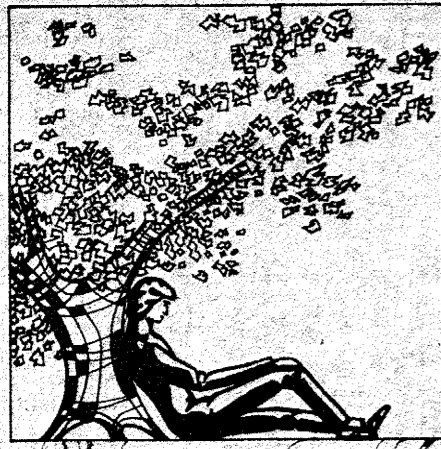
*** see Land Use and Circulation Map at right.

* Pinus sylvestris Linn.

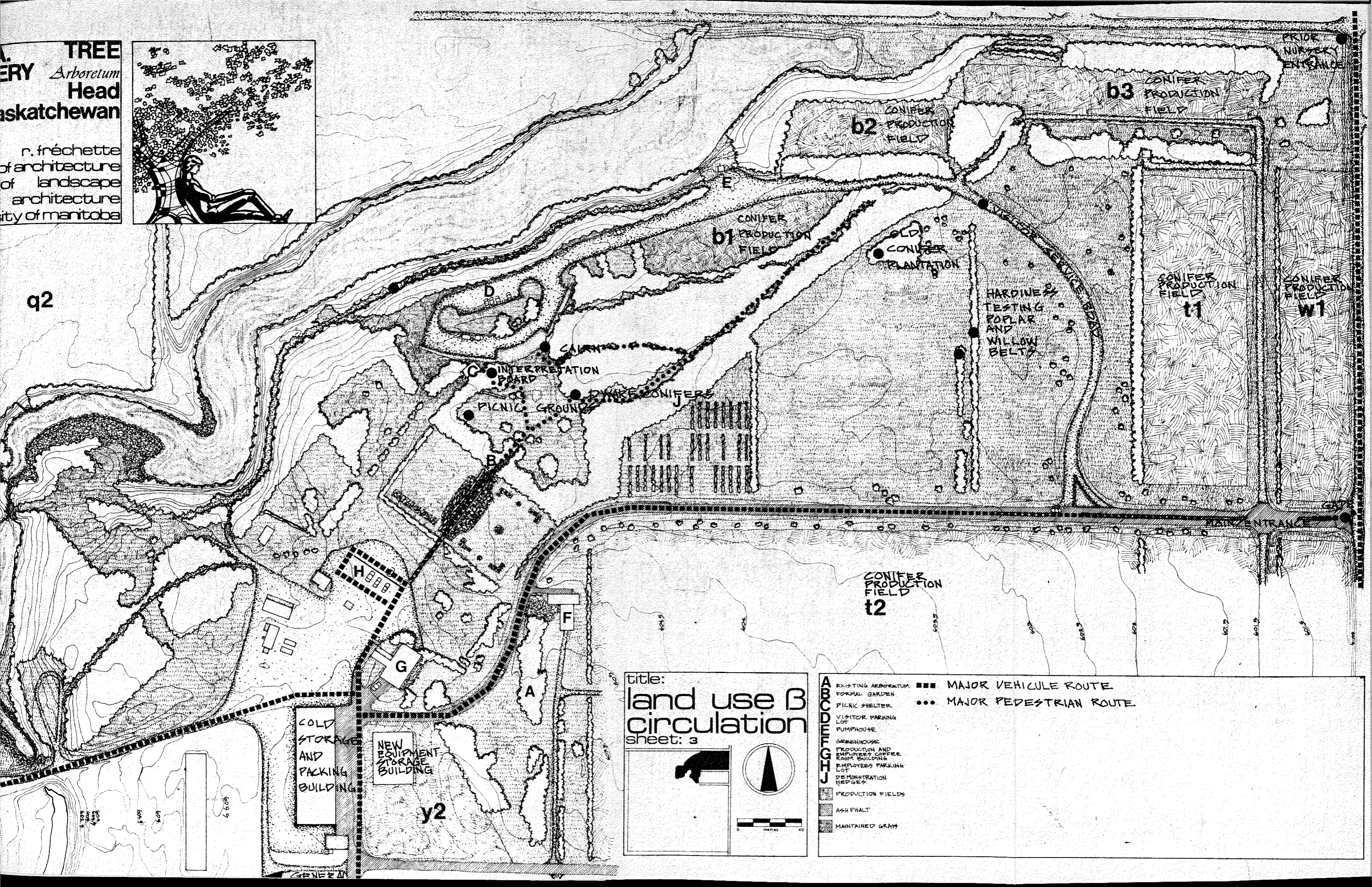
** The pre-emergence herbicide called "Linuron" is usually applied. This herbicide is applied to the soil to control the germination of annual weeds by absorption through their root system. Some contact effect is evident when Linuron is applied to the foliage of young weeds. It persists in the soil and controls weeds for up to four months of the growing season when applied at the recommended rate. Most perennial weeds are resistant to Linuron. Lack of precipitation within five days of application or high trash cover on the soil surface will greatly reduce weed control.

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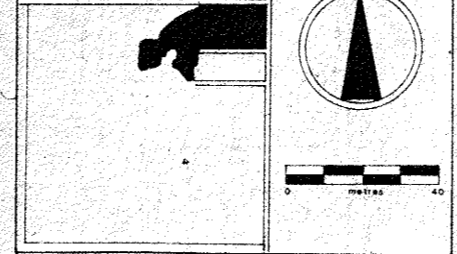
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title:
land use & circulation
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A	EXISTING ARBORETUM	■ ■ ■	MAJOR VEHICLE ROUTE
B	FORMAL GARDEN	● ● ●	MAJOR PEDESTRIAN ROUTE
C	PICNIC SHELTER		
D	VISITOR PARKING LOT		
E	PUMPHOUSE		
F	GREENHOUSE		
G	PRODUCTION AND EMPLOYEES' COFFEE ROOM BUILDINGS		
H	EMPLOYEES' PARKING LOT		
I	DEMONSTRATION HEDGES		
J	PRODUCTION FIELDS		
K	ASHPHALT		
L	MAINTAINED GRASS		

COLD STORAGE AND PACKING BUILDING

NEW EQUIPMENT STORAGE BUILDING

y2

GENERAL

P.F.R.A. TREE
NURSERY Arboretum
Indian Head
Saskatchewan

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chapter	1. Background Information
section	1.5. Existing Conditions
subject	1.5.6. Land Use and Circulation
division	

cairn with a bronze inscription commemorates the 75th anniversary of the Tree Nursery (1977).

The picnic grounds offer the facilities of wash-rooms and a picnic shelter (c) which can accommodate a group of 30 people. The outdoor picnic tables are located in different surroundings and groupings, on levelled concrete slabs. A number of hanging aluminum garbage containers are installed around the picnic grounds. The policy of the nursery about fires and bar-b-ques allows the visitor to use their portable bar-b-que equipment as long as the ashes are put in the containers identified for this purpose.

On the east side of the picnic shelter is an interpretation board where guide maps are available, technical service application forms and a photographic display on the P.F.R.A. Tree Nursery objectives.

Again without transition, the visitor will pass from the picnic tables to the dwarf conifer collection or to one of the several driveways leading to the prior nursery entrance and production fields.

South of the picnic grounds, the visitor will discover the formal flower garden(B). The space of the formal flower garden is rectangular and divided in half by a straight gravel path leading to the staff parking lot. The garden is contained by hedges of Scotch pine, blue spruce and potentillas; only the pine hedges have reached a height to limit the long views out of the garden. The east square of the garden is composed of geometrical beds and grassed for the free circulation; the west square is with the exception of two rectangular flower beds, only a lawn. South-east of the formal flower garden, on the other side of the staff building is the actual arboretum.

The arboretum (A), established in 1942, contains woody plants of 75 genera and over 325 species. The site is sheltered by Colorado blue spruce* on all sides except the north side. It has been used as a heeling-in ground for about 40 years. In some locations the fertile soil has been lost, while in another location there is distinct evidence of high salt content. In the latter location

**Picea pungens* Engelm.

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chapter 1. Background Information

section 1.5. Existing Conditions

subject 1.5.6. Land Use and Circulation

division

* Sorbus spp.

mountain ash*species were intentionally planted as part of a salt tolerance study. The planting plan was designed to permit easy and rapid comparison of species, especially for visitors interested in differences between them and comparative ornamental value. Each species is represented by two or three plants. The dwarf growing types have been located towards the front of the beds.

In 1969, a new layout was proposed for the area occupied by the display plantings, picnic grounds and access roads. The new main entrance road now cuts the arboretum in two. The north portion is a small area opening on the perennial beds bordering the formal flower gardens. The southern portion is an open grassed field surrounded by woody plants. At this time the woody species of the arboretum are overgrown and hiding the plants situated in the middle of the beds.

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chapter 1. Background Information

section 1.5. Existing Conditions

subject 1.5.7. Identification

division

The public grounds are the departure point of the existing guided tours for organized groups. The objective of the guided tour is to overview in 45 minutes, the history of the nursery, goals, production techniques and shelter belt samples in the production fields. The tour guide leads the organized groups on a walking tour across the public grounds and by bus they visit the production fields. The necessity for labels and signs is minimized by the guided tour.

The signs for the self-guided tours are placed throughout the public grounds collections of herbaceous and woody plants, and do not discuss the concept, the philosophies and goals beyond the production of woody plants for shelterbelts. In a self-guided tour, the visitor would first read the interpretation board located by the picnic shelter which presents briefly the goals of the nursery. At the same location he can pick up a guide tour map of the public grounds which locates the major site features. Walking across the picnic grounds, the visitor will discover, often hidden by the vegetation, direction signs and plant labels. The self-guided tours would be a relatively successful touring system if the guide maps were always available, if the visitor would start the tour at the visitor or staff parking lot, and if plant labels were readable and properly located.

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chapter 1. Background Information

section 1.5. Existing Conditions

subject 1.5.8. Other Facilities

division

Besides the picnic facilities, classroom space is also available for use by community groups for general meetings, workshops or other special events. For example, the production employees coffee room is rarely used after 17:00 hours and during the weekends. The size accommodates comfortably groups of 75 to 100 persons, throughout the year. The greenhouses are empty during the fall; during the late winter, workshops have been occasionally given in the laboratories of the investigation building.

During the winter the entire nursery is open to cross-country skiing and snowshoeing, but is restricted for snowmobiles.

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chapter 1. Background Information

section 1.5. Existing Conditions

subject 1.5.9. Conclusion

division

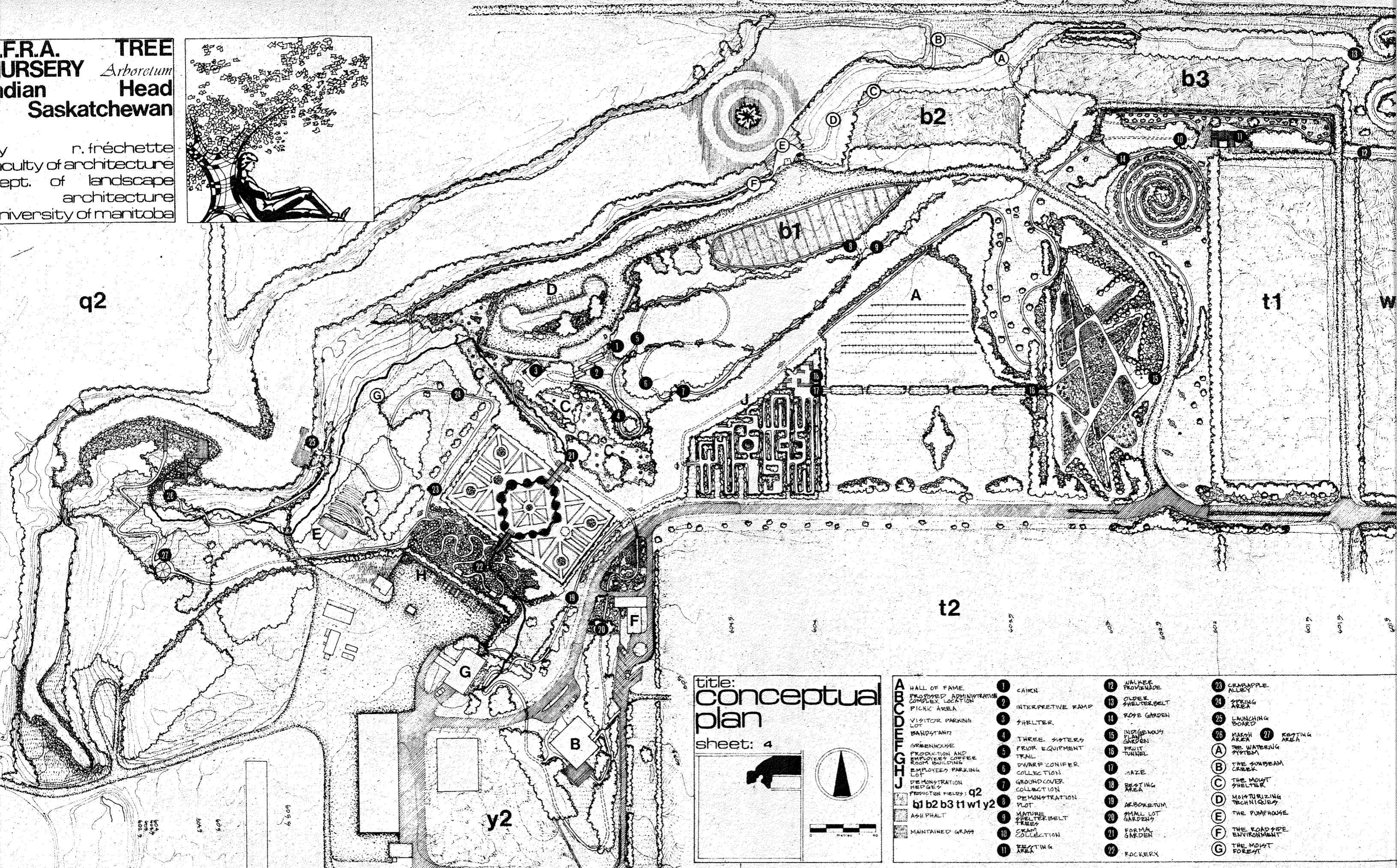
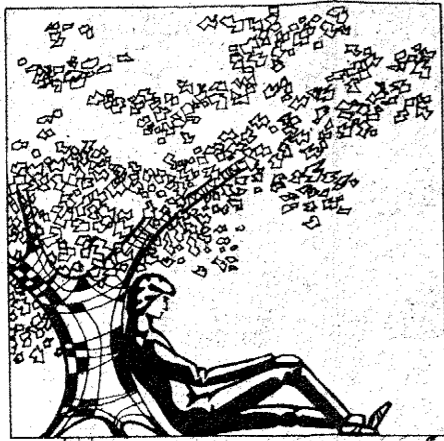
The inventory of the existing site conditions has focussed upon the good and weaker features of the nursery in general, and, more specifically, of the public grounds. The assets of the nursery and the public grounds are in the variety and the maturity of most of the woody plants established by the first superintendents, the availability of water from the retention lake system, and the strategic location along the Trans Canada Highway.

The weakness of the nursery arises from its priority of plant production. This priority severely affects the quality of the public grounds; for example, the gravel road access, the main entrance leading the visitor to the staff parking lot, the misplaced plant labels and the production field within the public zone.

The existing conditions of the public grounds goes against the objectives of the P.F.R.A. Because the P.F.R.A. has a mandate not only of producing trees but also to inform people on the importance of woody plants in the prairie landscape, it is urgent that the public grounds have an interpretative program and a conceptual plan that will solve the earlier mentioned conflicts.

F.R.A. TREE
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title: conceptual plan
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4 VISITOR PARKING LOT
5 BANDSTAND
6 GREENHOUSE
7 PRODUCTION AND EMPLOYEES COFFEE ROOM BUILDING
8 EMPLOYEES PARKING LOT
9 DEMONSTRATION HEDGES
10 PRODUCTION FIELDS: q2
11 b1 b2 b3 t1 w1 y2
12 ASPHALT
13 MAINTAINED GRASS</p> | <p>1 CAIRN
2 INTERPRETIVE KAMP
3 SHELTER
4 THREE SISTERS
5 PRIOR EQUIPMENT TRAIL
6 DWARF CONIFER COLLECTION
7 GROUND COVER
8 DEMONSTRATION PLOT
9 MATURE SHELTER BELT TREES
10 SCAM COLLECTION
11 RESTING AREA</p> | <p>12 WALKER PROMENADE
13 OLDER SHELTER BELT
14 ROSE GARDEN
15 INDIGENOUS PLANT GARDEN
16 FRUIT TUNNEL
17 MAZE
18 RESTING AREA
19 ARBORETUM
20 SMALL LOT GARDENS
21 FORMAL GARDEN
22 ROCKERY</p> | <p>23 CLEMATIS ALLEY
24 SPRING AREA
25 LAUNCHING BOARD
26 MARCH AREA
27 RESTING AREA
A THE WATERING SYSTEM
B THE SUNBEAM CREEK
C THE MOIST SHELTER
D MOISTURIZING TECHNIQUES
E THE PUMPHOUSE
F THE ROAD SIDE ENVIRONMENT
G THE MOIST FOREST</p> |
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P.F.R.A. TREE
NURSERY *Arboretum*
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chapter 2.	Design Synthesis and Development
section	2.1. The Arboretum Concept for the Public Grounds of the P.F.R.A. Tree Nursery
subject	
division	

The section of the nursery designated as the public grounds is currently named "the interpretive grounds". The expression of interpretive grounds has a broad significance and for this reason is used to designate any public ground that has a pathway and a narration system; this title does not give the specific conceptual guidelines so necessary to the development of an integral public ground.

As indicated in the section on history of arboreta, the concept for the arboretum has evolved from divine purposes to a recreation, education, conservation and preservation purpose. The P.F.R.A. Tree Nursery at Indian Head is only dealing with woody plants and the public grounds are the result of the collecting habits of the prior superintendents. It is obvious that the public grounds as well as the existing arboretum together meet the Victorian definition of an arboretum by J.C. Loudon: that portion of a garden or of a park reserved for the growth and the display of trees.

Those arboretum administrators who have tried to follow, to the word, Loudon's definition of an arboretum, have often limited the arboretum popularity and thus support. Generally arboreta have been elaborated up to the sixties as gardens to be admired for the beauty of their exclusive plant collections. This too often limited the user groups to the elite* - those with money and science - this becoming symbolic of social status and not of real interest. Nowadays concern for conservation and preservation are causing the development of arboreta interpretation centres for the comprehension of the characteristics, the role and the essence of woody plants in our built and/or natural environment. The P.F.R.A.'s mission to make people sensitive to the role of woody plants as shelterbelts will be best achieved by using the contemporary concept of arboretum as a guideline for the development of their public grounds. The P.F.R.A. arboretum should display the whole range of available woody plants for educational and recreational purposes in the prairie region.

* Roy Christian, Forgotten Oasis in an Urban Desert, published in Country Life, November 25, 1976, p. 1585.

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chapter 2.	Design Synthesis and Development
section 2.1.	The Arboretum Concept for the Public Grounds of the P.F.R.A. Tree Nursery
subject	
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The expansion of the P.F.R.A. Tree Nursery is a major reason to advocate the development of the public grounds. In the evaluation of the existing programs of the P.F.R.A. Tree Nursery of Indian Head, the nursery administration considers it important to increase the percentage of survival of the seedlings when they are planted by the applicants, and to utilize new species and new planting techniques for tree shelterbelts. Already among the suggested ways to achieve these objectives, the P.F.R.A. Tree Nursery considers to increase the public relation program on different channels of communication (i.e. television, radio, newspapers, etc.). In this regard, the nursery public grounds should be considered as a permanent outdoor public relation program. Using an outdoor interpretive program, the arboretum will display the latest nursery techniques and tree shelterbelt research in a pleasant atmosphere. The pleasant atmosphere for an arboretum becomes an initiative for any visitors to try to recreate such an atmosphere on their farms. This program will also increase the number of prairie farmers to benefit from the technical program of the P.F.R.A. Tree Nursery of Indian Head.

P.F.R.A. TREE NURSERY
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chapter 2. Design Synthesis and Development

section 2.2. User Programs

subject 2.2.1. The Touring Programs

division

* TOURING PROGRAMS

1. The Arboretum Touring Program.
2. The General Interest Touring Program.
3. The Horticultural Interest Touring Program.
4. The Educational Interest Touring Program.

As proposed in this practicum the touring programs * of the arboretum will respect the needs and consider the expressed opinions, ideas and suggestions of the potential users and the behavior patterns of the informal visitors. The organized tours and the informal visitors will have access to four touring programs. The first touring program is the Arboretum Program; it is composed of all the points of interest within the Arboretum. Because few visitors will have the time for this extensive program, three other program alternatives are possible: the Educational Interest Program, the General Interest Program, and the Horticultural Interest Program.

An informal visitor, with the assistance of a guiding pamphlet and the interpretive boards, has the liberty of strolling anywhere in the arboretum following the pathway or not, and choosing among the points of interest, or following one of the proposed touring programs.

This system also allows an organized student group or other civic group to tour only the points of interest that are recommended and organized for the benefit of the type of interest represented by the organized group. To satisfy the needs of the potential users of the Arboretum, the user programs have been developed. The user programs are the synthesis of the user surveys and of the site conditions.

The user programs are composed of a number of points of interest. Each point of interest is dealing with topics presented through the surveys and is located to fit the site conditions as well as the interpretation system. In fact, the points of interest are grouped in thematic areas to increase the value of the interpretation.

All the user programs are based on a self-guided interpretation system using interpretive boards and the guiding pamphlet. To this self-guiding system can be added the participation of a group leader or a tour guide for organized tours.

Finally, these self-guiding programs permit the informal visitors, the elderly people and the handicapped persons to limit their tour to a theme area or a few points of interest.

TABLE 202 MATRIX OF DEVELOPMENT TOPICS OF THE P.F.R.A. TREE NURSERY PUBLIC GROUNDS.

TOPICS	CATEGORISED	IMPLEMENTED	SUPPORTED	PROPOSED	CONFLICTUAL	REJECTED
1. Retention of the public grounds in the existing state						
2. Design of facilities unlike the ones of the Exp. Farm						
3. Promotion of the interpretive grounds to the local civic groups						
4. Participation of local people to planting days at the Nursery						
5. Layout of multi-purpose rooms for year round use by civic groups						
6. Hiring tour for teachers interested in PFRAs guided tours						
7. Utilization of the interpretive grounds as a study area for students of forestry, botany, landscape, horticulture and gardening						
8. Species of insect and rodent damage per species of trees						
9. Improvement of the labelling system						
10. Expansion of arboretum						
11. Concentration area for the single tree species grown on the nursery						
12. Concentration of shelterbelts and their maintenance						
13. Interpretation area on hedges						
14. Need for a full time employee for the interpretive grounds						
15. Display on energy conservation by the use of trees						
16. Display on the history of the PFRAs Nursery						
17. Improvement of nature reserve land for wildlife habitat						
18. Interpretation on trees: their soil, light, moisture requirements, growth habit, flowering time, fruit colours, role in biosphere						
19. Expansion of the picnic area						
20. Construction of children's solid log playground						
21. Establishment of a hobby farm						
22. Development of outdoor cooking facilities						
23. Planning a cross-country ski trail						
24. Development of facilities for outdoor shows						
25. Layout for outdoor games (baseball, croquet, horse shoes)						
26. Layout of a horse back riding trail						
27. Planting of a carriage collection in honour of Dr. Cram						
28. Development of home planting and landscaping area						
29. Introduction of seasonal areas (fall, winter, spring)						
30. Development of themes for the herbaceous plant beds: poisonous, edible, medicinal, prairie tested, native, outstanding flowers, fruits and vegetables						
31. Elaboration of user programs for self-guided tours						
32. Development of rest areas with benches, observation points, canoe launching area						
33. Design of a brochure with a plant index, maps and indications for self-guided tour						
34. Need to hire each year, a casual employee as a tour guide						
35. Conflict elimination between vehicular circulation and visitors						
36. Suitable sign location along HWY.1 to announce the PFRAs Tree Nursery						
37. Placement of access roads						
38. Site furniture placement such as fountain, gazebo, bridges, rock garden						
39. Introduction of topographic changes						

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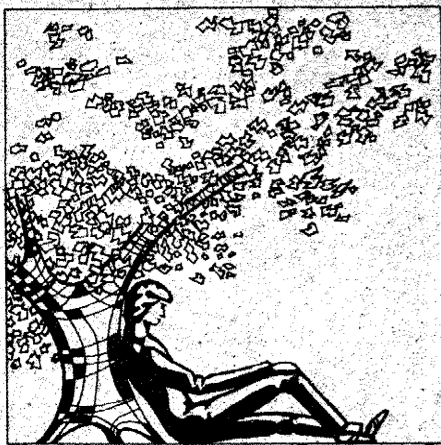


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section	2.2. User Programs
subject	2.2.1. Touring Programs
division	2.2.1.1. The Arboretum Touring Program

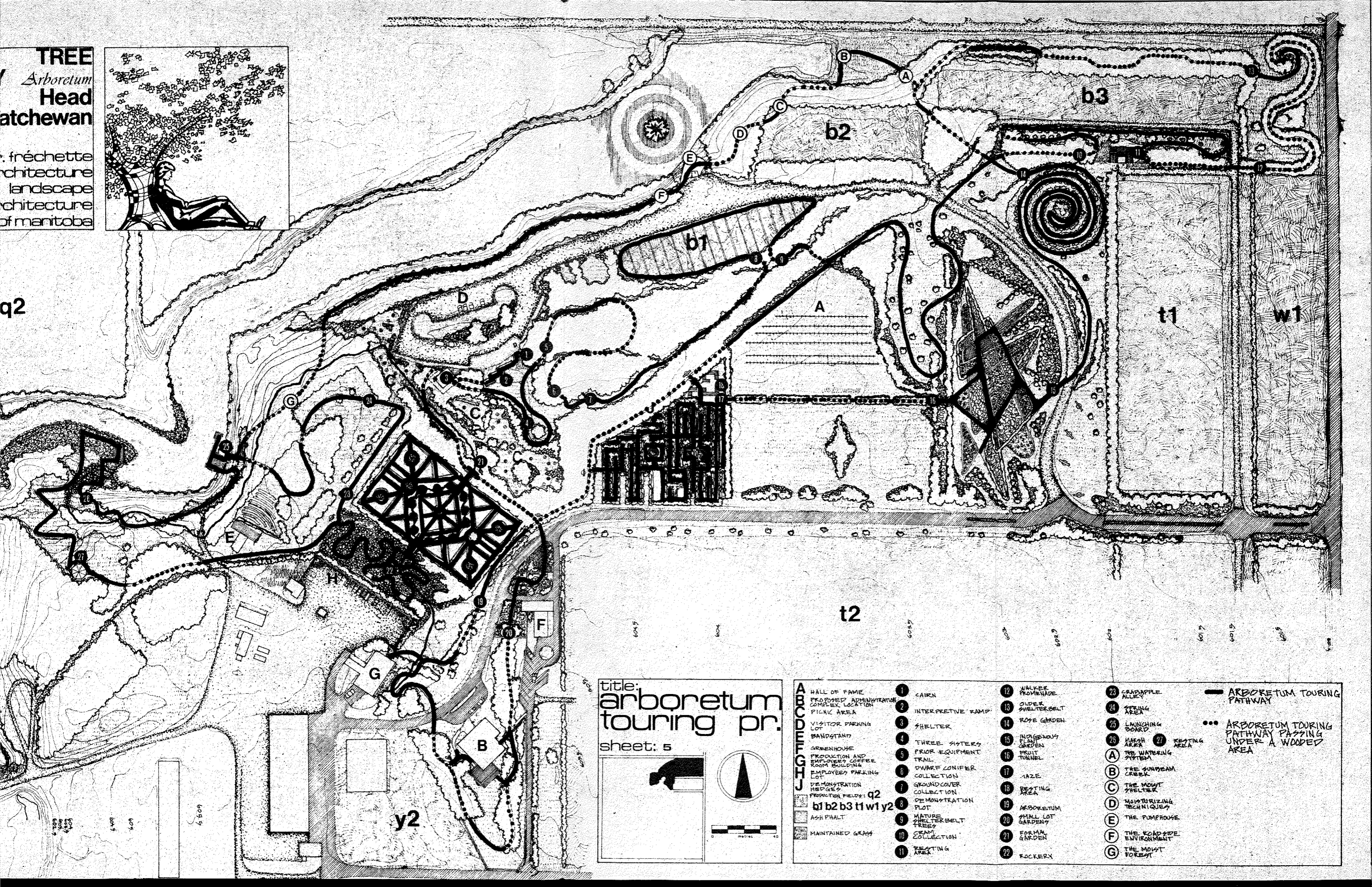
The proposed arboretum conceptual plan is connected by a pathway which links all the points of interest together. The Arboretum Touring Program is composed of all the points of interest located in the arboretum, and presents the many characteristics of woody plants as single specimens, collections and in thematic man-made environments. The whole program is to promote the understanding and the use of woody plants, especially the ones produced by the nursery, in the prairies. This overall program will sustain the interest of the informal visitors, elderly people and the handicapped persons over several visits. For this type of visit only one thematic area might become the goal of the visit.

In the Arboretum Touring Program can be found the implemented development topics brought forward by the interviews (see Table XI).

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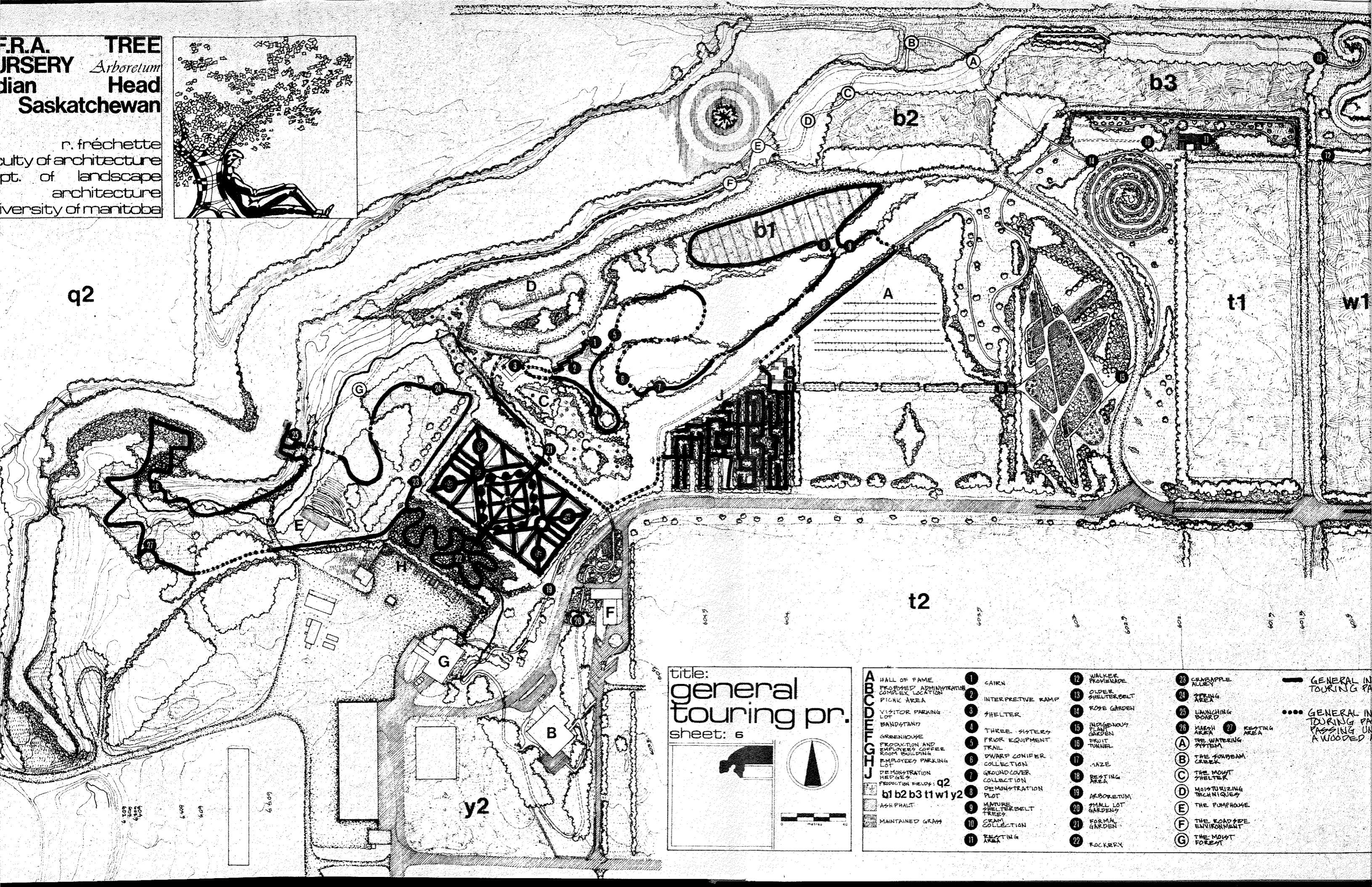
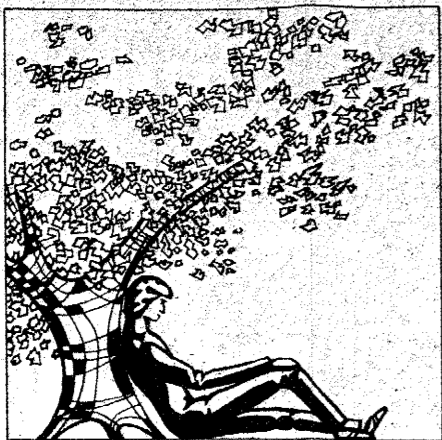
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A HALL OF FAME	1 CAIRN	12 WALKER PROMENADE	23 CRANAPPLE ALLEY
B PROPOSED ADMINISTRATION COMPLEX LOCATION	2 INTERPRETIVE RAMP	13 OLDER SHELTERBELT	24 TEEING AREA
C PICNIC AREA	3 SHELTER	14 ROSE GARDEN	25 LAUNCHING BOARD
D VISITOR PARKING LOT	4 THREE SISTERS	15 INDIGENOUS PLANT GARDEN	26 MARSH AREA
E BANDSTAND	5 PRIOR EQUIPMENT TRAIL	16 FRUIT TUNNEL	27 RESTING AREA
F GREENHOUSE	6 DWARF CONIFER COLLECTION	17 LAZE	
G PRODUCTION AND EMPLOYEES COFFEE ROOM BUILDING	7 GROUND COVER COLLECTION	18 RESTING AREA	
H EMPLOYEES PARKING LOT	8 DEMONSTRATION PLOT	19 ARBORETUM	
I DEMONSTRATION HEDGES	9 MATURE SHELTERBELT TREES	20 SMALL LOT GARDENS	
J PRODUCTION FIELDS: q2	10 CREAM COLLECTION	21 FORMAL GARDEN	
K b1 b2 b3 t1 w1 y2	11 RESTING AREA	22 ROCKERY	
L ASH PHALT			
M MAINTAINED GRASS			
			N ARBORETUM TOURING PATHWAY
			O ARBORETUM TOURING PATHWAY PASSING UNDER A WOODED AREA

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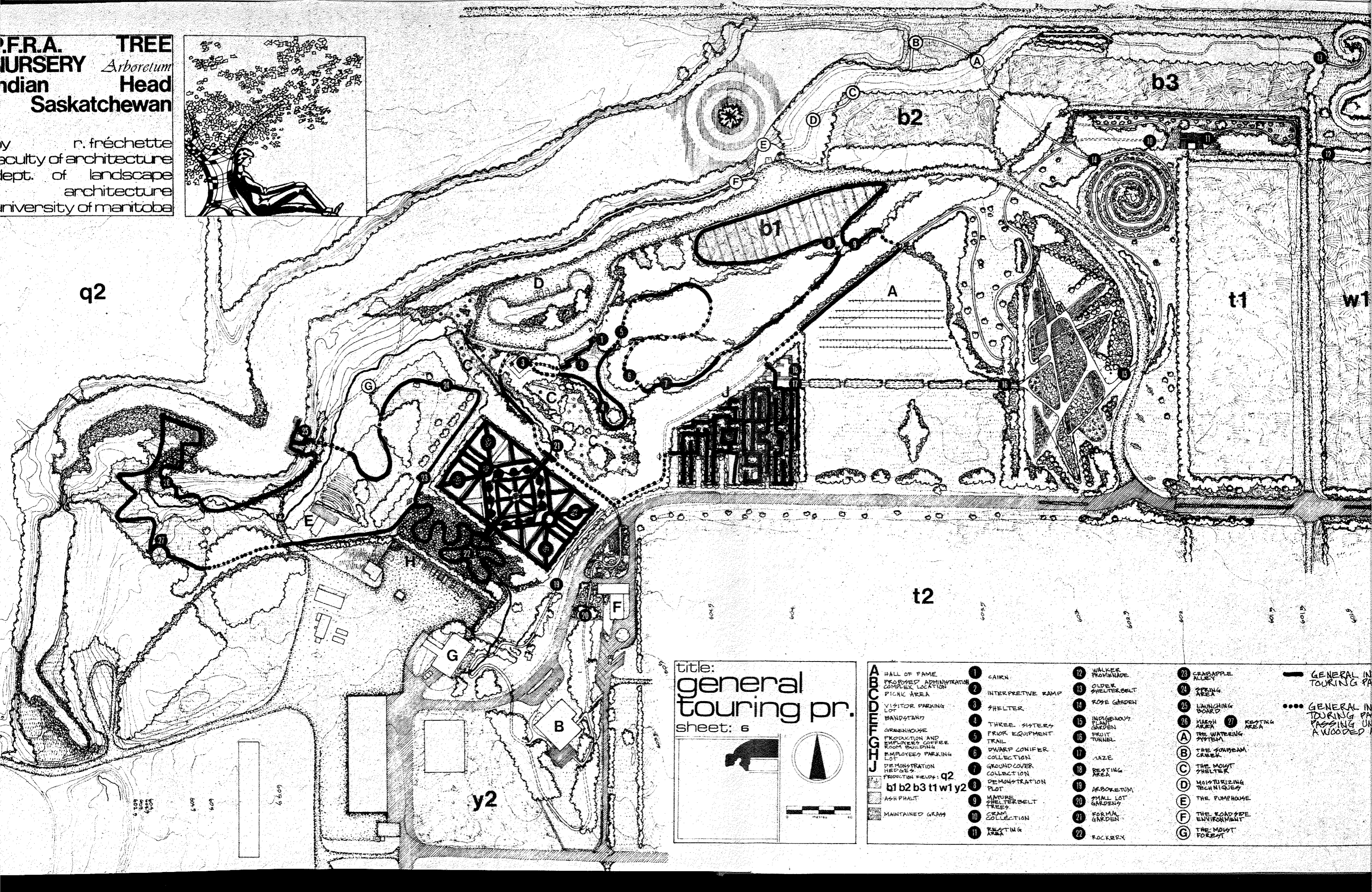
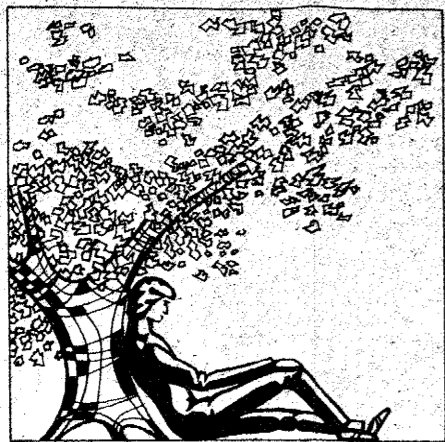


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P.F.R.A. TREE NURSERY
Indian Head
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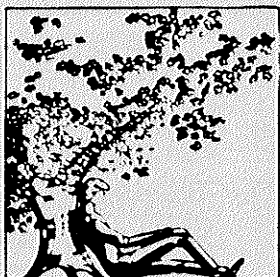
by r. fréchette
faculty of architecture
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H EMPLOYEES' PARKING LOT
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4 THREE SISTERS TRAIL
5 PRIOR EQUIPMENT
6 DWARF CONIFER COLLECTION
7 GROUND COVER COLLECTION
8 DEMONSTRATION PLOT
9 MATURE SHELTERBELT TREES
10 CRAN COLLECTION
11 RESTING AREA
12 WALKER PROMENADE
13 OLDER SHELTERBELT
14 ROSE GARDEN
15 INDIGENOUS PLANT GARDEN
16 FRUIT TUNNEL
17 LAZE
18 RESTING AREA
19 ARBORETUM
20 SMALL LOT GARDENS
21 FORMAL GARDEN
22 ROCKERY
23 SCRAMBLE ALLEY
24 SPRING AREA
25 LAUNCHING BOARD
26 MARCH AREA
27 RESTING AREA
28 KEESTING AREA</p> | <p>(A) THE WATERING SYSTEM
(B) THE SUNBEAM CREEK
(C) THE MOIST SHELTER
(D) MOISTURIZING TECHNIQUES
(E) THE PUMPHOUSE
(F) THE ROADSIDE ENVIRONMENT
(G) THE MOIST FOREST</p> | <p>— GENERAL IN TOURING PA
.... GENERAL IN TOURING PA PASSING UN A WOODED</p> |
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P.F.R.A. TREE
 NURSERY Arboretum
 Indian Head
 Saskatchewan



by r. fréchette
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 architecture
 university of manitoba

chapter 2.	Design Synthesis and Development
section 2.2.	User Programs
subject 2.2.1.	The Touring Programs
division 2.2.1.2.	The General Interest Touring Program

The General Interest Touring Program is addressed to the visitors who come to the Arboretum to enjoy the pleasant atmosphere of the public grounds. From a statistical point of view, this represents 17.6%*. By observing the visitor behavior, informal conversations with some of the visitors and comparing the answered questionnaire, it is possible to conclude that they are mostly between 21 and 35 years old** and have an occupation such as operator, technician, clerical or a profession. They are most often young couples or individuals, in the process of getting a property and who anticipate work on their own yard.

The General Interest Program has the objective of the presentation through planting examples, the use of woody plants for home landscape and the introduction of visitors to the other interest programs. This program relies on presenting woody plants in attractive environments, close by their components to what can be found in botanical gardens, to excite the visitors' curiosity for the educationally inclined programs.

* See 1.4.3. Visitor Questionnaire, 1.4.3.1. Interpretation of the Results, question no. 8, under the category "for pleasure".

** See 1.4.3. Visitor Questionnaire, 1.4.3.1. Interpretation of the Results, question no. 2.

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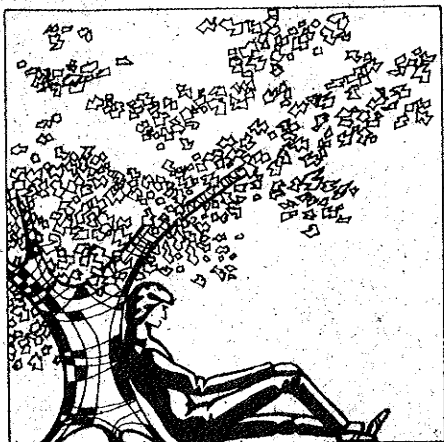
chapter	2. Design Synthesis and Development
section	2.2. User Programs
subject	2.2.1. The Touring Programs
division	2.2.1.3. The Horticultural Interest Touring Program

The Horticultural Interest Program will be recommended to the 21%* portion of visitors having an interest in gardening and/or horticulture. This program has an objective to inform the regional horticulturists and the horticulturalists from the rest of the country about the choice of woody plants in the Indian Head climate zone. It presents the shelterbelt woody species, indigenous and cultured woody plants in a setting to enhance the exclusive characteristics of each plant. Most of the points of interest associated with this program display the woody plants in collections according to similar growth habits, family, species, size, color.

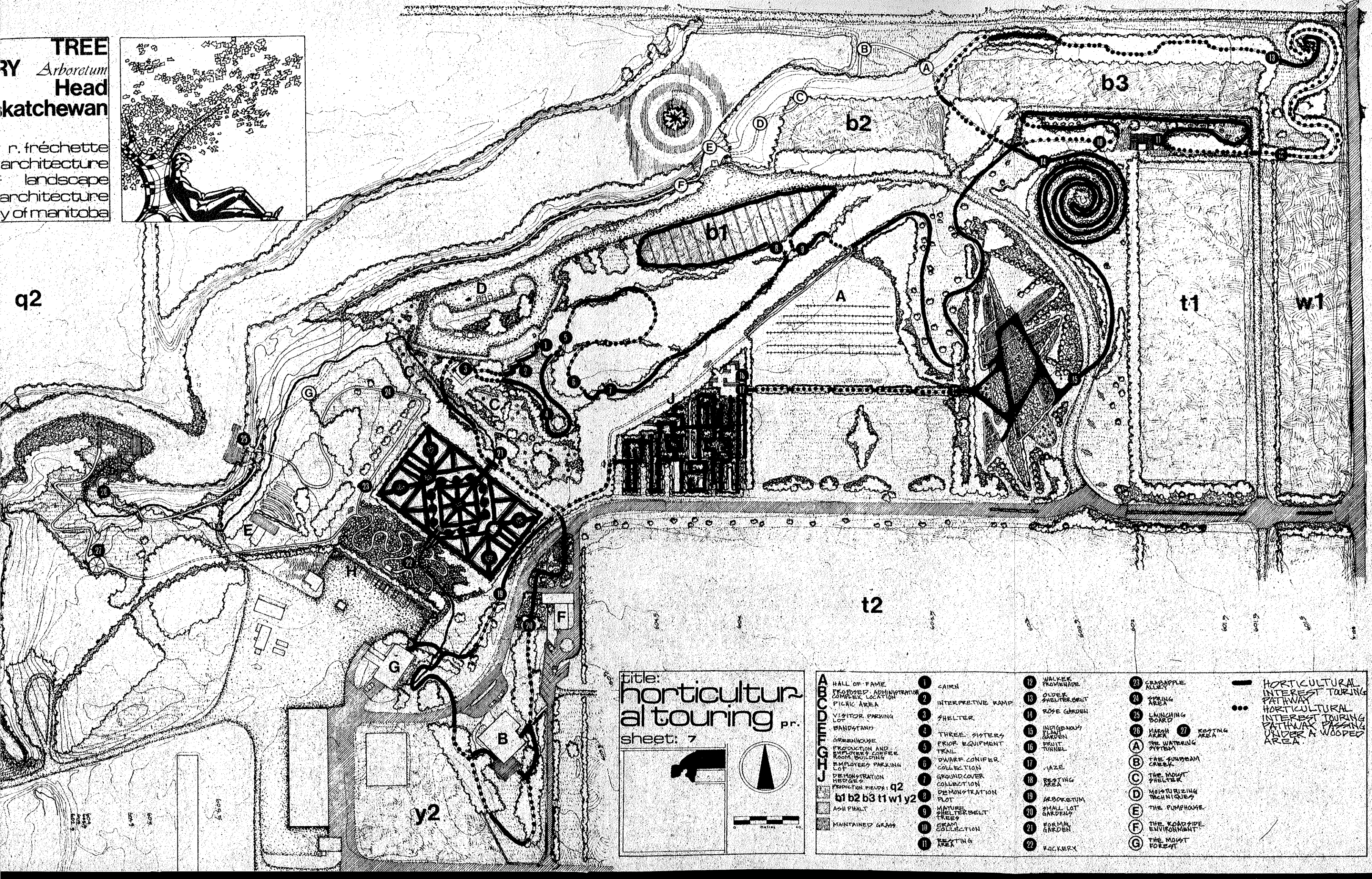
* The 21% of visitors having an interest in gardening and/or horticulture was calculated by the questionnaire results (see 1.4.3. Visitor Questionnaire, 1.4.3.1. Interpretation of the Results; question No. 8, under the category "for general interest in plants". This touring program also answers to some of the topics proposed during the interviews (see Table X Matrix of Redevelopment Topics, topics, no. 9, 13, 28, 29, 30)

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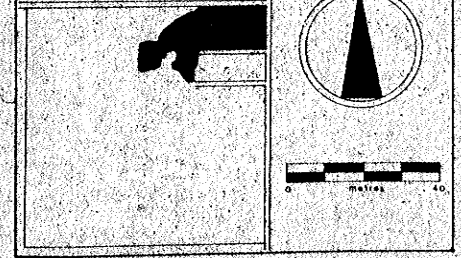
r. fréchette
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 landscape
 architecture
 y of manitoba



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title:
 horticultural touring pr.
 sheet: 7

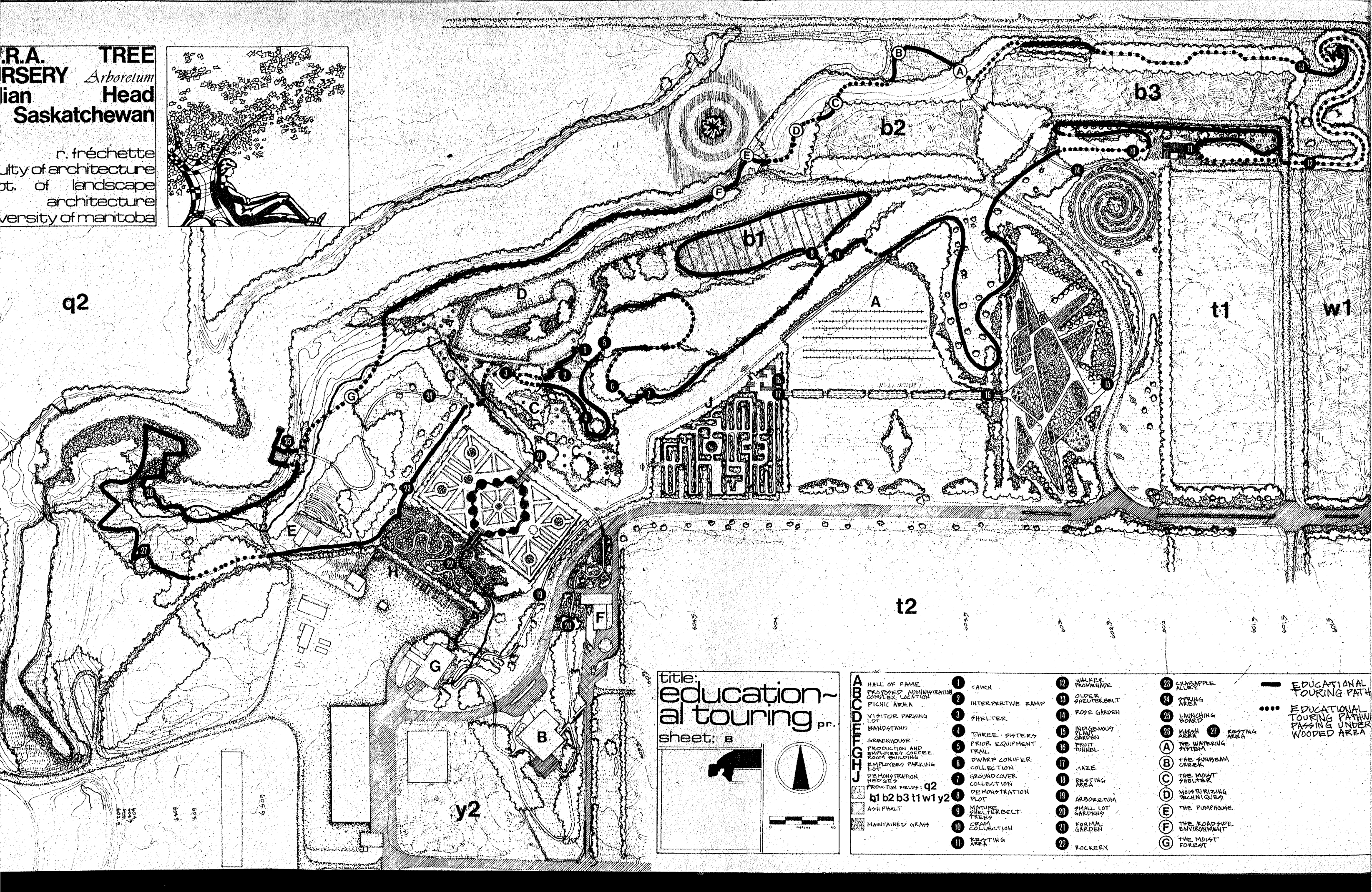
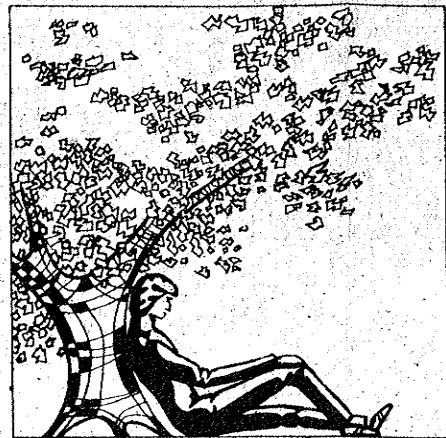


A HALL OF FAME	1 CAIRN	12 WALKER PROMENADE	23 CRABAPPLE ALLEY
B PROPOSED ADMINISTRATION COMPLEX LOCATION	2 INTERPRETIVE RAMP	13 OLDER SHELTERBELT	24 SPRING AREA
C PICKNIC AREA	3 SHELTER	14 ROSE GARDEN	25 LAUNCHING BOARD
D VISITOR PARKING	4 THREE SISTERS TRAIL	15 INDIGENOUS PLANT GARDEN	26 MARCH AREA
E BANDSTAND	5 PRIOR EQUIPMENT COLLECTION	16 FRUIT TUNNEL	27 RESTING AREA
F GREENHOUSE	6 DWARF CONIFER COLLECTION	17 MAZE	A THE WATERING SYSTEM
G PRODUCTION AND EMPLOYEES LOBBY ROOM BUILDING	7 GROUND COVER COLLECTION	18 RESTING AREA	B THE SUNBEAM CREEK
H EMPLOYEES PARKING LOT	8 DEMONSTRATION PLOT	19 ARBORETUM	C THE MOIST SHELTER
I DEMONSTRATION HERDS	9 MATURE SHELTERBELT TREES	20 SMALL LOT GARDENS	D MOISTURIZING TECHNIQUES
J PRODUCTION FIELDS: q2	10 GRASS COLLECTION	21 FORMAL GARDEN	E THE PUMPHOUSE
K b1 b2 b3 t1 w1 y2	11 RESTING AREA	22 PACKERY	F THE ROADSIDE ENVIRONMENT
L ASH PAVILT			G THE MOIST FOREST
M MAINTAINED GRASS			

— HORTICULTURAL INTEREST TOURING PATHWAY
- - - HORTICULTURAL INTEREST TOURING PATHWAY PASSING UNDER A WOODED AREA

R.A. ARBORY
Head
Saskatchewan

University of architecture
 Department of landscape
 architecture
 University of manitoba



title:
**education-
 al touring** pr.
 sheet: 8

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|--------------------------------------------------------------------------------------------------------|----------------------------------------|--------------------------------------|---------------------------|
| A HALL OF FAME
PROPOSED ADMINISTRATION
COMPLEX LOCATION
PICNIC AREA | 1 CAIRN | 12 WALKER PROMENADE | 23 CRABAPPLE ALLEY |
| B VISITOR PARKING
LOT
BANDSTAND | 2 INTERPRETIVE RAMP | 13 OLDER SHELTERBELT | 24 SPRING AREA |
| C GREENHOUSE
PRODUCTION AND
EMPLOYEES COFFEE
ROOM BUILDING
EMPLOYEES PARKING
LOT | 3 SHELTER | 14 ROSE GARDEN | 25 LAUNCHING BOARD |
| D DEMONSTRATION
HEDGES
PRODUCTION FIELDS: q2 | 4 THREE SISTERS
TRAIL | 15 INDIGENOUS PLANT
GARDEN | 26 WASH AREA |
| E b1 b2 b3 t1 w1 y2 | 5 PRIOR EQUIPMENT
COLLECTION | 16 FRUIT TUNNEL | 27 RESTING AREA |
| F ASH PHALT | 6 DWARF CONIFER
COLLECTION | 17 MAZE | |
| G MAINTAINED GRASS | 7 GROUND COVER
COLLECTION | 18 RESTING AREA | |
| | 8 DEMONSTRATION
PLOT | 19 ARBORETUM | |
| | 9 MATURE SHELTERBELT
TREES | 20 SMALL LOT
GARDENS | |
| | 10 CREAM COLLECTION | 21 FORMAL GARDEN | |
| | 11 RESTING AREA | 22 ROCKERY | |
| | | | 28 CRABAPPLE ALLEY |
| | | | 29 RESTING AREA |
- EDUCATIONAL TOURING PATH
 EDUCATIONAL TOURING PATH PASSING UNDER WOODED AREA

P.F.R.A. TREE
 NURSERY Arboretum
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chapter	2. Design Synthesis and Development
section	2.2. User Programs
subject	2.2.1. The Touring Programs
division	2.2.1.4. The Educational Interest Touring Program

* This represents 36%. See Table III Visitor Group Categories, in 1.4.4. 1971-1979 Visitor Survey.

**
 For the last stop on this educational pathway there will be a discussion circle. The teacher and/or the tour guide will invite the students to sit and exchange their opinions on the tour; the discussion circle could become the area for questions, for short exercises by the teacher, for giving to the students a pause of reflection about trees and how they could participate in making other people aware of the value of a tree. The answer would be easy: by planting one or many trees. The teacher(s) and the student leader(s) should, therefore, receive application forms for their school, and/or the chance of planting a tree with a tag printed with the name of one person chosen by the group, somewhere in the interpretive groups designated as the "Hall of Fame". After this ceremony the tour would be completed.

The Educational Interest Program will be recommended for student groups. The student groups are the leading * category of users for the last ten years of the guided tours provided by the nursery. The objective of this program is to present, in a pleasant atmosphere, the value of trees in the prairie landscape, using the work of the P.F.R.A. Tree Nursery to substantiate the message. This program will promote the youth participation to tree planting and sensitize them to the protection of their environment for the benefits of the coming generations. To fully achieve these objectives this program requires the participation** of the students during their tour and the previous cooperation of the teachers and the nursery authorities to integrate the students tour into their academic learning process.

During the spring of each year the tree nursery will sponsor a coffee house and seminar for teachers of any school boards (or of a specific school board) to present them with the possibilities of the educational interest program. The presentation will be exhaustive, professionally-oriented, and will provide them with a learning resource kit. The learning resource kit will contain: ***

* On Table XI Matrix of Development Topics, the topic no. 33 - "Design of a brochure with plant index, maps and identifications for self-guided tour" should be implemented for the students' uses. See Appendix 'B' Interview of Mr. Bill Wood, Consultant of Outdoor Programs, Board of Education, Regina, June 13, 1980.

- an overall detailed plan of the arboretum;
- a schematic plan locating the educational points of interest that can be used later on by the students for their own orientation;
- an application form for renting a pre-recorded slide show. The slide show will present an overall resume of the P.F.R.A. Tree Nursery: its history, its goals and its activities;
- a tour summary informing the teachers on the topics possibly covered either in a guided tour, or in a self-guided tour, or in a workshop, or, finally in a slide show(s).
- a tree index of, first, the woody plants produced for shelterbelts and second, the major plants grown in the arboretum.

The Educational Interest Program should prove to be also very handy for the nursery authorities hosting horticulturists, nursery related professionals, governmental representatives and applicants to the P.F.R.A. technical assistance program. They can use only the thematic areas related to the preoccupation of the guests.

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P.F.R.A. TREE
 NURSERY *Arboretum*
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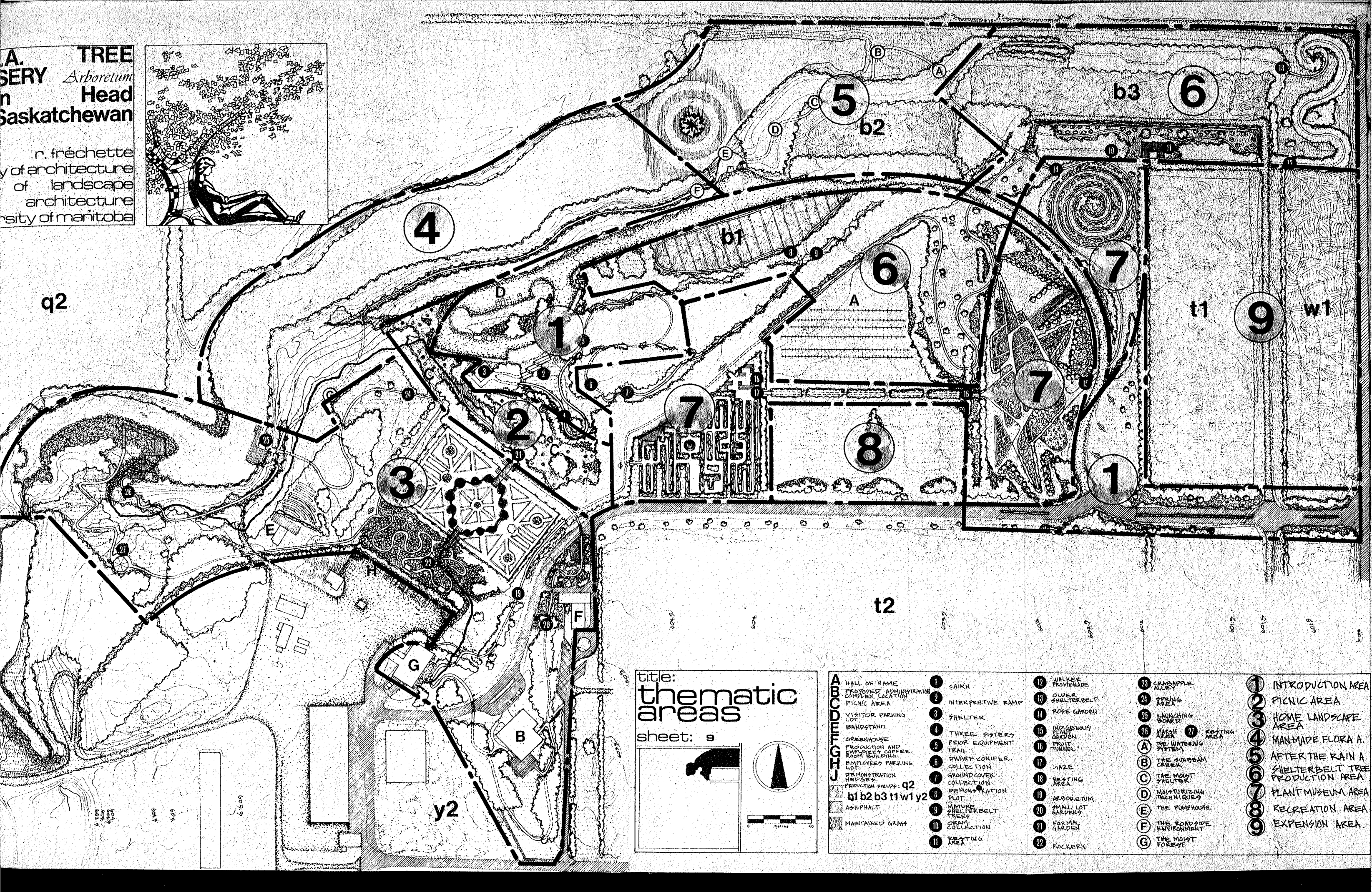
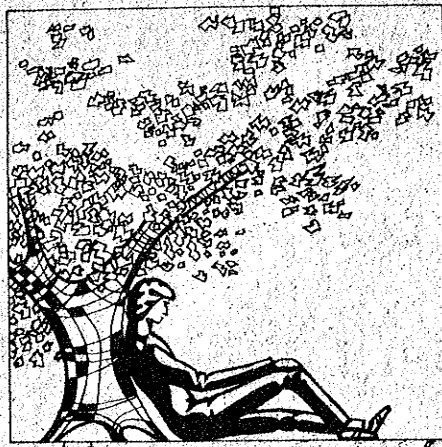
chapter	2. Design Synthesis and Development
section	2.2. User Programs
subject	2.2.2. Thematic Areas and Points of Interest
division	

The points of interest are stopping points located along the visiting pathway presenting the different features of the interest touring programs. The points of interest have been inspired from the Matrix of Development Topics (Table XI) and by the existing plant materials or physical features of the site, and limited by the site physical conditions. To reduce the operation cost over the years the points of interest can be presented briefly in a guiding pamphlet (e.g. location, subject, type of interest) and extensively on interpretive boards at each point of interest. Permanent interpretive boards must be considered as essential to the success of the Arboretum.

The topics of the thematic areas answer to the nursery public relation preoccupations as well as to the local civic groups (see Appendix 'B', Summarized Interviews).

**A. TREE
SERVY Arboretum
in
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title:
**thematic
areas**

sheet: 9

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| <p>A HALL OF FAME
PROPOSED ADMINISTRATION
COMPLEX LOCATION
PICNIC AREA
V VISITOR PARKING
LOT
B BANDSTAND
G GREENHOUSE
PRODUCTION AND
EMPLOYEE COFFEE
ROOM BUILDING
EMPLOYEES PARKING
LOT
D DEMONSTRATION
HERBES
PRODUCTION FIELDS: q2
b1 b2 b3 t1 w1 y2
A ASPHALT
M MAINTAINED GRASS</p> | <p>1 CAIRN
2 INTERPRETIVE RAMP
3 SHELTER
4 THREE SISTERS
PRIOR EQUIPMENT
TRAIL
5 DWARF CONIFER
COLLECTION
6 GROUND COVER
COLLECTION
7 DEMONSTRATION
PLOT
8 NATURE
SHELTERBELT
TREES
9 GRASS
COLLECTION
11 RESTING
AREA</p> | <p>12 WALKER
PROVIDENADE
13 OLDER
SHELTERBELT
14 ROSE GARDEN
15 INDIGENOUS
PLANT
GARDEN
16 FRUIT
TUNNEL
17 MAZE
18 RESTING
AREA
19 ARBORETUM
20 SMALL LOT
GARDENS
21 FORMAL
GARDEN
22 FOCKERY</p> | <p>23 CRANAPPLE
ALLEY
24 SPRING
BOARD
25 LAUNCHING
BOARD
26 WASH
AREA
27 RESTING
AREA
28 THE WATERING
SYSTEM
B THE SUNBEAM
CAREK
C THE MOIST
SHELTER
D MOISTURIZING
TECHNIQUES
E THE PUMPHOUSE
F THE ROADSIDE
ENVIRONMENT
G THE MOIST
FOREST</p> | <p>1 INTRODUCTION AREA
2 PICNIC AREA
3 HOME LANDSCAPE
AREA
4 MAN-MADE FLORA A.
5 AFTER THE RAIN A
SHELTERBELT TREE
PRODUCTION AREA
6 PLANT MUSEUM AREA
7 RECREATION AREA
8 EXPENSION AREA</p> |
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P.F.R.A. TREE NURSERY
Indian Head Saskatchewan

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 university of manitoba



chapter 2. Design Synthesis and Development

section 2.2. User Programs

subject 2.2.2. Thematic Areas and Points of Interest

division 2.2.2.1. Introduction Theme

1. THE CAIRN:

The first move of any visitor when they get out of the their car is to go towards the nearest point of attraction. The nearest point of attraction will be the cairn. It will be at this location that a guided tour will begin and also where a stand for the distribution of the self-guiding tour pamphlets is located.

The cairn is part of the existing features of the public grounds. It was erected in 1977 to commemorate the 75th anniversary of P.F.R.A. Tree Nursery of Indian Head. Because of its location, the cairn becomes for the visitors, the first encounter with the nursery's impressive past history.

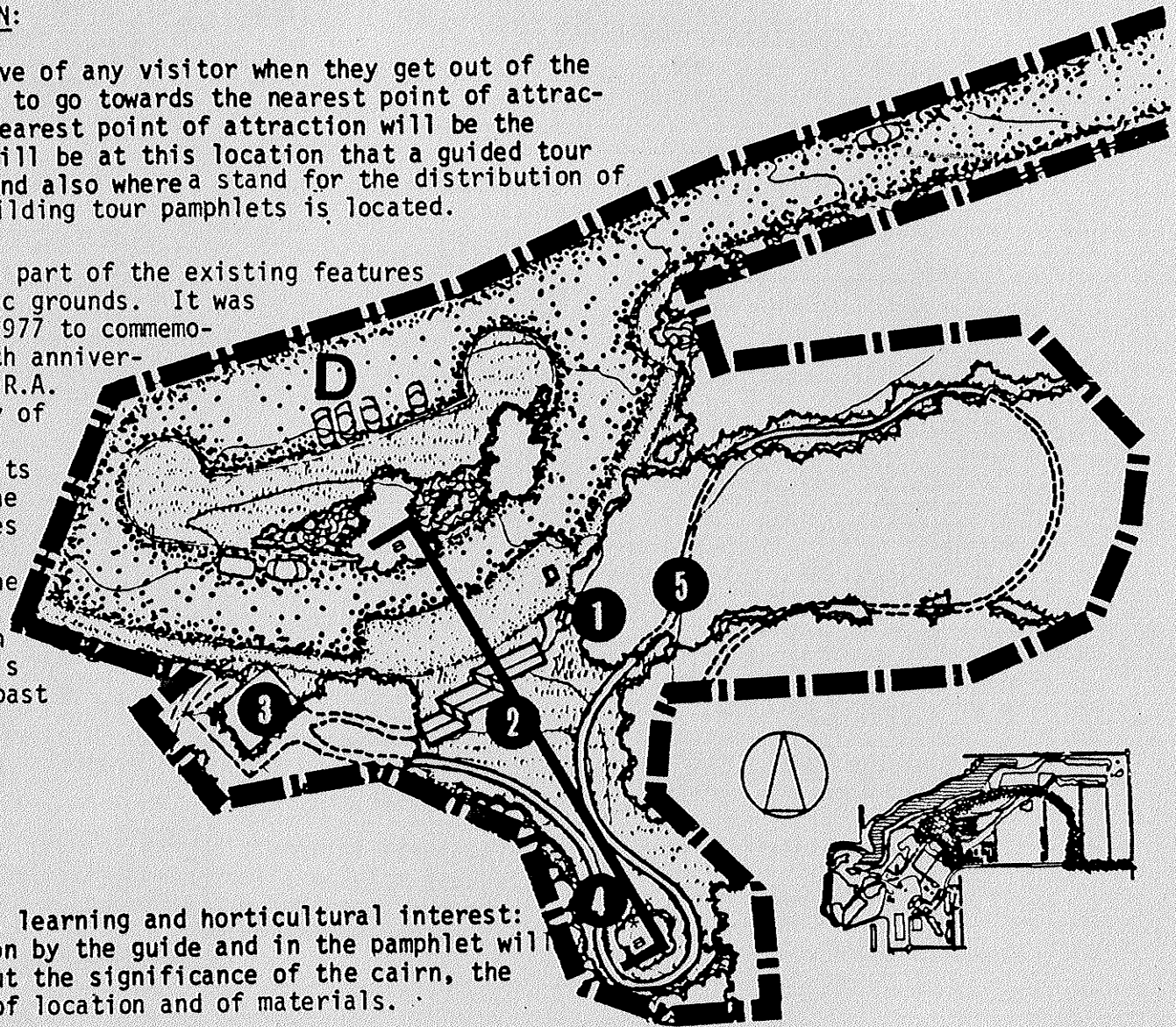
General, learning and horticultural interest:
 Narration by the guide and in the pamphlet will point out the significance of the cairn, the choice of location and of materials.

2. THE INTERPRETIVE RAMP:

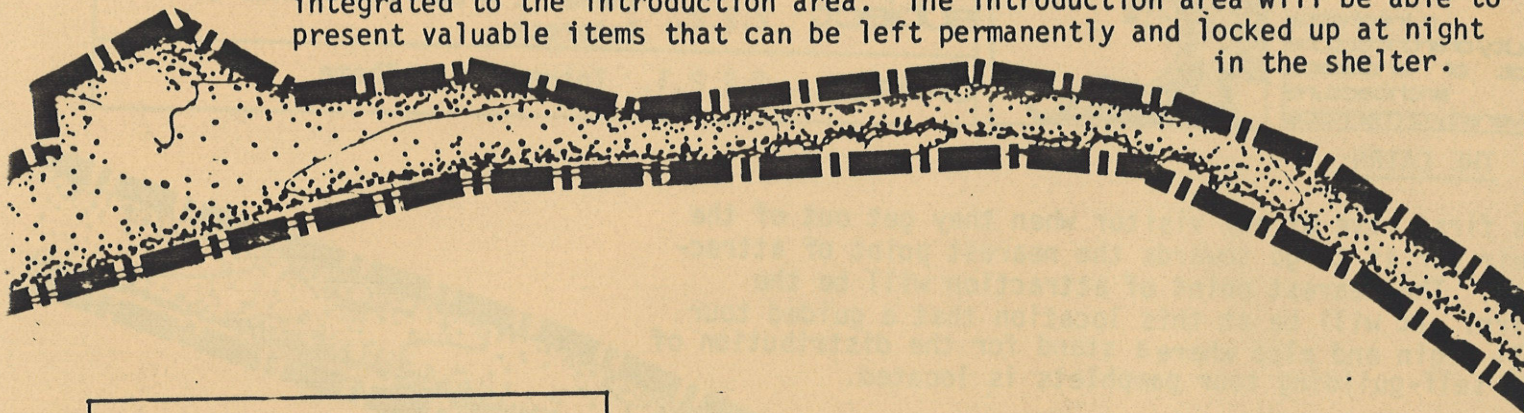
The interpretive ramp will be located on a wood deck with interpretive boards and covered by a roof. It will be approached by the concrete sidewalk and can be used for accommodating the visitors during short periods of rainfall. The interpretive boards will present, by graphics and brief narration the history of the arboretum, the goals and objectives of the P.F.R.A. Tree Nursery, the tree production and a memorandum on how to look at plants. The use of a ramp rather than stairs will make the interpretive boards accessible to wheel chairs. The choice of a ramp rather than

a ground level shelter becomes necessary here to mark an evident transition between the visitor parking lot and the touring pathway.

*See cross-section a,a, p. 43-44



3. THE SHELTER: The shelter is constructed as an outdoor picnic facility: it is not heated but completely closed, and if desired, it can be locked. From observations it is known that the shelter is rarely used. For this reason and because immediate low cost display spaces are needed by the nursery, governmental and local civic groups (i.e. Natural History Society) for presenting publications, models, etc., the shelter has been integrated to the introduction area. The introduction area will be able to present valuable items that can be left permanently and locked up at night in the shelter.



How to look at a plant.

Here is the sort of reminder that should appear in the shelter:

Observation is the key of plants-manship. Most of the time we look at a new plant just enough to recognize it the next time.

To pick flowers and keep them close to you a few days in a vase would be the best manner to observe a plant, but probably no more flowers would be left in our gardens. Perhaps the best way to learn plant observation is to draw the plant. A few lines on a piece of paper could help the horticulturist to remember one particular plant. In any case you have to learn to look at a plant. Learning to look at a plant is first taking in the obvious points that distinguish one plant from another plant:
its stem(s), branch(es), leaf(ves),
flower(s).

Then to look for the natural qualities where the plant is growing: is it in damp, leafy soil and shade or in a gravel bank.

What pattern is made by the buds, and hence the leaves and side shoots: are they opposite, or staggered along the shoots, or in whorls of three or more.

What is the size, strength and stiffness of the shoots or stems.

What kind of texture the whole plant gives from the pattern of the leaves and shoots.

What is the shape and color of the leaves.

What is the leaf texture.

In the shelter will be a display composed of seed samples, dried and mounted young plants produced by the nursery, some older equipment, available government publications covering topics related mainly to woody plants, and finally a visitor record book.

Learning Interest:

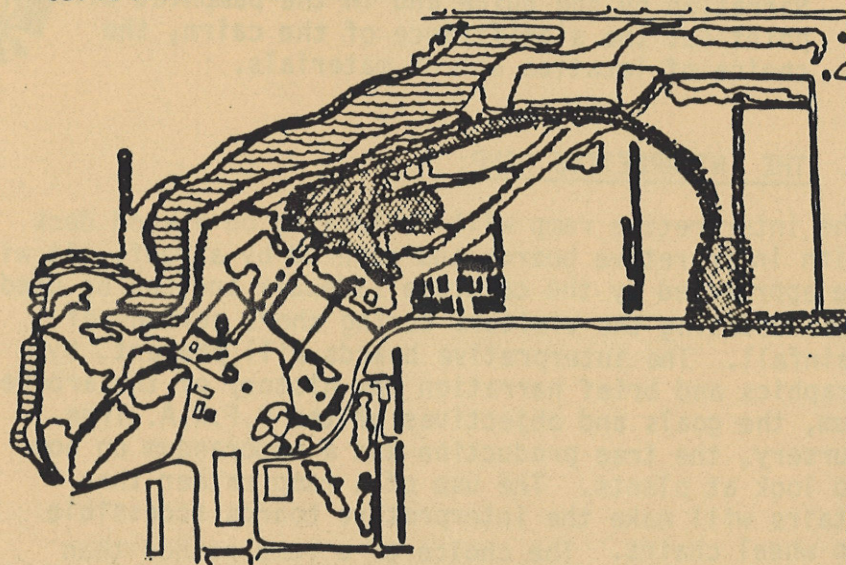
The groups are invited to request a slide presentation on the Tree Nursery. It will cover such topics as the goals, the objectives and the history of the nursery, along with the production techniques, the watering system, the research and the uses of the woody plants.

General Interest:

On request only, a slide presentation will be offered for organized groups on farmstead shelterbelt management and technical programs of the P.F.R.A.

Horticultural Interest:

On request only, a slide presentation will be offered for organized groups on woody plant characteristics for shelterbelts.



Historical Display.

Inventory of historical materials:

- Yale Board (1928)
- Cultivator 3 weeders
- Vacuum
- Slip-Earthmover
- Compactor-packer
- Adjustable harrow
- Wood cutter
- Old wood sawing machine
- Stone lifter
- Fire hose and reel

These instruments can be found here and there on the nursery. All of them are not anymore in shape to be used but in good enough state to demonstrate the evolution of the equipment used for the tree production since as early as the 1920's.

The location on the grounds is important. In the conceptual design they would be part of this historical pathway of the nursery. They can be mounted on concrete slabs, or on a bed of stone mulch. The important part of the display is the interpretation. Each of these instruments should be associated with an explanative text of the use of the instrument. Along the pathway they should be displayed in a chronological sequence, from the earliest to the latest one.

4. THE THREE SISTERS:

The three sisters is a coppiced Colorado blue spruce which has produced three heads from the lateral branches. It was planted in 1906 near the superintendent's quarters.

General Interest:

Time is one of the main factors that will make out of a seed one of these forest giants. Often the tree life is longer than that of the planter. For this reason, when somebody plants a tree, he is preparing an authentic heritage for the coming generations.

Learning Interest:

The visitors will be presented with pictures of the early Superintendent's quarters, along with the pictures, the narration will describe the early layout and purposes of the prior quarters.

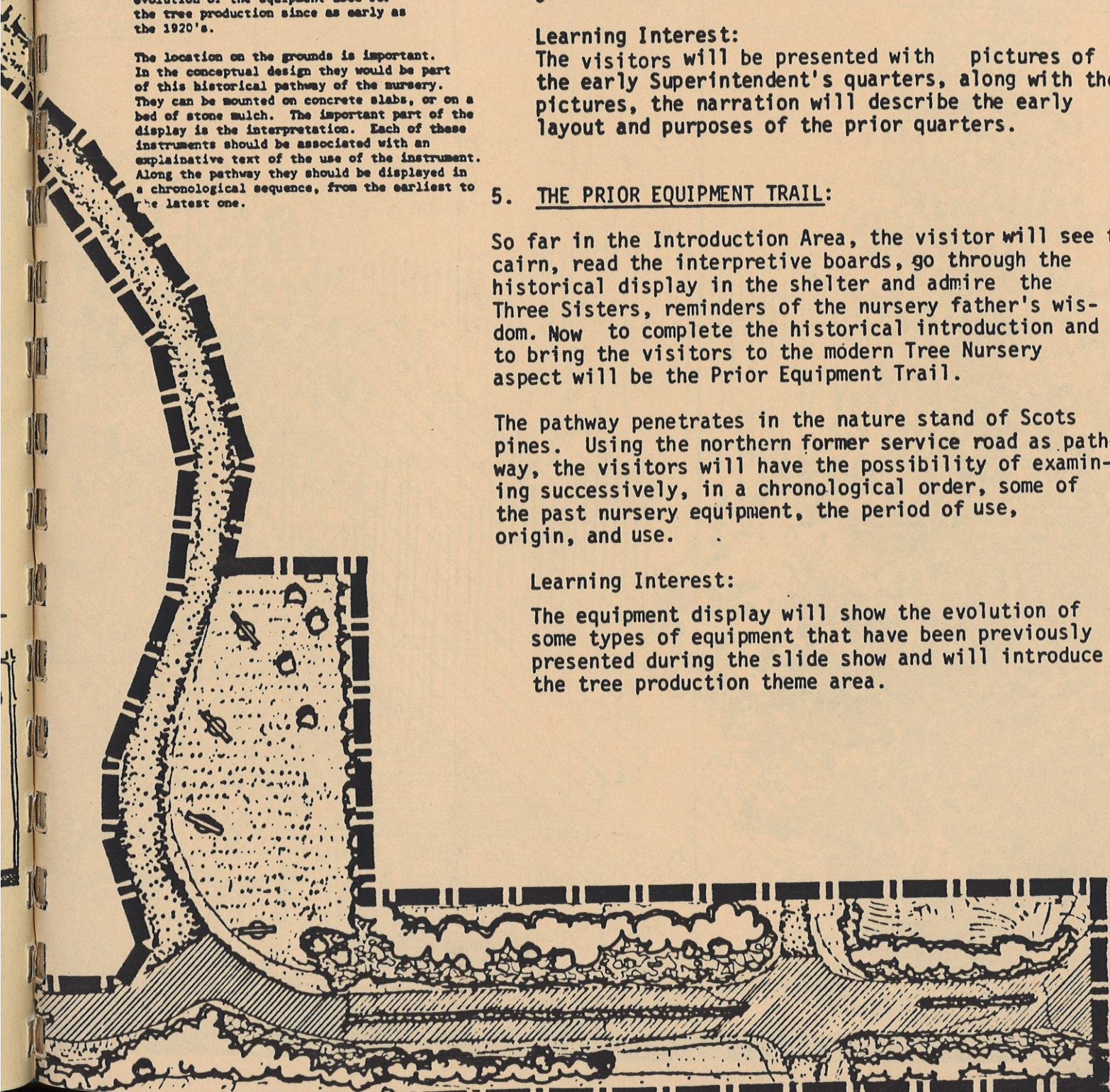
5. THE PRIOR EQUIPMENT TRAIL:

So far in the Introduction Area, the visitor will see the cairn, read the interpretive boards, go through the historical display in the shelter and admire the Three Sisters, reminders of the nursery father's wisdom. Now to complete the historical introduction and to bring the visitors to the modern Tree Nursery aspect will be the Prior Equipment Trail.

The pathway penetrates in the nature stand of Scots pines. Using the northern former service road as pathway, the visitors will have the possibility of examining successively, in a chronological order, some of the past nursery equipment, the period of use, origin, and use.

Learning Interest:

The equipment display will show the evolution of some types of equipment that have been previously presented during the slide show and will introduce the tree production theme area.



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chapter 2. Design Synthesis and Development
 section 2.2. User Programs
 subject 2.2.2. Thematic Areas and Points of Interest
 division 2.2.2.1. Introduction Theme Cross-Section a-a (not to scale)

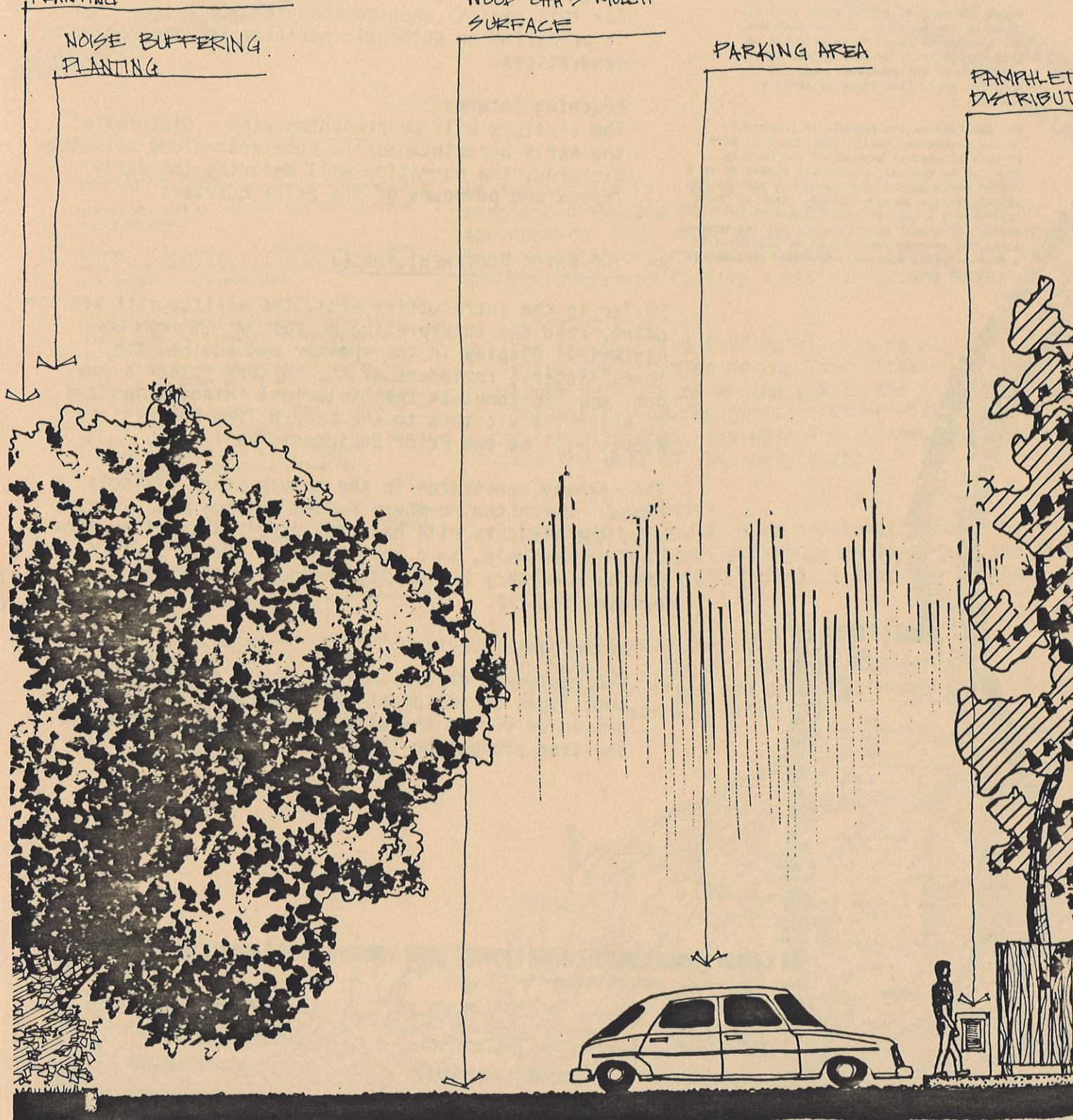
CIRCULATION-BUFFERING PLANTING

NOISE-BUFFERING PLANTING

WOOD CHIPS MULCH SURFACE

PARKING AREA

FAMPHLET DISTRIBUTION



BACKGROUND WOOD
FENCE

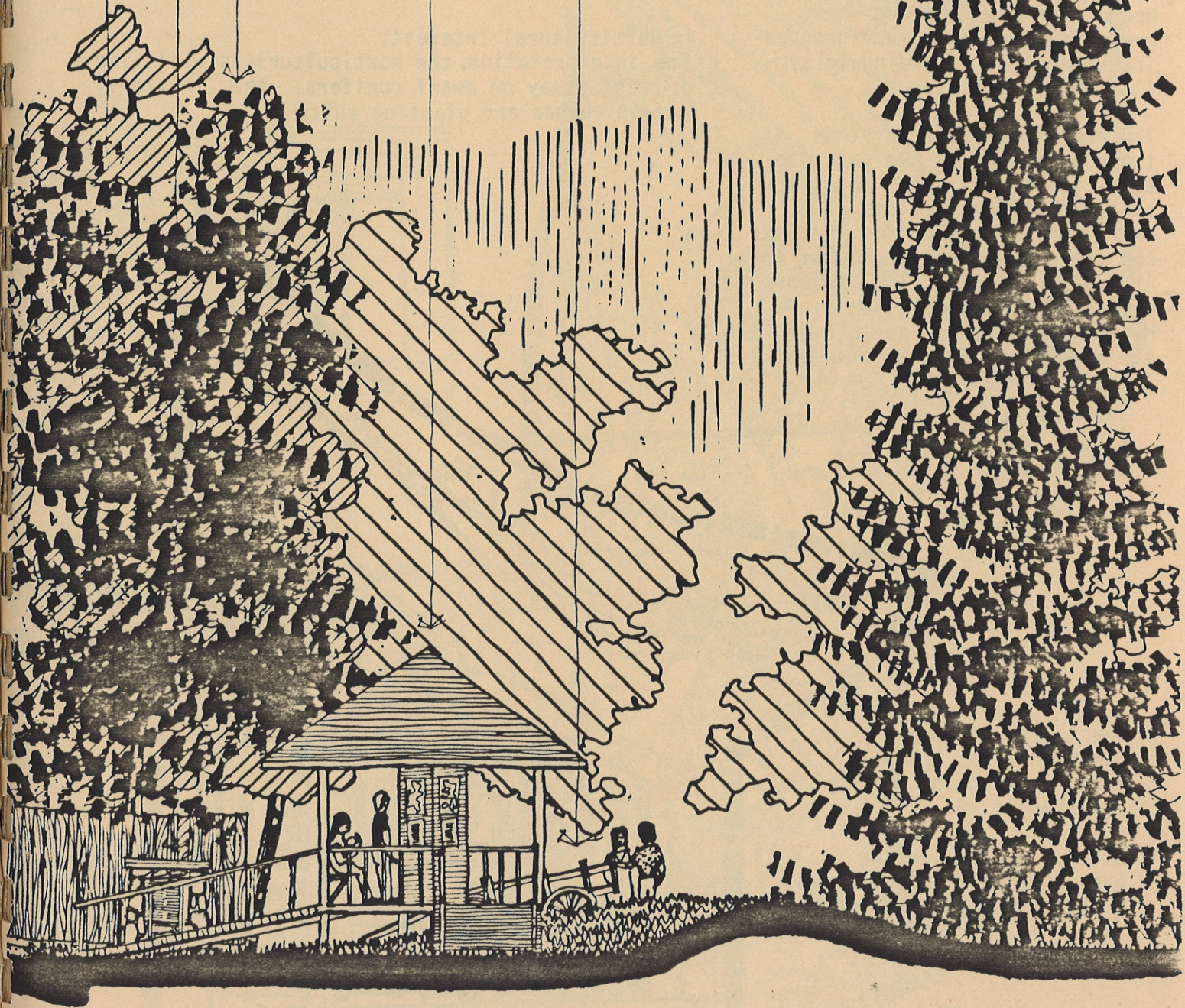
COMMEMORATIVE
CAIRN

EXISTING CONIFER
PLANTATION

INTERPRETIVE
RAMP

PRIOR
EQUIPMENT
TRAIL

THE THREE
SISTERS



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Indian Head
Saskatchewan

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architecture
university of manitoba



chapter	2. Design Synthesis and Development
section	2.2. User Programs
subject	2.2.2. Thematic Areas and Points of Interest
division	2.2.2.2. Plant Museum Theme (Part One)

The Plant Museum Theme was put together to satisfy the 2.4%* of visitors "who are looking for some particular plants", for the 9.6%* of visitors who come to the Arboretum for scientific (i.e. horticulturists) purposes and for such civic groups as the Horticultural Society of Indian Head. The Plant Museum Theme presents woody plants, regrouped in collections according to similar physical features.

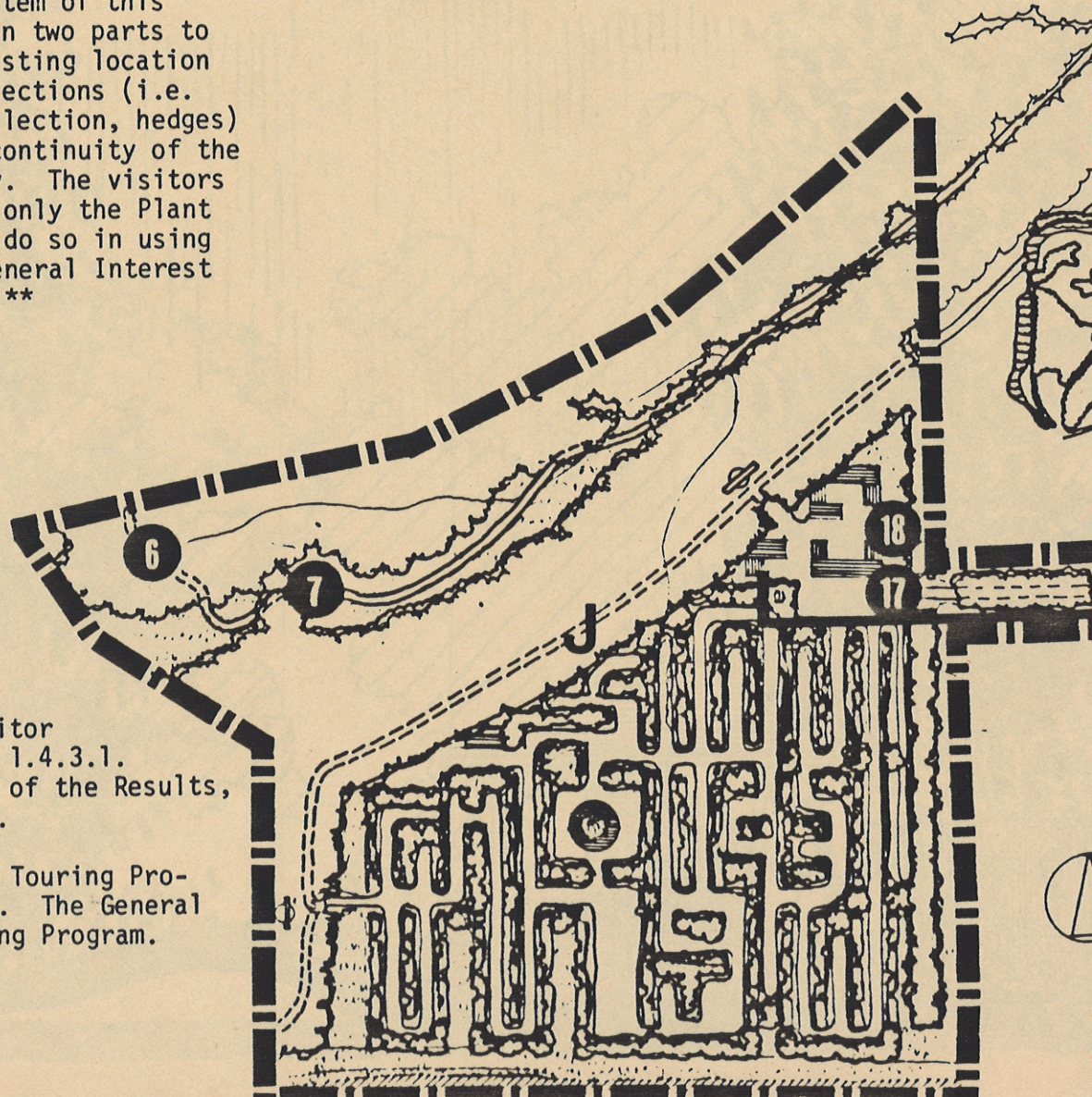
The numerical system of this theme is broken in two parts to allow for the existing location of the plant collections (i.e. dwarf conifer collection, hedges) and the desired continuity of the Arboretum pathway. The visitors choosing to walk only the Plant Museum Theme can do so in using the suggested "General Interest Touring Program".**

6. DWARF CONIFER COLLECTION:

The dwarf conifer collection is the first encounter with a plant collection in the Arboretum. This collection as any of the following ones will be properly labelled with calling numbers referring to the Arboretum library, the scientific and common names. Space will be available for the visitors in the pamphlet to write down notes for further reference.

Horticultural Interest:

For interpretation, the horticulturists will find a brief essay on dwarf conifers: the history, maintenance and planting suitability.



* See 1.4.3. Visitor Questionnaire, 1.4.3.1. Interpretation of the Results, question no. 8.

** See 2.2.1. The Touring Programs, 2.2.1.2. The General Interest Touring Program.

GROUND COVER COLLECTION: The groundcover collection is spread along the prior driveway leading to the superintendent's quarters. This location was chosen for its variety of sun exposure given by the mature stands of trees previously bordering the driveway. The groundcovers will be chosen among the woody types. The specimens will be properly labelled; common and scientific names as well as a calling number referring to the Arboretum library. Space will be reserved in the pamphlet for the visitor notes.

Horticultural Interest:

As interpretation the horticulturists will find a brief essay on groundcovers: their history, their maintenance, their availability and their planting suitability.



See cross-section a, a p. 47-48

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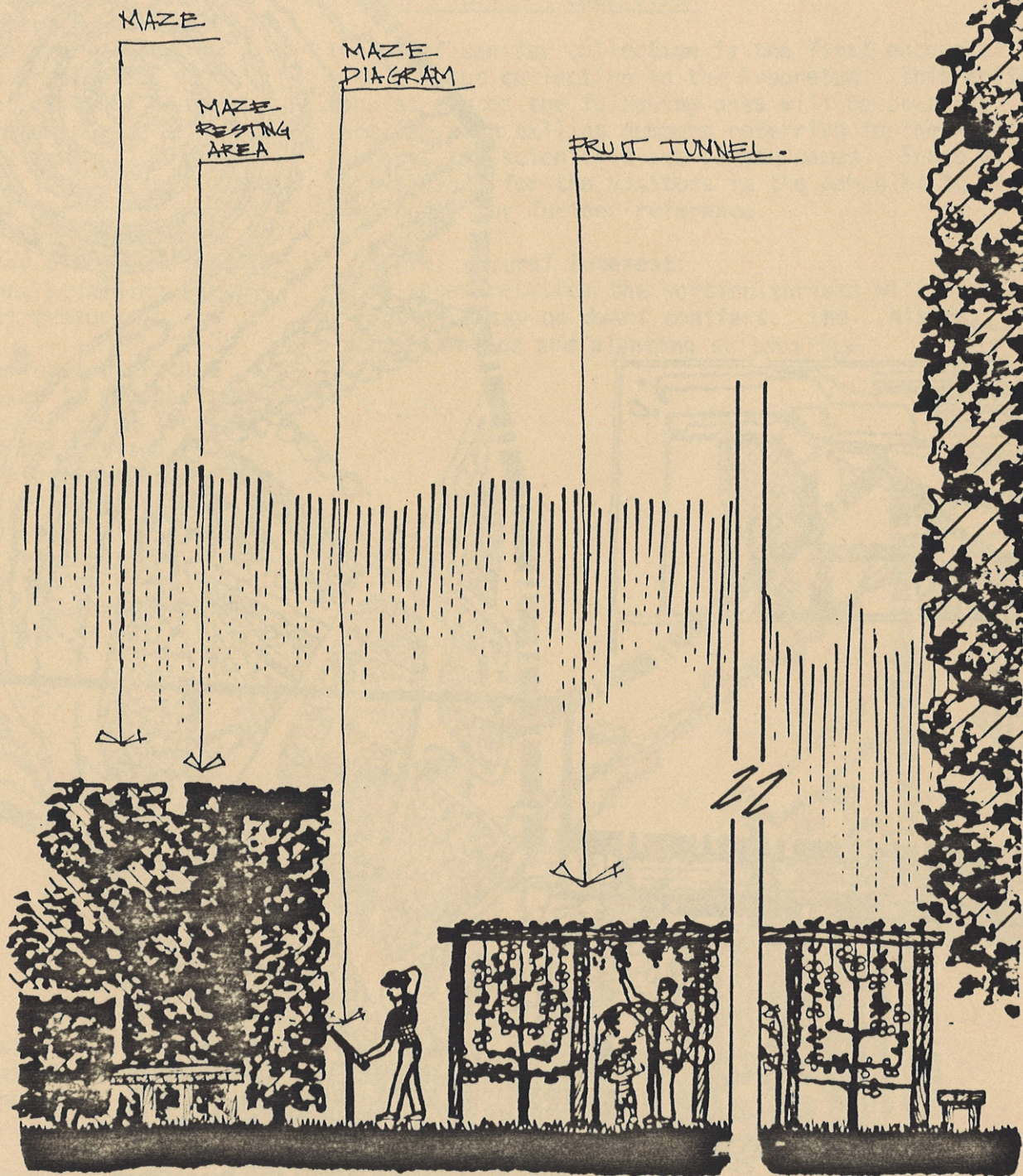


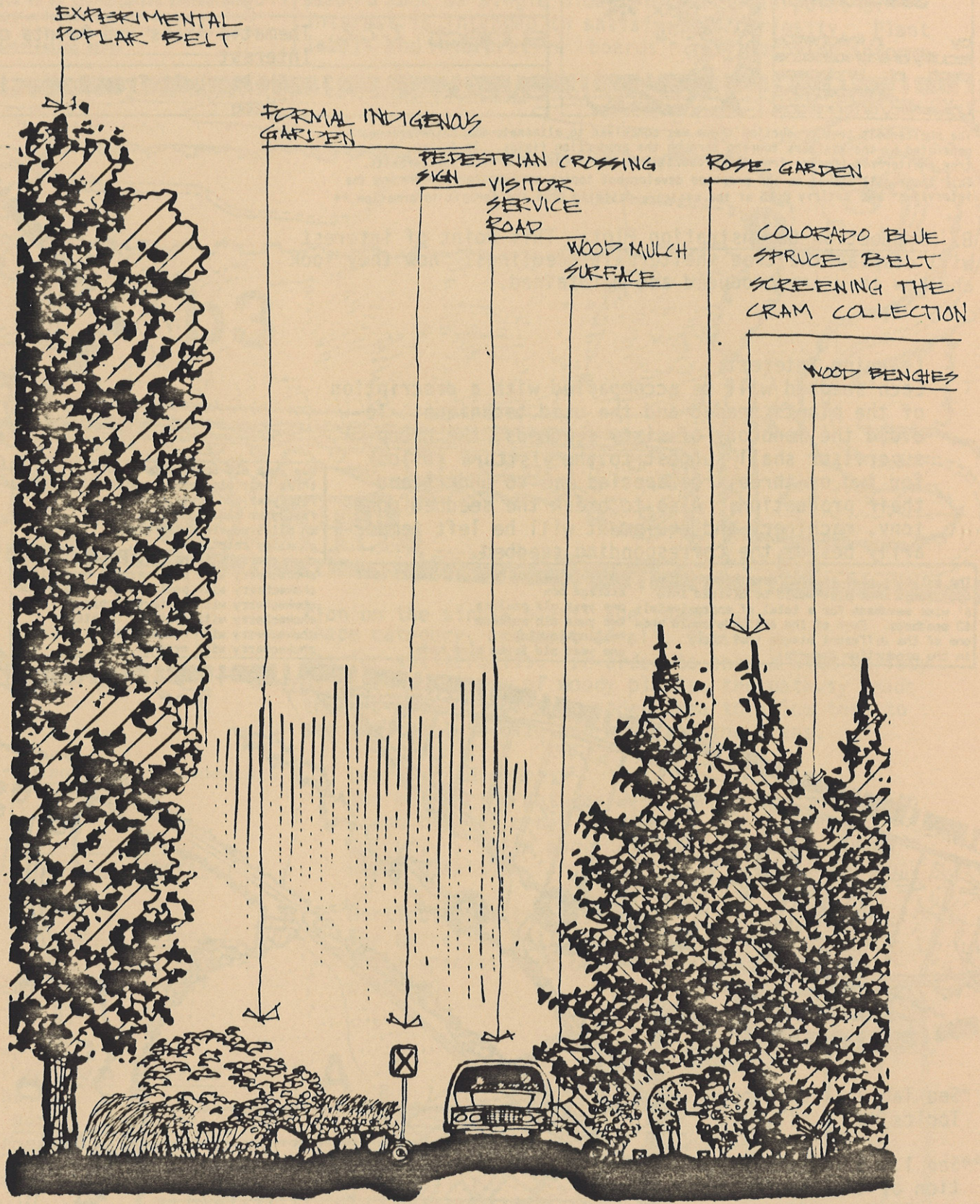
chapter 2. Design Synthesis and Development

section 2.2. User Programs

subject 2.2.2. Thematic Areas and Points of Interest

division 2.2.2.2. Plant Museum Theme Cross-Section a-a (not to scale)





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chapter	2. Design Synthesis and Development
section	2.2 User Programs
subject	2.2.2. Thematic Areas and Points of Interest
division	2.2.2.3. Shelterbelt Tree Production Theme

The shelterbelt tree production theme was conceived to eliminate the interferences generated by the visitors touring through the production fields. It follows the tree shelterbelt species from the production to their formation into shelterbelts. This theme will answer to the proposed development topics brought forward during the interviews* and satisfy 6.6% of the visitors desiring tree shelterbelt information.**

8. Production Demonstration Plot: This point of interest will display the tree shelterbelt seedlings: how they look and how they are produced and maintained.

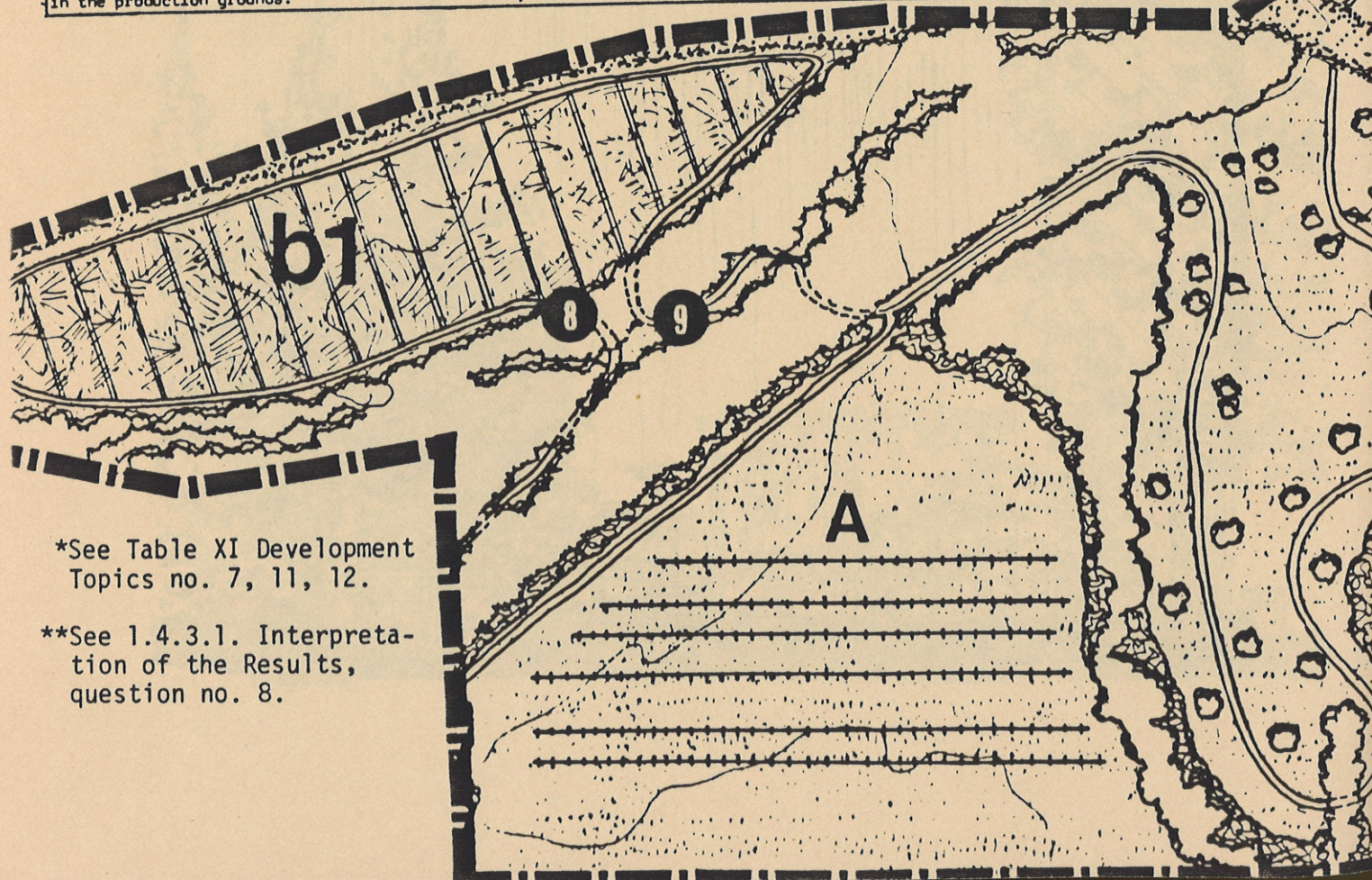
Learning Interest:

Each seedbed will be accompanied with a description of the plants seeded and the used technique. To avoid the monotony of sixty seedbeds, the group supervisor shall suggest to the visitors to look for two or three tree species and to understand their production. Also to break the seedbed monotony, machinery and equipment will be left temporarily beside the corresponding seedbed.

The existing plot is 100' deep by more than 400' long. The plot would be divided into 6' wide seedbeds for a total of approximately 60 seedbeds. Each of the seedbeds could show one of the different stages that occur in the production grounds:

- poplar stooling beds with empty cold storage box
- one year old poplars
- two year old poplars
- healing-in plot
- one year old Scots pine beds

- two year old Scots pine beds
- three year old Scots pine beds
- four year old Scots pine beds
- five year old Scots pine beds
- an alley covered with grass
- an alley rototilled
- chokecherry with no herbicides
- chokecherry with pre-emergent herbicide
- chokecherry with post-emergent herbicide
- chokecherry with contact herbicide
- chokecherry with systemic herbicide
- chokecherry with hydromulch
- chokecherry with organic mulch

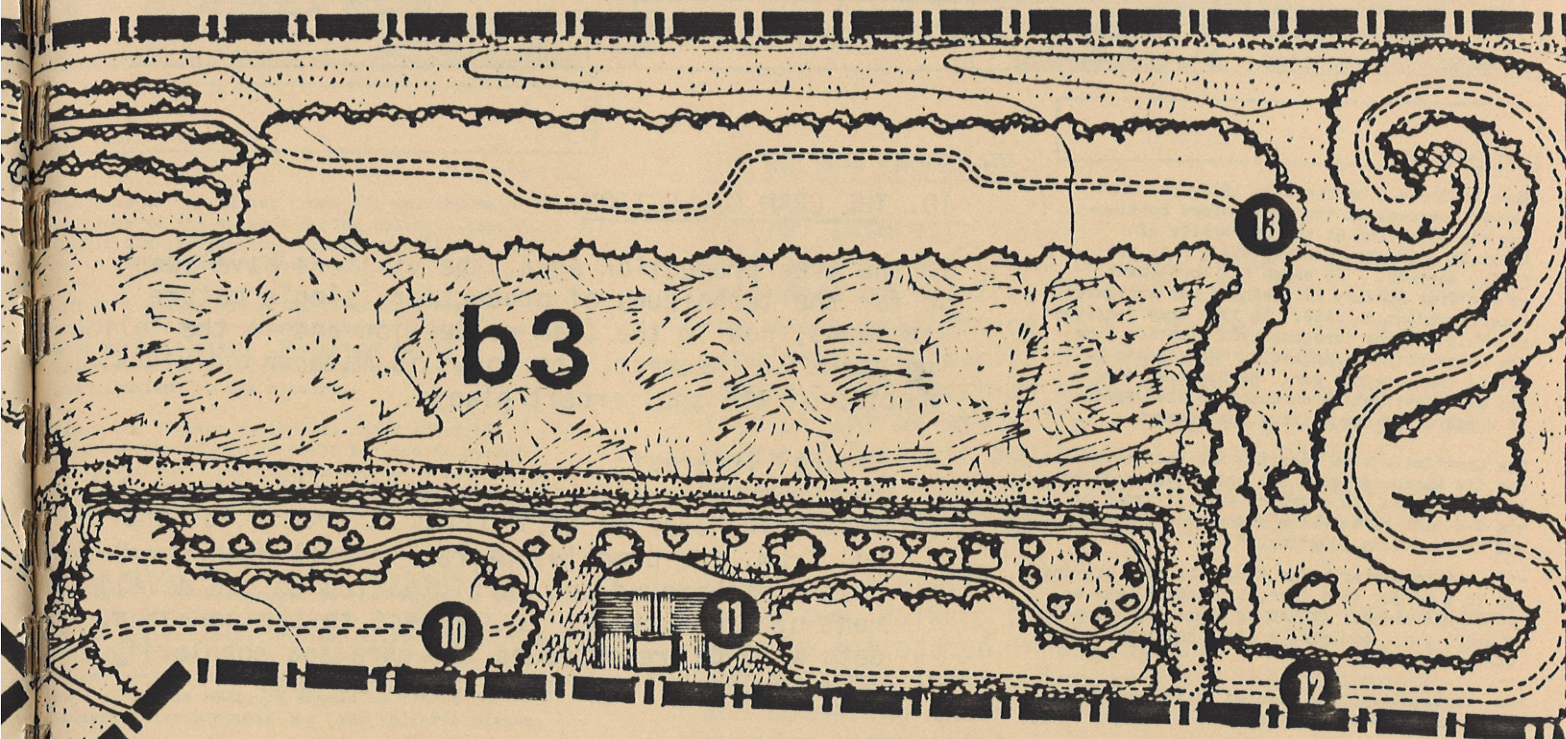


*See Table XI Development Topics no. 7, 11, 12.

**See 1.4.3.1. Interpretation of the Results, question no. 8.

Additional planting would be necessary to support the purpose of this section. Already several woody species exist along the forseen pathway but species such as lilacs, cottonwood, green ash and chokecherry would have to be transplanted there. The use of transplantation techniques are here necessary to be sure that the plants would have an interesting size.

After examining the production techniques, most of the visitors will be anxious to see how the shelterbelt plants look as single older plants. This point of interest is intended to satisfy this curiosity. Plant labels and interpretive boards will provide informa-



tion on the single plant; age, name, sex, shape category, and most of all, their use for shelterbelts. In order to show a wide variety of older specimens of woody plants, the pathway leads the visitors out of the wooded area to allow them to see the complete size and shape of the trees.

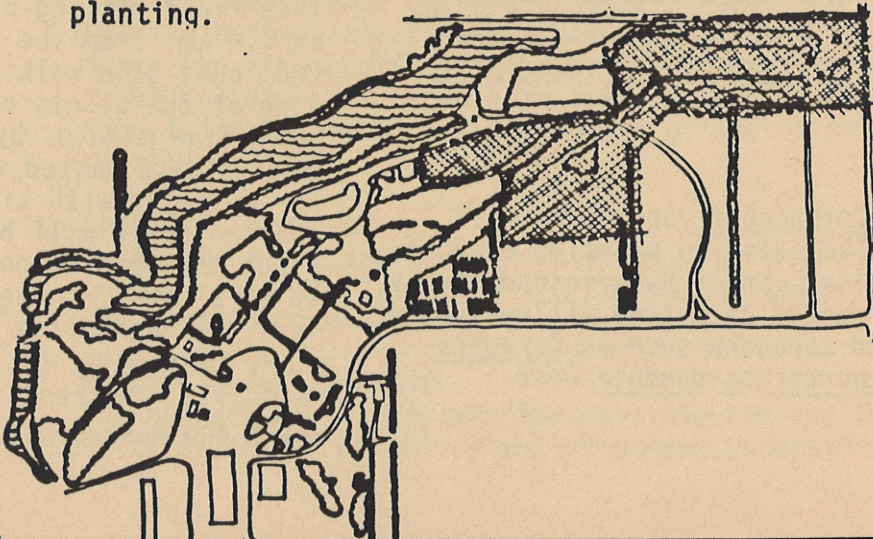
Learning Interest:

The meandering pathway will permit the visitor to stand back in order to compare the texture, colour, size and shape of almost mature woody plants.

Horticultural Interest:

The narration will expose the criteria on which these species have been chosen for shelterbelt planting.

- Maple
- White Spruce - *Picea glauca* (Moench) Voss.
- Berberian Elm
- White Pine - *Pinus strobus* L.
- Berberian Larch - *Larix siberica* Ledeb.
- Green Ash
- White Lilac - *Syringa villosa* L.
- Chokecherry - *Prunus virginiana melanocarpa* (A.Nels) Sarg.
- Low
- Maples
- Manitoba Maple
- Hebe - *Lonicera tatarica* L.
- Common Caragana
- White Birch - *Betula papyrifera* March
- Black Cottonwood - *Populus sargentii* Dode
- Colorado Blue Spruce



P.F.R.A. TREE
NURSERY Arboretum
Indian Head
Saskatchewan

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chapter	2. Design Synthesis and Development
section	2.2. User Programs
subject	2.2.2. Thematic Areas and Points of Interest
division	2.2.2.3. Shelterbelt Tree Production Theme

Cram Collection

Born at Morden, Manitoba in 1913, Dr. Cram served overseas in the RCAF before continuing his education at the University of Manitoba where he received his B.S.A. and M. Sc. degrees. He began his employment at the Tree Nursery in 1947 and was appointed Superintendent in 1958. In 1951 Cram received his Ph.D. on the caragana hybridization from the University of Minnesota. He used to be called the caragana man. He has also done a lot of investigation on Colorado blue spruce, of which he is now writing the summary.

The Cram Collection location has been chosen for its surroundings. The collection will be located in the old entrance area in front of the B-3 plot between the cotoneaster hedge and the existing planting. **

- the cotoneaster hedge should be left growing up to a height of 6 feet, but kept always as a clipped hedge. It has to close the view of the B-3 plot and make a clean background for the collection.
- no caragana will be planted on the south side, among the Walker planting.
- the caraganas will be planted at regular distance one from the other.
- a walking space of 4' is necessary around each of them.
- in the suggested woody plant list there are 18 species of caragana; in Walker planting, there are already few species of caragana that should not be duplicated for the collection.
- the cotoneaster hedge is about 120 meters long, so 13 caragana could be planted 10 meters apart 2 meters away from the hedge;
- since this section of the interpretive grounds is almost half a mile away from the parking lot a resting area should be built. An overhead trellis work attached to the three sides of the service building with benches for at least 30 people and wood deck. The number of places to sit is required by the average student group.
- The Cram Collection Plaque could be placed on the north facing wall of the service building. Since the walls are now finished in painted concrete blocks a new finishing of the walls would be appropriate. Stonewalls could be a noble wall finishing for the plaque.

* Cotoneaster spp.

**The existing planting of John Walker, prior Superintendent, is composed of mature willows, elms and caragana such as Caragana arborescens pendula Carr.

10. THE CRAM COLLECTION:

In the tree production area, the visitors have seen so far the techniques of production, single mature specimens, now in the Cram collection and in the following point of interest, the focus is made on individual species of the shelterbelt plants.

General Interest:

The Cram collection is a caragana collection established in honor of Dr. William H. Cram. To honor Dr. Cram, the pamphlet narrative will describe Dr. Cram's background and participation to the development of the nursery. In respect to the caragana, data will be presented on the caragana popularity as a shelterbelt shrub in the prairies.

Learning Interest:

The visitors with the aid of a monitor and their pamphlet, will go through a short exercise of which the objective is to find as many differences as possible between the varieties of caragana. The exercise will resume into an open exchange of the students' observations.

Horticultural Interest:

A complete list of the caragana of the collection will be fully identified in the pamphlet by common and scientific names and taxonomic description.

11. RESTING AREA:

This first resting point along the pathway is located at 1.4 km. from the starting point or 20 minutes of continual slow walking along the pathway without stopping at the points of interest. If the visitor has taken five minutes by point of interest, 1 hour and 10 minutes have passed since the beginning of his tour. For a family with kids or average fit person of 50 years old, it will be the right time for a pause. Since the resting point will be a sitting area sheltered by a roof, the structure itself will be convenient for regrouping a group before and after a short lecture by the group leader or during a brief rainfall. The resting area will also provide drinkable water and washrooms.

P.F.R.A. TREE
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Indian Head
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University of Manitoba

chapter	2. Design Synthesis and Development
section	2.2. User Programs
subject	2.2.2. Thematic Areas and Points of Interest
division	2.2.2.3. Shelterbelt Tree Production Theme

THE WALKER PROMENADE

The area of the Walker promenade was the main entrance of the nursery during Walker's time. Walker did the planting design of this area and it is at its best in the fall.

Walker's plaque should be fixed to a huge boulder located in front of the northern Colorado blue spruce cluster. The plaque should commemorate his service time as well as his contributions to the nursery.

Since the "Walker poplar" was named after him, this species of poplar could be used to border the promenade. The poplars should be planted 8' apart. The promenade itself should be 6' wide and the poplars 4' away from the promenade.

The end of the "Walker" promenade would finish into a spiral space around the plaque of Mr. J. Walker. As background to this area, in this case the immediate background, is the junction of two gravel roads. Jubilee willows could hide it by being planted 4' in front of the honeysuckle hedge. A viewing point should be left on the town of Indian Head; it should be framed for interpretive purposes by the Walker's plaque.

Also in the same area is located the PFRA Tree Nursery sign. The location of this sign is confusing for any visitor coming from highway #1. The sign would be more effective if it was located by the existing main entrance. The concrete base could then be used for flagpoles; different flags would bring an international and national feeling as well as some life in this sterile corner.

The use of contrasting mulches and ground covers should be used as an arabesque of colours. In the fall this area would attract, by its detail of colour juxtaposition, as many people as the formal flower beds do. Here is a short list of late flowering perennials that could be planted also by the plaque:

<i>Aster</i> spp.	Michaelmas Daisy
<i>Chrysanthemum maximum</i> Ramond.	Shasta Daisy
<i>Rudbeckia laciniata</i> L. 'Hortensia'	Golden-Glow
<i>Helenium autumnale</i> L.	Sneezeweed

* John Walker came to Canada in 1913. After the war, he obtained his B.S.A. at the University of Alberta and his M.Sc. at the University of Minnesota in 1926. He was appointed as superintendent of the nursery from 1942 to 1958; he introduced a series of mechanization innovations. Now retired, he remains an active Winnipeg horticulturist.

12. THE WALKER PROMENADE:

General Interest:

This area is dedicated to John Walker*, prior Superintendent of the Tree Nursery. The existing planting was a realization of Mr. Walker. The plants used make a colourful display during the fall season. The location also offers a view of the Town of Indian Head. The planting of two sinuous belts of 'Walker' poplars will give place for a narrative on work of Mr. Walker on poplars and an introduction to the design of shelterbelts.

Learning Interest:

Using the 'Walker' poplar the notion of 'selection' will be introduced in asking the student to point out the best looking poplar from the promenade and comparing their choice to the choice of the nursery authorities.

Horticultural Interest:

The pamphlet narrative will trace back the genealogical sources, at least on the female side, of the 'Walker' poplar, up to prehistoric time. A short description of different uses of poplars through history will join the major species of poplars.

13. EARLY SHELTERBELT:

General Interest:

The main interest of this point is an old shelterbelt. The shelterbelt is made of four straight rows of trees, amur maple and white spruce. By walking between the rows the visitor will experience the atmosphere of this early shelterbelt technique and will be able to compare these straight rows to the sinuous rows of poplars of the Walker promenade.

Learning Interest:

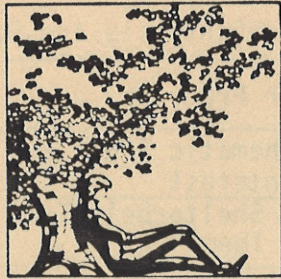
Using the early shelterbelt location, the pamphlet will explain the latest design techniques and the possible tree species combinations.

Horticultural Interest:

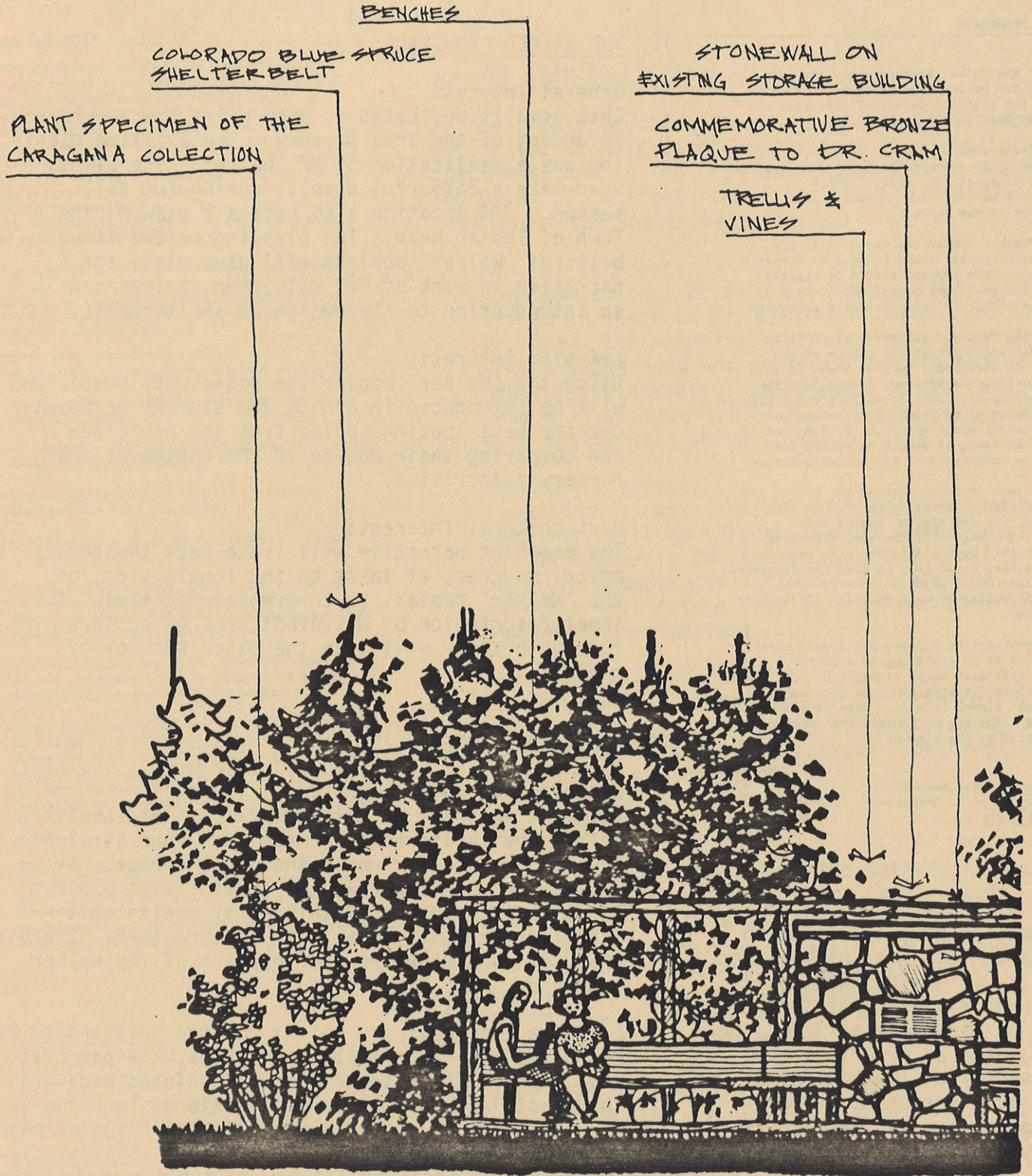
The narrative will explain how multiple row shelterbelts allow the establishment of unique understory flora.

P.F.R.A. TREE
NURSERY Arboretum
Indian Head
Saskatchewan

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architecture
university of manitoba



chapter	2. Design Synthesis and Development
section	2.2. User Programs
subject	2.2.2. Thematic Areas and Points of Interest
division	2.2.2.3. Shelterbelt Tree Production Cross-Section a-a (not to scale)



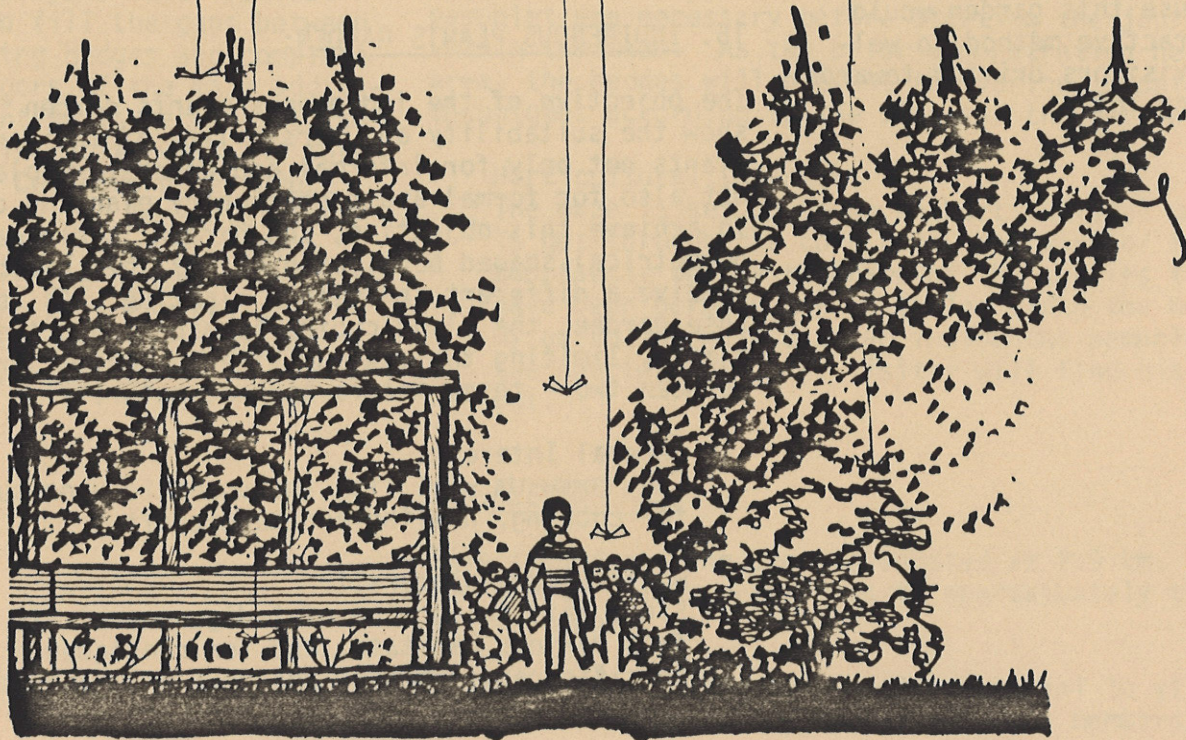
WOOD DECK FOR
INFORMAL SITTING
AND GROUP MEETING
DISCUSSION

PATHWAY ON
WOOD MULCH

ENTRANCE

PLANT SPECIMEN
OF THE CARAGANA
COLLECTION

COLORADO BLUE
SPRUCE BELT
SCREENING THE
ROSE GARDEN



P.F.R.A. TREE
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Indian Head
Saskatchewan

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 university of manitoba



chapter	2. Design Synthesis and Development
section	2.2. User Programs
subject	2.2.2. Thematic Areas and Points of Interest
division	2.2.2.4. Plant Museum Theme (Part Two)

Plant Museum Theme (Part Two) is the continuation of Plant Museum Theme (Part One) previously described. Part Two as part one of this theme presents woody plants, regrouped in collections according to similar physical features.

* Born in Scotland in 1877, Mr. Norman M. Ross obtained his B.Sc. in Agricultural Botany from the Ontario Agricultural College in 1898, pursued his education at the University of Tennessee and, in 1902, became the first superintendent of the Tree Nursery where he developed the nursery tree planting program and retired in 1941.

** The location of the indigenous plants garden was chosen to use the row of experimental poplars for background of the garden, the poplar species being a major indigenous prairie species, and also because this garden would be an attractive method to welcome the visitors driving towards the parking lot.

14. ROSE GARDEN:

The rose garden will be an example of a low maintenance rose garden. In this sense hybrid perpetual and hybrid tea roses are left aside since the too severe climate does not permit a successful outdoor wintering. Since the concept of the Arboretum deals first with woody plants, shrub roses are far the most appropriate type of rose.

Horticultural Interest:

A general description and the source for the principal rose families will appear as interpretation. The 'Rambling Rose' is a rose selected by Norman M. Ross*, prior Superintendent of the nursery, and will serve in the interpretation to demonstrate the criteria of rose selection.

15. INDIGENOUS PLANTS GARDEN:

The objective of the indigenous plants garden** is to show the suitability and versatility of indigenous plants not only for informal and understory planting but also for formal and contemporary planting designs. To achieve this objective, the garden is divided into geometrical shaped beds, each one of them capable to receive a different indigenous planting. As for the rose garden, the plant choice is made among the woody plants, limiting the maximum size to medium shrub, between two - three meters high at maturity.

General Interest:

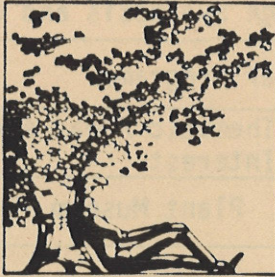
The comments will list the domestic uses such as for cooking, healing and handicraft.

Horticultural Interest:

Since this collection of indigenous plants comes from various habitats, and for consequence have specific requirements, the text will indicate the

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Indian Head
Saskatchewan

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dept. of landscape
architecture
university of manitoba



chapter	2. Design Synthesis and Development
section	2.2. User Programs
subject	2.2.2. Thematic Areas and Points of Interest
division	2.2.2.4. Plant Museum Theme (Part Two)

commercial source of the plants, their prairie habitat and their domestic requirements.

16. FRUIT TUNNEL:

The fruit tunnel is a collection of hardy fruit trees and shrubs. The collection will contain such fruit plants as grapes, apple trees, cherry trees, plum trees. The fruit tunnel will take its support on an iron frame allowing the growth of the fruit trees as espaliers. The fruit tunnel will provide a romantic spring flowered environment, and a luxurious fruit picking area during the summer and early fall.

Horticultural Interest:

Interpretation will be made on the techniques used to grow the different fruits and their sources.

17. THE MAZE:

The maze results from modifications brought to the demonstration hedge area. Caution, awareness and the pamphlet are necessary before starting the journey within the maze. As the prior demonstration hedge area, the hedges will present the various pruning techniques according to the size and the species.

Horticultural Interest:

The maze is set up to be an horticultural game. To get through the corridors, the visitor has to constantly verify the name of the species that have been permanently installed along the hedges. By using the maze diagram inside the pamphlet and the species name, the visitor will find his way out.

18. RESTING AREA:

This second resting area is located at 2.9 km. from the start, which corresponds to approximately two hours of visiting.

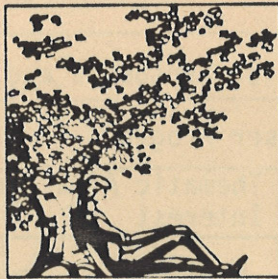
The adventure of the maze will not appeal to all the visitors. For the convenience of group members or

* The fruit tunnel location was chosen for its full exposure to south sun, to divide the previous large open space and to bring an enjoyable link between the prior existing public grounds and the newest and further points of interest of the Arboretum.

** The actual hedges, when the species allows it, should be left to grow to eye's level (5 feet high). To fill the gaps between the existing hedges and complete the corridors of the maze additional planting is necessary; to keep the integrity with the surroundings Colorado blue spruce should be chosen for this planting since it shapes already a belt around the hedges area. Inside of the maze benches will provide secluded conversation and resting points.

P.F.R.A. TREE
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 Saskatchewan

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 university of manitoba

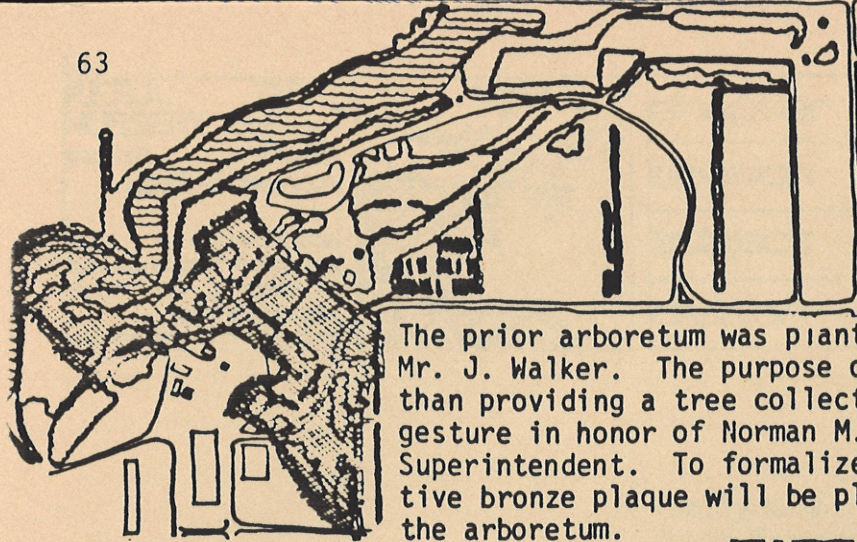


chapter	2. Design Synthesis and Development
section	2.2. User Programs
subject	2.2.2. Thematic Areas and Points of Interest
division	2.2.2.4. Plant Museum Theme (Part Two)

family members who will prefer to wait outside for their friends or relatives, for elderly and handicapped people, the entrance to the maze is provided with a resting area.

For the visitors who will have any interest in exploring the maze or waiting for somebody, the resting area provides access to a service pathway leading to the next point of interest.

The resting area will have benches, a drinkable water fountain, colorful planting to look at, and washroom



The Home Landscape Theme is the major component of the General Interest Touring Program (see 2.2.1.2.). This thematic area presents the potential of woody plants in the home landscape context by displaying indigenous, cultured woody plants, produced or not by the nursery, in a wide range of planting design themes (i.e. formal garden, marsh environment, etc.).

19. ARBORETUM:

The prior arboretum was planted between 1942 - 1949 by Mr. J. Walker. The purpose of the arboretum was more than providing a tree collection, but was a symbolic gesture in honor of Norman M. Ross, first nursery Superintendent. To formalize this gesture a commemorative bronze plaque will be placed by the entrance of the arboretum.

* see section a,a page 65-66.



P.F.R.A. TREE NURSERY
 Indian Head Saskatchewan
 by r. Fréchette
 faculty of architecture
 dept. of landscape architecture
 university of manitoba



The improved Arboretum will be a collection of woody plants where each plant is properly labelled and spaced so that its characteristics will be easily observable. Spacings according to the species' maturity size must be considered; the spacing must also permit to observe singly planted specimens as well as more or less dense clusters of the same species.

Horticultural Interest:
 The arboretum pathway will be connected to the new administrative complex. There, the horticulturists will be able to consult the arboretum library, governmental publications and, when possible, ask the advice of professionals.

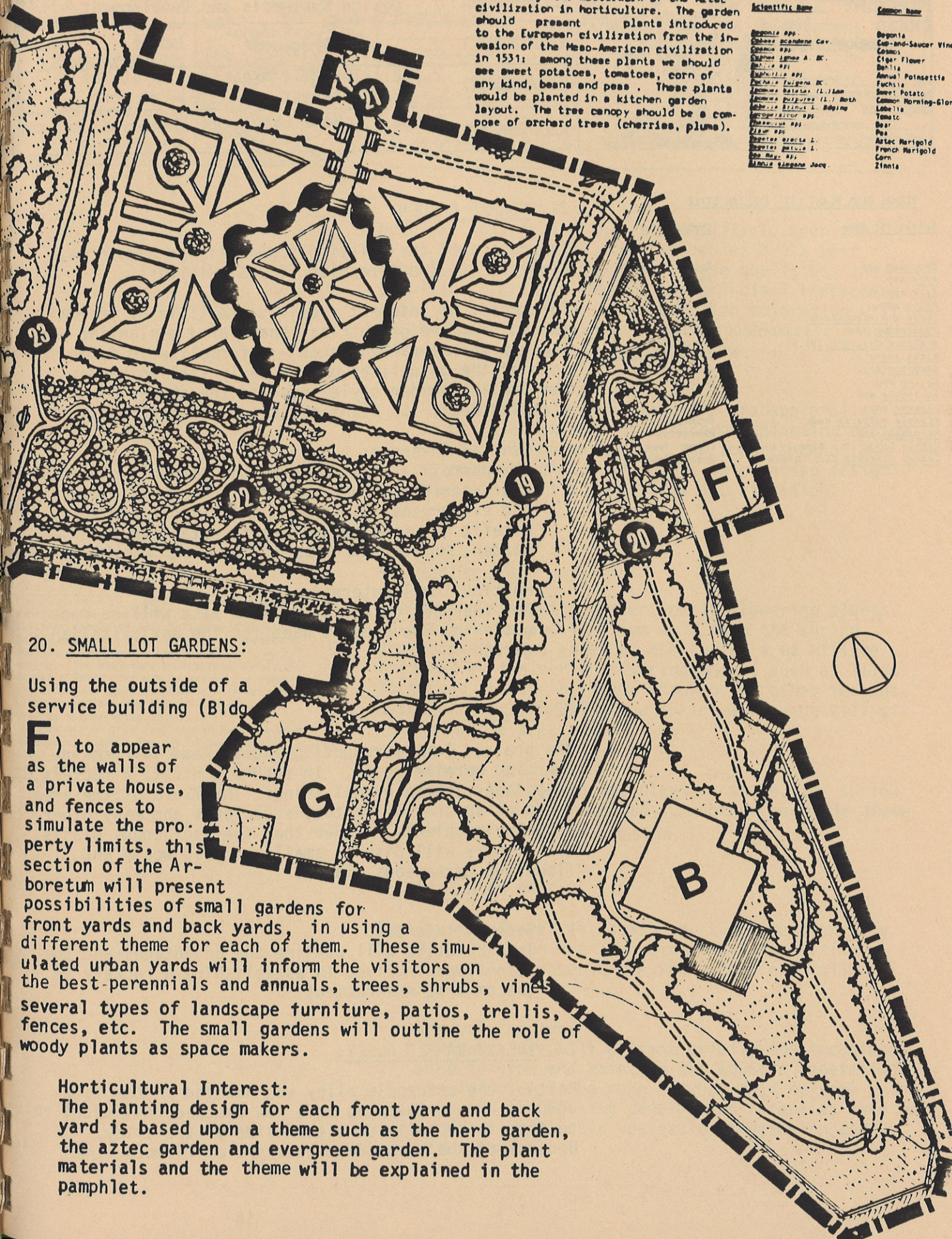
chapter	2. Design Synthesis and Development
section	2.2. User Programs
subject	2.2.2. Thematic Areas and Points of Interest
division	2.2.2.5. Home Landscape Theme

The Aztec Garden would be a means to acknowledge the masterwork of the Aztec civilization in horticulture. The garden should present plants introduced to the European civilization from the invasion of the Meso-American civilization in 1531; among these plants we should see sweet potatoes, tomatoes, corn of any kind, beans and peas. These plants would be planted in a kitchen garden layout. The tree canopy should be composed of orchard trees (cherries, plums).

Scientific Name

Common Name

<i>Begonia</i> spp.	Begonia
<i>Celastrus scandens</i> Cav.	Cup-and-Saucer Vine
<i>Cassia</i> spp.	Cassia
<i>Cyrtosperma</i> A. DC.	Cigar Flower
<i>Dahlia</i> spp.	Dahlia
<i>Euphorbia</i> spp.	Annual Poinsettia
<i>Fuchsia</i> <i>lucida</i> DC.	Fuchsia
<i>Lycopersicon</i> (L.) Lam.	Sweet Potato
<i>Ipomoea</i> <i>purpurea</i> (L.) Roth	Common Morning-Glory
<i>Labellia</i> <i>biloba</i> L. Boding	Labellia
<i>Malvaceae</i> spp.	Tomato
<i>Phaseolus</i> spp.	Bean
<i>Pisum</i> spp.	Pea
<i>Tagetes</i> <i>erecta</i> L.	Aztec Marigold
<i>Tagetes</i> <i>patula</i> L.	French Marigold
<i>Zea</i> <i>Mays</i> spp.	Corn
<i>Malus</i> <i>sibiana</i> Jacq.	Apple



20. SMALL LOT GARDENS:

Using the outside of a service building (Bldg

F) to appear as the walls of a private house, and fences to simulate the property limits, this section of the Arboretum will present possibilities of small gardens for front yards and back yards, in using a different theme for each of them. These simulated urban yards will inform the visitors on the best-perennials and annuals, trees, shrubs, vines, several types of landscape furniture, patios, trellis, fences, etc. The small gardens will outline the role of woody plants as space makers.

Horticultural Interest:

The planting design for each front yard and back yard is based upon a theme such as the herb garden, the aztec garden and evergreen garden. The plant materials and the theme will be explained in the pamphlet.

P.F.R.A. TREE
NURSERY *Arboretum*
Indian Head
Saskatchewan

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 architecture
 university of manitoba



chapter	2. Design Synthesis and Development
section	2.2. User Programs
subject	2.2.2. Thematic Areas and Points of Interest
division	2.2.2.5. Home Landscape Theme

FORMAL BEDS PLANT LIST ITALIAN STYLE

<u>Scientific Name</u>	<u>Common Name</u>
<u>Geranium spp.</u>	Red Geranium
<u>Rosa spp.</u>	Rose
<u>Iris spp.</u>	Iris
<u>Viola spp.</u>	Violet
<u>Viola x Wittrockiana</u>	Pansy
<u>Hyacinthus spp.</u>	Hyacinth
<u>Dianthus Caryophyllus L.</u>	Carnation
<u>Alcea rosea L.</u>	Common Hollyhock
<u>Jasminum spp.</u>	Jasmine
<u>Lilium spp.</u>	Lily
<u>Lavandula spp.</u>	Lavender
<u>Papaver spp.</u>	Poppy
<u>Primula vulgaris Huds.</u>	Primrose
<u>Narcissus spp.</u>	Narcissus
<u>Citrus Limon (L.) Burm.f.</u>	Lemon Tree
<u>Citrus sinensis (L.) Osbeck.</u>	Orange Tree

21. FORMAL GARDEN:

The colors of the existing formal flower garden have always attracted a regular flow of visitors.

This point of interest receives the title of "formal" garden from the geometrical shape of the planting beds. The new formal garden takes formality in following some of the guidelines of the early Italian gardens. The Italian garden style inspired the shapes of the planting beds, the plant choice, the water course.

General Interest:

The narrative will describe the garden's physical characteristics such as size, numbers of flowers and evergreens, along with the history and the benefit of using guidelines to establish a formal garden, such as the ones of the early Italian garden.

Horticultural Interest:

For the horticulturist a plant list will be made outlining the species used for the early Italian garden.

22. ROCKERY:

The prairie land surrounding Indian Head is rich in emerging moraine rocks. In such a context, a rockery only looks like a normal thing. The flora of the area includes species of cactus, succulents and many other heat-loving plants. Other than the indigenous plants, the rockery will display small cultured woody and flowering herbaceous plants.

General Interest:

The narrative will outline the advantages and the techniques involved in establishing a rockery in the prairie environment.

23. THE CRABAPPLE ALLEY:

Most of the crabapple alley was planted in the late 1940's. The crabapples have now reached sufficient volume to form thick walls on either side of the alley. Because of the abundant clusters of flowers, the

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 Indian Head
 Saskatchewan

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 architecture
 university of manitoba



chapter 2. Design Synthesis and Development

section 2.2. User Programs

subject 2.2.2. Thematic Areas and Points of Interest

division 2.2.2.5. Home Landscape Theme

purplish foliage and the capability to keep the fruit over the winter, the crabapples are a year around attraction. Among all these qualities, the purplish coloration remains the principal characteristic of its species. This purplish coloration will be the base for narration about monochromatic planting as possible theme for home landscape.

General Interest:

The narrative will explain the crabapple alley as being an example of monochrome planting design. A note will be made about the importance of an appropriate choice of colors in planting design that will suit a home landscape situation.

24. SPRING AREA:

The spring area will present early flowering plants. Tulips, crocus and trillium will form the spring groundcover. The edges of the spring area will be bordered by the early flowering shrubs such as lilacs. To spread the spring theme through the other seasons, a sculpture celebrating the spring awakening will sit in the middle area.

General Interest:

As for the monochrome planting theme, the spring theme will be presented as another possible theme for home landscape design.

25. LAUNCHING AREA:

The launching area is located by the retention lake and by walking on the launching board the visitors will be able to observe the indigenous and cultured aquatic plants.

General Interest:

The narrative will present briefly the techniques used to grow and maintain the aquatic vegetation. Comparison will be made between this nursery retention and the housing development retention lake to promote the aquatic vegetation protection and understanding.

Spring Area

The planting of early flowering plants is essential for this area. Tulips, crocus and trillium should be used as a ground cover. In the middle of the area would be located a sculpture inspired on the intimacy of the spring. The sculpture on its base should not exceed 6 feet. The ground around the base of the sculpture could be planted with masses of globe evergreens and lily of the valley, as well as higher early lilies. The pathway in this area should become a wide symmetrical space. The use of round paving slabs with gravel mulch should formalize the space as well as protect the flowering ground cover.

P.F.R.A. TREE
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 Indian Head
 Saskatchewan

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 architecture
 university of manitoba



chapter 2. Design Synthesis and Development

section 2.2. User Programs

subject 2.2.2. Thematic Areas and Points of Interest

division 2.2.2.5. Home Landscape Theme

Educational Interest:

The visitors will be introduced to the aquatic flora by presenting them the composing elements and the factors that play on these elements, in keeping this environment alive: for example, the role of the the constant presence of water in the establishment of water lilies.

26. MARSH AREA:

The marsh area located at the extremity of the retention lake will be provided with a floating boardwalk to allow the visitor close observation of marsh plants. The boardwalk will protect the sensitive vegetation against the frequent passage of visitors.

At this location water from an artificial spring supply will run down the hill. Before passing under the boardwalk, the water will activate a wood structure such as a water wheel. This water powered wood structure will attract the visitors down the hill, upon the boardwalk.

General Interest:

The narrative will present the marsh as a unique environment necessary to a well-balanced ecosystem. A point will be made to say that a marsh acts as a natural filter on waste water produced by man: the water powered wood structure will symbolize this quality.

Educational Interest:

The marsh environment will permit interpretation of the flora and the fauna associated with the marsh. The notion of the wet meadow will be introduced in using the grass and the sedge growing nearby.

27. RESTING AREA:

Being on the top of the slope the visitor will have a vista over the boscaje, the marsh, and a partial view of the production fields. Since this is the last point of interest, the visitor probably wants to relax a few minutes before returning to the parking lot.

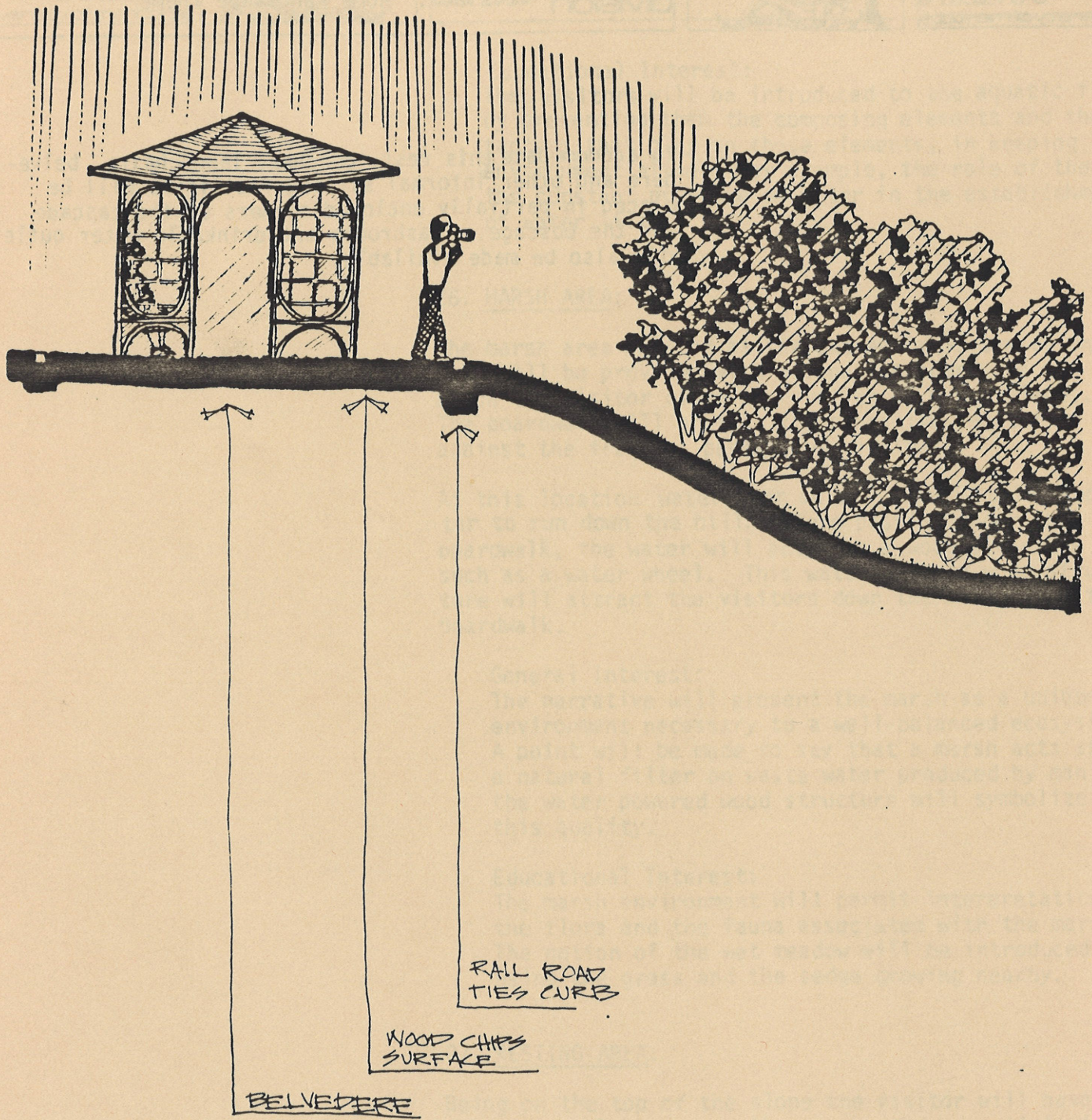
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 Indian Head
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chapter	2. Design Synthesis and Development
section	2.2. User Programs
subject	2.2.2. Thematic Areas and Points of Interest
division	2.2.2.5. Home Landscape Theme

To accommodate this rest, benches, lawn chairs, belvedere and other informal sitting facilities will be placed in partially enclosed corners of the cascade and the boscage. Washrooms and drinkable water outlets will also be made available.



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chapter	2. Design Synthesis and Development
section	2.2. User Programs
subject	2.2.2. Thematic Areas and Points of Interest
division	2.2.2.5. Home Landscape Theme Cross-Section a-a (not to scale).

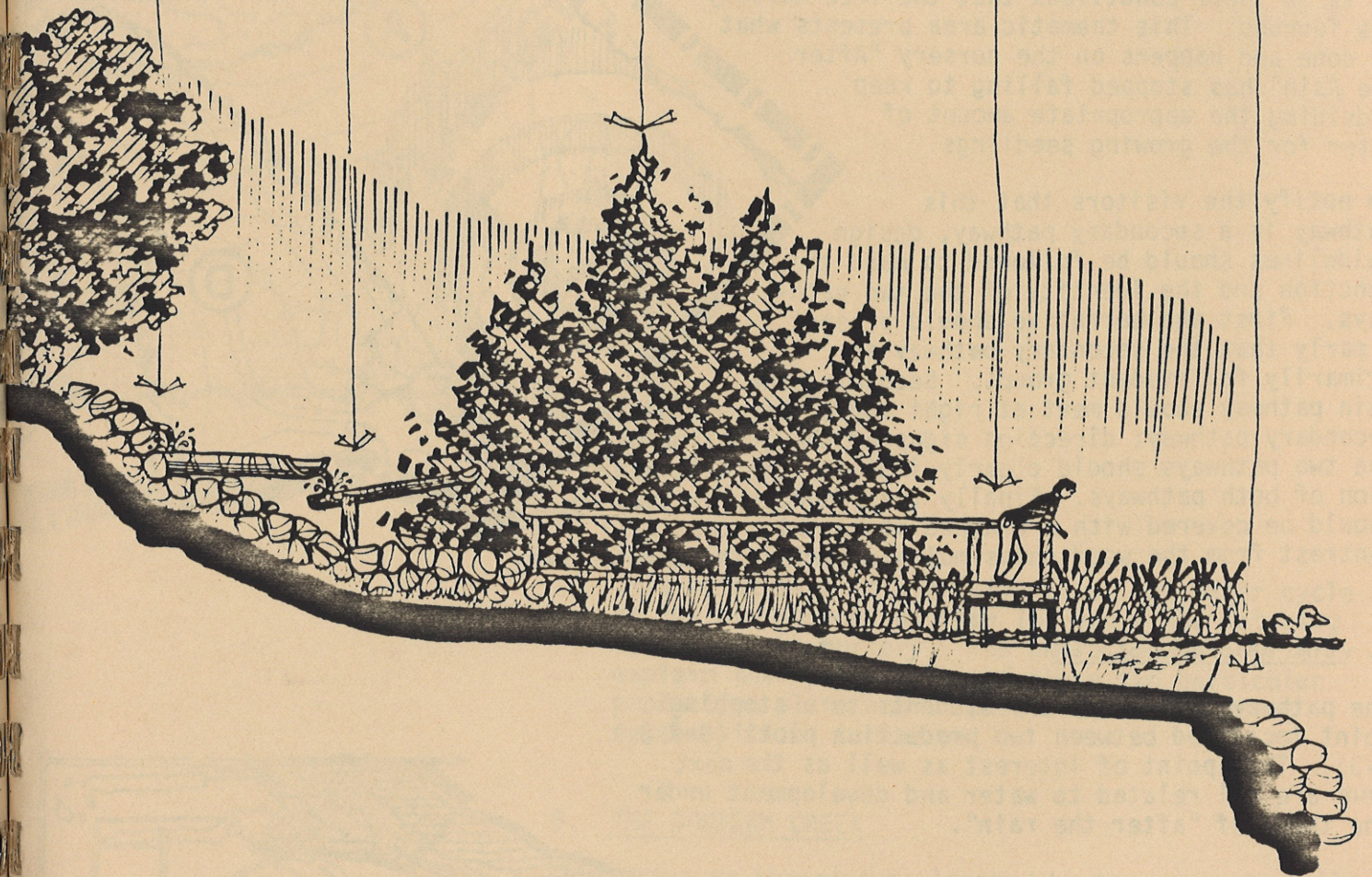
CASCADE

WATER POWERED
WOOD STRUCTURE

WATER EDGE-
CONIFER PLANTING
OF BLACK & WHITE
SPRUCE

FLOATING WOOD
BOARDWALK

UNDERWATER
STONE
RETENTION
WALL



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chapter 2. Design Synthesis and Development

section 2.2. User Programs

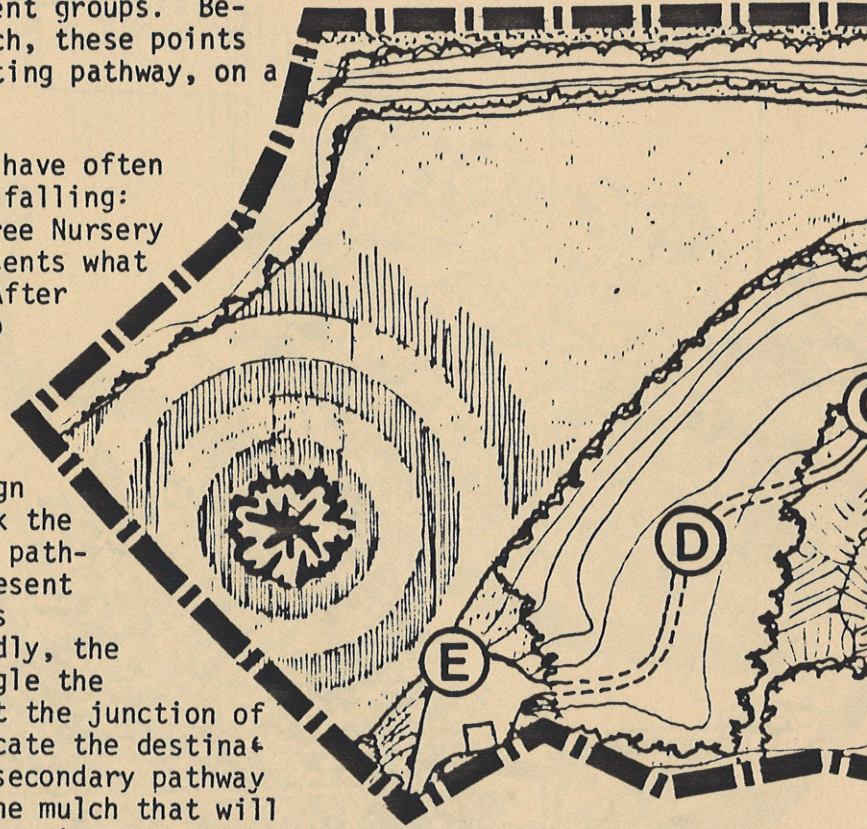
subject 2.2.2. Thematic Areas and Points of Interest

division 2.2.2.6. After the Rain Theme

The next seven points of interest will be developed primarily for the educational interest of student groups. Because of the themes that they approach, these points are located outside of the main visiting pathway, on a secondary pathway.

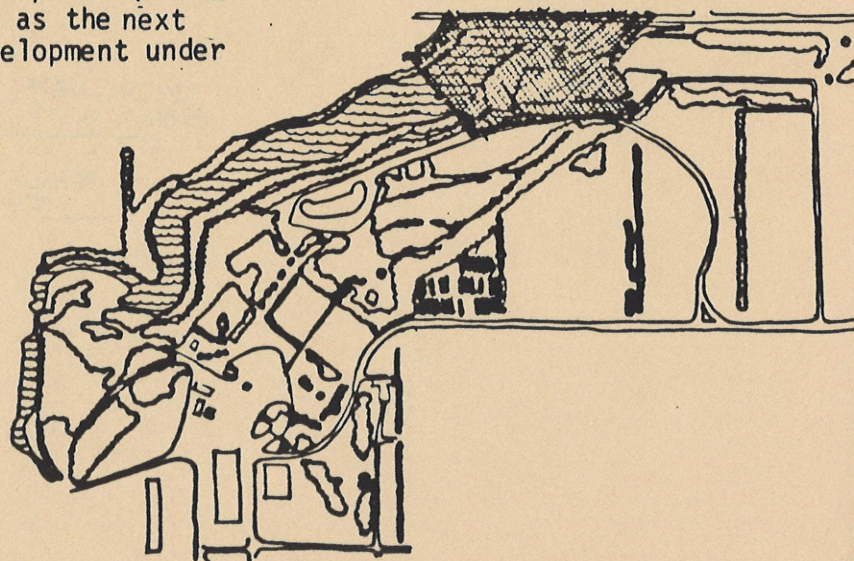
In the prairie history, droughts have often started "After the Rain" has stopped falling: it is in these conditions that the Tree Nursery was founded. This thematic area presents what is done and happens on the nursery "After the Rain" has stopped falling to keep providing the appropriate amount of water for the growing seedlings.

To notify the visitors that this pathway is a secondary pathway, design guidelines should be followed to mark the junction and the identity of the two pathways. First the narrative should present clearly that the secondary pathway is primarily for student groups. Secondly, the main pathway should meet at right angle the secondary pathway; direction signs at the junction of the two pathways should clearly indicate the destination of both pathways. Finally the secondary pathway should be covered with a crushed stone mulch that will contrast from the wood chips mulch covering the main pathway.



A. THE WATERING SYSTEM

The pathway will guide the students to a stopping point localized between two production plots (B-2 & B-3). This point of interest as well as the next four are all related to water and development under the theme of "after the rain".





Educational Interest:

This point will tell briefly about the water cycle in the atmosphere and then introduce the watering system of the nursery. The narrative will briefly explain the water regime of these two particular production plots and if possible, the watering system will be turned on.

B. THE SUNBEAM CREEK

This point of interest is located by the concrete spillway located in the northern portion of the retention lake no. 1. By using the spillway as feature, this point of interest will present the cycle of the nursery watering water.

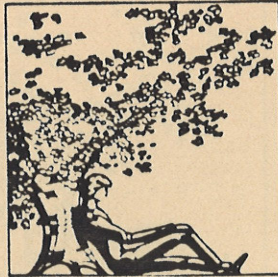
Educational Interest:

The narrative will explain the cycle of the watering water through the nursery, from the creek to the fields. To accomplish this interpretation, the narrative will include a description of the retention lake system, their importance in the nursery production, comments of the water quality and suitability as wildlife habitat.

* see section a,a
on page 71.

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chapter 2. Design Synthesis and Development

section 2.2. User Programs

subject 2.2.2. Thematic Areas and Points of Interest

division 2.2.2.6. After the Rain Theme

C. THE MOIST SHELTER

Located within a tree stand, this third point of interest on water will present the participation of trees, in shelterbelt formation or not, in protecting the moisture of the cultured fields.

Educational Interest:

To transmit these notions, the narrative will explain how trees can be planted to provide snow accumulation at a desired location; how the tree root system is similar to the one of the human intestine and its role in the capillarity of the soil; and how their situation can provide proper wind and sun breaks.

D. MOISTURIZING TECHNIQUES

This point of interest will be using the actual production plot B-2. to demonstrate techniques to keep or to increase the moisture content of the soil commonly used for the tree production. Contrary to the situation described in the moist shelter where the moisture is retained by the trees, here the moisture is controlled by adding materials to the natural elements. The point of interest will consist of a walk by seedling plots using such materials as silica sand, peat moss, hydro mulches, clay pipes, sun screens, etc., and will not interfere with the nursery operations in the B-2 plot.

Educational Interest:

Narration will be made on the physical and/or chemical qualities of each of the moisturizing material. A table will show the desirable quantities and the expected results, according to the seedling species.

E. THE PUMPHOUSE

The purpose of this point of interest is to bring an easy level of understanding the mechanical process involved in distributing and quantifying the amount of water necessary to the production fields, using the pumphouse for demonstration. The pumphouse is located on the edge of the retention lake no. 1, in front of the proposed floating aeration fountain.

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chapter 2. Design Synthesis and Development

section 2.2. User Programs

subject 2.2.2. Thematic Areas and Points of Interest

division 2.2.2.6. After the Rain Theme

Educational Interest:

The narration will present tables and explanations on the quantities of water from the retention lake system necessary for the growing season and the physical features of this particular retention lake no. 1. To help the understanding of these figures, graphics will show the relief of the lake and the meaning of the expression of "acre foot" of water, and a glass window will allow the visitor to examine the water pump.

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chapter 2. Design Synthesis and Development

section 2.2. User Programs

subject 2.2.2. Thematic Areas and Points of Interest

division 2.2.2.6. After the Rain Theme
Cross-section a-a (not to scale)

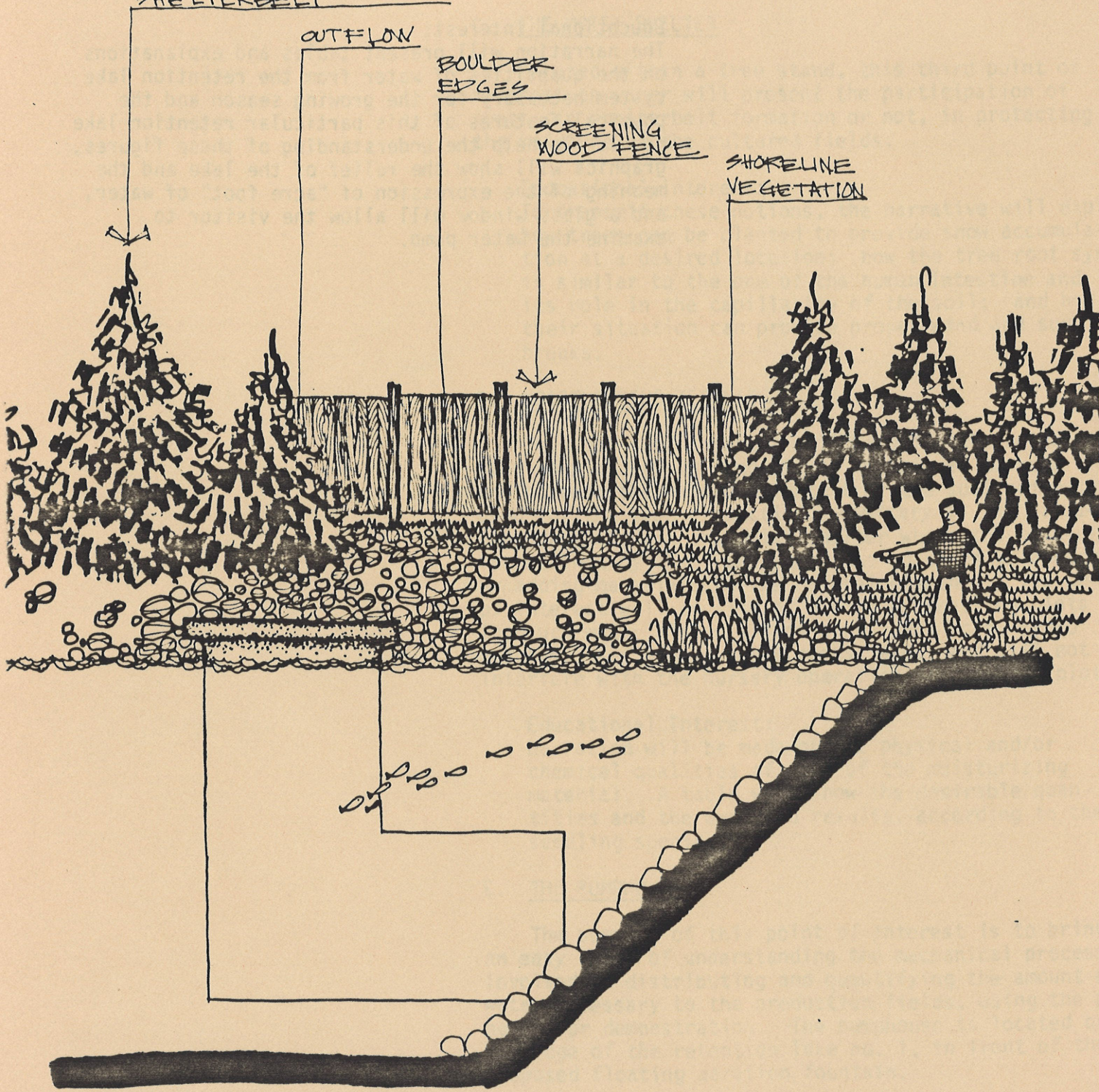
BLACK & WHITE SPRUCE
WINTER CONIFER
SHELTERBELT

OUTFLOW

BOULDER
EDGES

SCREENING
WOOD FENCE

SHORELINE
VEGETATION



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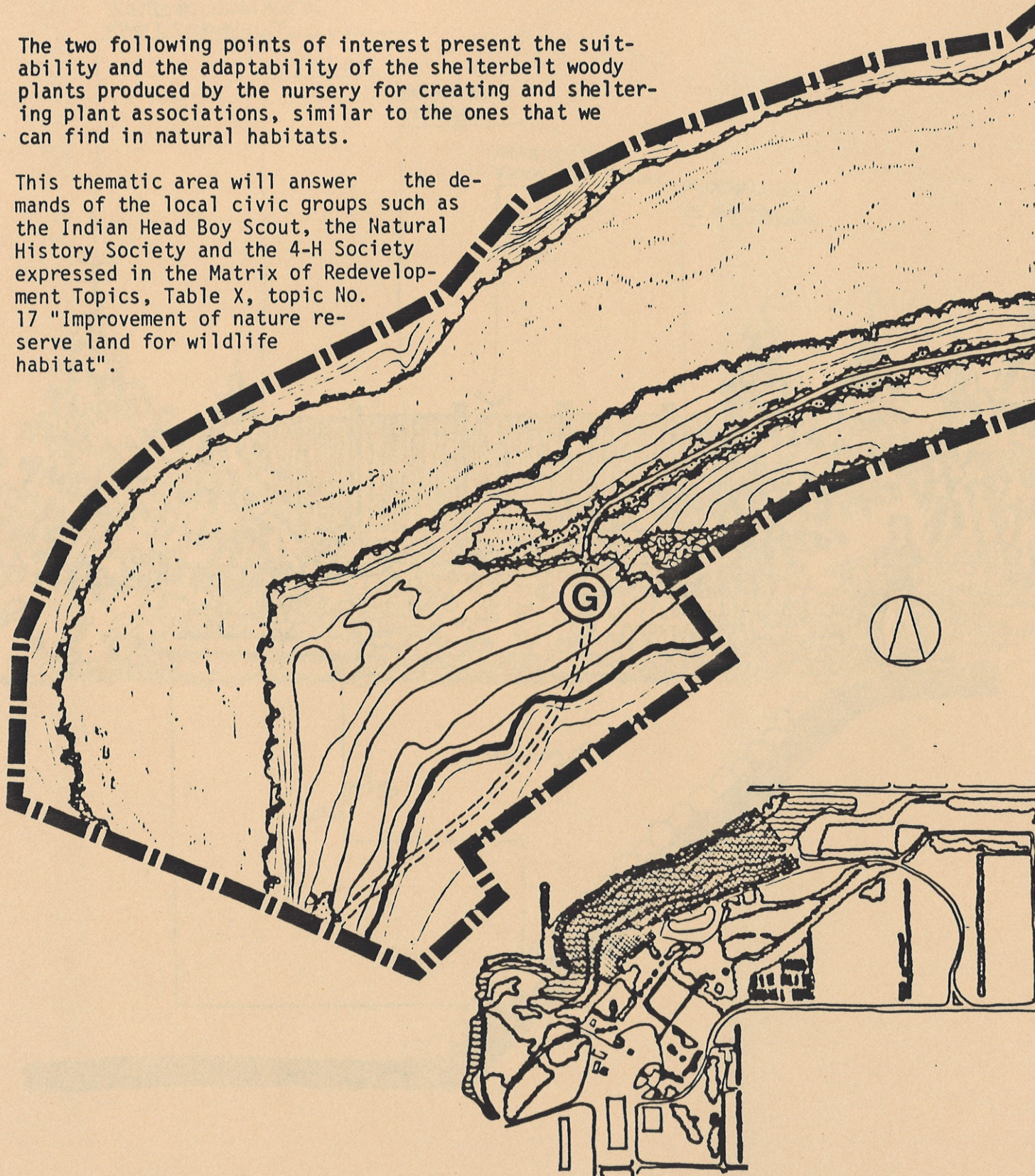
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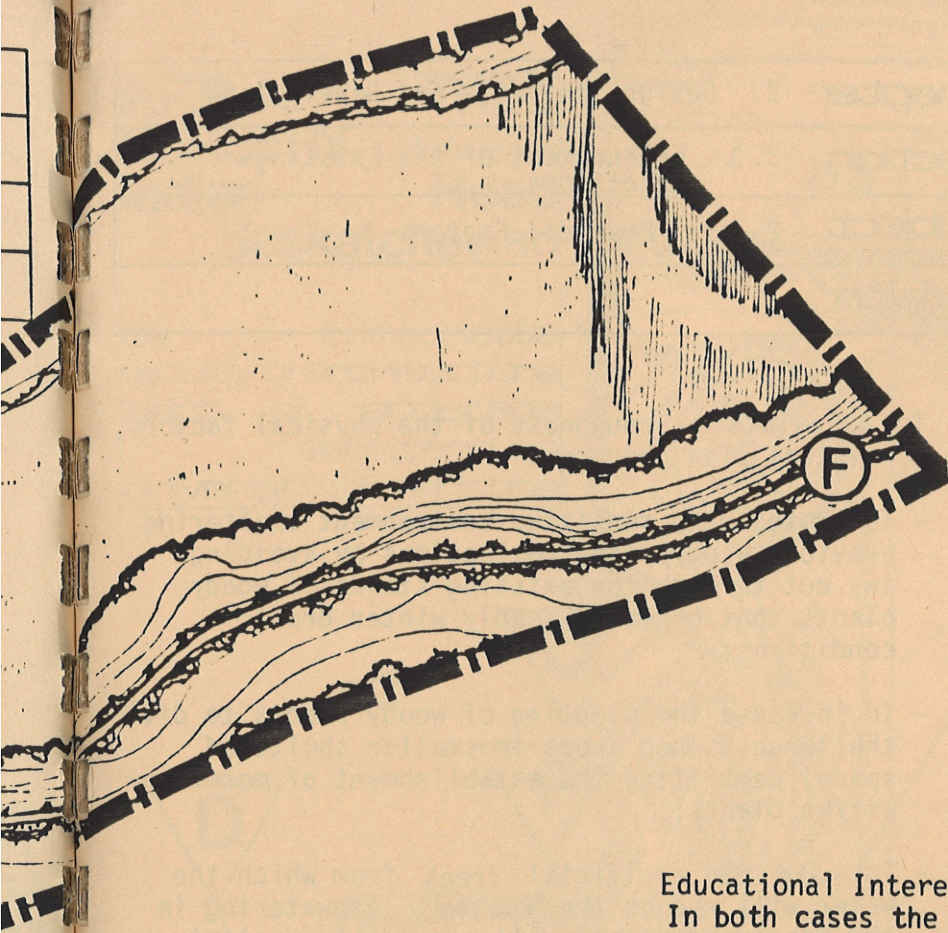


chapter	2. Design Synthesis and Development
section	2.2. User Programs
subject	2.2.2. Thematic Areas and Points of Interest
division	2.2.2.7. Man-Made Flora Theme

The two following points of interest present the suitability and the adaptability of the shelterbelt woody plants produced by the nursery for creating and sheltering plant associations, similar to the ones that we can find in natural habitats.

This thematic area will answer the demands of the local civic groups such as the Indian Head Boy Scout, the Natural History Society and the 4-H Society expressed in the Matrix of Redevelopment Topics, Table X, topic No. 17 "Improvement of nature reserve land for wildlife habitat".





Educational Interest:

In both cases the text will define the physical characteristics of the environment sheltering the plant associations, list the woody species grown by the nursery and the added herbaceous species* to form the plant associations, and explain their respective role and location in the plant association.

F. THE ROADSIDE ENVIRONMENT

Originally the roadsides to which is referred here was the site of a service road for the nursery operations, and later on became an improvised pedestrian trail. Today the surrounding vegetation is taking over the road bringing new herbaceous species along this east-west trail.

G. MOIST FOREST

The existing stand of trees is composed of mature Siberian elms, coppiced Manitoba maples, clumps of caragana and a groundcover of grass. With the moisture of an artificial creek, a new scope of growing possibilities will appear.

* See Appendix C and D.

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chapter 2. Design Synthesis and Development

section 2.3. Enhancement of the Existing Conditions

subject 2.3.1. Physical Factors

division

To alleviate the roughness of the physical factors, the conceptual plan proposes:

- To protect the sensitive environment sheltering previous woody plant collections by avoiding any cut through the existing stands of woody plants that generate deadly winter draft conditions;
- To increase the planting of woody plants to divide the large opened areas in smaller sheltered space, permitting the establishment of more sensitive plants;
- To make an artificial creek from which the water will reduce the frequency of watering in the concerned areas, will provide a constant moisture to the top soil reducing the risk of high salinity and finally will contribute to the retention lake aeration.*

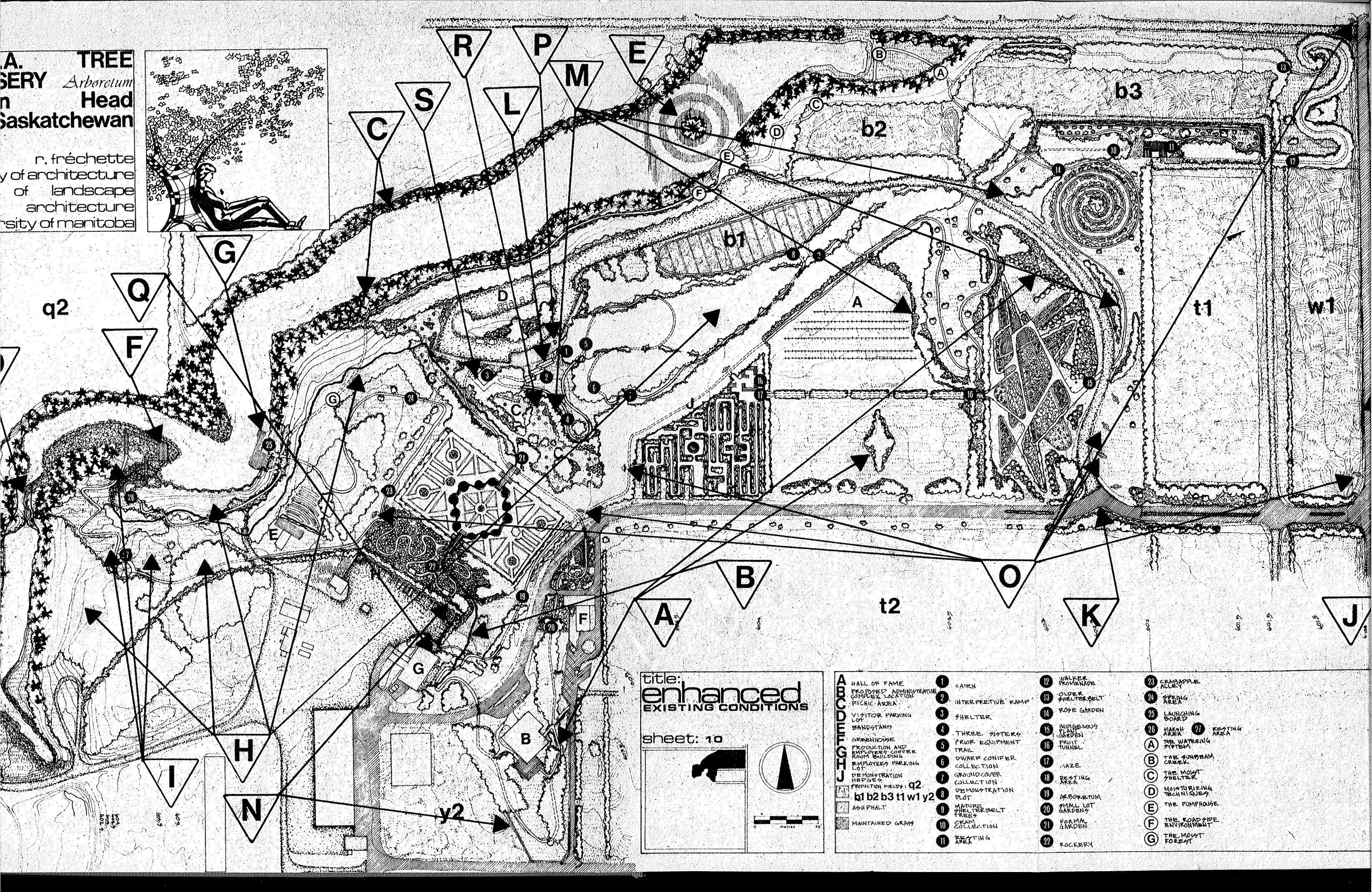
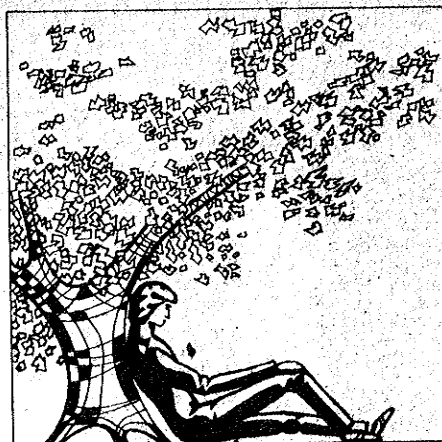


* Dr. G. G. C. Robinson, Lecturer, Department of Botany, University of Manitoba.

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in
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title:
enhanced
EXISTING CONDITIONS

sheet: 10

- | | | | |
|-------------------------------------------------------|-----------------------------------|-----------------------------|-----------------------------------|
| A HALL OF FAME | 1 CAIRN | 12 WALKER PROMENADE | 23 CANSAPPLE ALLEY |
| B PROPOSED ADMINISTRATION | 2 INTERPRETIVE KAMP | 13 OLDER SHELTERBELT | 24 OPENING AREA |
| C COMPLEX LOCATION | 3 SHELTER | 14 ROSE GARDEN | 25 LAUNCHING BOARD |
| D PICNIC AREA | 4 THREE SISTERS | 15 INDIGENOUS GARDEN | 26 MARCH AREA |
| E VISITOR PARKING LOT | 5 PRIOR EQUIPMENT TRAIL | 16 FRUIT TUNNEL | 27 RESTING AREA |
| F BANDSTAND | 6 DWARF CONIFER COLLECTION | 17 MAZE | A THE WATERING SYSTEM |
| G GREENHOUSE | 7 GROUND COVER COLLECTION | 18 RESTING AREA | B THE GUMBAM CREEK |
| H PRODUCTION AND EMPLOYEE COFFEE ROOM BUILDING | 8 DEMONSTRATION PLOT | 19 ARBORETUM | C THE MOIST SHELTER |
| I EMPLOYEES PARKING LOT | 9 MATURE SHELTERBELT TREES | 20 SMALL LOT GARDENS | D MOISTURIZING TECHNIQUES |
| J DEMONSTRATION HEDGES | 10 CLAY COLLECTION | 21 FORMAL GARDEN | E THE PUMPHOUSE |
| K PROTECTION FIELDS: q2 | 11 RESTING AREA | 22 ROCKERY | F THE ROADSIDE ENVIRONMENT |
| L b1 | | | G THE MOIST FOREST |
| M b2 | | | |
| N b3 | | | |
| O t1 | | | |
| P t2 | | | |
| Q w1 | | | |
| R y2 | | | |
| S | | | |

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chapter	2. Design Synthesis and Development
section	2.3. Enhancement of Existing Conditions
subject	2.3.2. Drainage and Water Quality
division	

To alleviate the problem involved with the high level of nutrients in the water the conceptual plan proposes:



- To replace gradually the deciduous plants in the proximity of the retention lake by coniferous plants because the needle drop is slow and promotes acidic conditions rather than basic or alkaline conditions;*
- To replace the use of copper sulfate by the use of diquat which is an organic and not poisonous or toxic as copper;

*References no. 32.

To control the anaerobic condition of the retention lake:



- The water surface will have to be raked periodically to remove the flowering blue algae; to eliminate before decomposition;
- The lake will be dug deeper in the south-west area to reach over a depth of 10 feet; this depth will create upwards and downwards water currents which promote the aeration of the water;



- An aeration water fountain will be installed by the pump house on a floating removable raft; the aeration water fountain will be a part of the point of interest of the pump house;

To give access any time of the visiting season to the water vegetation:



- A floating boardwalk will be anchored by the marsh area;



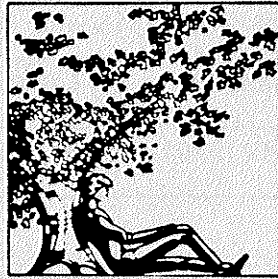
- A floating launching board will be installed by the emerging vegetation point of interest.

In both cases, the floating quality of the structure will follow the water level fluctuation.

- The nursery will keep the retention lake #1 as the last resource for watering the production fields.

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chapter 2. Design Synthesis and Development

section 2.3. Enhancement of the Existing Conditions

subject 2.3.3. Wildlife

division

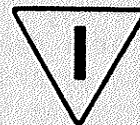
To promote the bird population the conceptual plan proposes:



- The construction of bird houses for species smaller than the magpie; the design of the bird house must discourage such predators; this type of work will be appreciated by the local scout groups;

To avoid accidents in the Arboretum, any type of trapping or hunting will be forbidden.

To control the growth of the wildlife community in the Arboretum and to prevent a future large population of small mammals from feeding in the production fields the Arboretum will introduce a diversified population of predators such as: red foxes, owls, dogs and cats



To control the mosquito population, and especially the woodtick population, selective and monitored grass fires will be created every three years. Woodtick eggs are laid on the lower leaves of grasses and are not resistant to desiccation*. For the success of this technique this area will be seeded with indigenous prairie short grass species. The short prairie grass has root and rhizome systems going deep into the ground protected from the heat generated by grass fires and can produce new stems from one fire to the other by the energy stored in their underground parts.**

** References no. 33, 34.

* Maurice T. James, Robert F. Harwood, Medical Entomology, published by MacMillan, London, 1967, 484 p.

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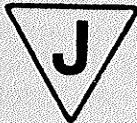
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chapter	2. Design Synthesis and Development
section	2.3. Enhancement of the Existing Conditions
subject	2.3.4. Accessibility
division	

To enhance the access to the Arboretum the conceptual plan proposes:

- To communicate to the Regina travelling agencies and the provincial Department of Tourist and Recreation, information and invitations to incorporate the Arboretum into their points of interest;
- To increase the number of advertisement boards along the Trans-Canada Highway; they should be located at three km. and one km. on the East and West side of the junction of the municipal road and the highway; this task will be achievable in cooperation with the provincial Department of Transport;
- To get rid of the dusty municipal road, the best solution is to properly pave allowing shoulders, preferably paved and curbed, with separate paths for pedestrian and bicycle circulation;



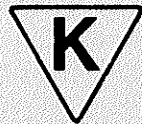
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chapter	2. Design Synthesis and Development
section	2.3. Enhancement of Existing Conditions
subject	2.3.5. Land Use and Circulation
division	

To solve the conflicts issued from the land use and the circulation, the conceptual plan proposes:



- To modify the Entrance to the visitor parking lot; in this manner the visitors will be able to start their tour by the beginning and not the end of the grounds; signs will describe to the visitors driving towards the parking lot, the suggested steps for a better tour of the Arboretum;



- To give a raised observation point and mark the transition from the parking lot and the touring grounds, a ramp will articulate the visitor entrance; the ramp will shelter interpretation boards and seating, group welcoming, waiting, etc. the use of ramps instead of stairs is of first importance to give access to wheel chairs;



- To screen views, to limit the access and to shape semi-private picnic spaces, dense planting buffer will be used;



- To completely cut the access between the old arboretum and the production fields, or between the staff parking lot and the rockery, solid, opaque and attractive fencing will be built.

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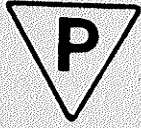
chapter 2. Design Synthesis and Development

section 2.3. Enhancement of the Existing Conditions

subject 2.3.6. Identification

division

To optimize the recreational and educational potentiality of the Arboretum and to prevent misuse of the facilities:



- A sign system localized by the roads and the pathways intersection will orient the visitor towards the different points of interest;
- Guiding pamphlets will be available by the parking lot; to minimize vandalism, a mechanical pamphlet distributor will make the individual distribution according to a minimum fee.
- In the entrance ramp, an engraved map of the arboretum will present for the informal visitors without pamphlet how to go about touring the Arboretum.

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chapter	2. Design Synthesis and Development
section	2.3. Enhancement of Existing Conditions
subject	2.3.7. Other Facilities
division	

The conceptual plan also proposes the access to facilities:



- The washrooms as well as the soft drink machines, presently located in the coffee room, will be accessible from the visiting pathway; since these machines are now operated by the Employees' Association, the profit made by the sales will help the association activities;



- Fire pits will be fixed permanently in the picnic area at a ratio of one per two picnic tables;



- Drinking water outlets will be available outside of the picnic shelter, by the entrance of the washrooms and at each resting area;

At each point of interest seating furniture will be placed to accommodate a group of six people (this represents the maximum number of passengers of one car). Seating for larger groups will be provided at the interpretive ramp, the resting area, the bandstand, and the picnic areas.

Civic Group Accommodations

Civic groups such as the Indian Head Horticultural Society can put their annual show in the Tree Nursery. At the period of their show the greenhouses of the nursery are empty. One is located in the area of the formal beds; this one could take the flowers of the expositants. The second one is the greenhouse attached to the header house. It would be spacious enough for all the vegetables. As far as meeting places are concerned, the greenhouse by the formal beds has its own vestibule and can accommodate easily the crowd of the opening night.

Also a tent can be borrowed from the Experimental Farm or another governmental agency to accommodate the bigger flower shows and other activities that are related to the flower show such as lectures, tea parties or a dancing night.

The coffee room of the Utility Building (No. 14) can accommodate, spaciouly, a crowd of 75 to 100 persons. This building is well insulated and its location is readily available from the staff parking lot.

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chapter	2. Design Synthesis and Development
section	2.4. Implementation
subject	
division	

The purpose of this section is to propose guidelines for the implementation of the Arboretum conceptual plan. The proposed implementation guidelines are chosen because they will permit a constant evolution of the Arboretum interpretive program, and the necessary adaptations and transformations to adapt the Arboretum to the contemporary conditions and user needs. To assure this flexibility the implementation stages are designated by projects. The schedule of these projects will depend mainly upon the individual project sponsor. A project can be a possible task that can be completed in parts entirely one or several points of interest. For example, a project could be the installation of the underground electric lines sponsored by the Saskatchewan Power Company; another project can be the complete landscape of the "Rose Garden" sponsored by the Indian Head Horticultural Society.

To supervise the implementation process and the related decision making, an Arboretum Implementation Committee is necessary. The committee must be representative of the different user groups referred to in this practicum; the members of this committee would be preferably chosen among the interested individuals who have, through interviews or the general public meetings, debated the first draft of the Arboretum Conceptual Plan, and participated from the start with the development of the conceptual plan. A landscape architect should be hired as a permanent consultant, acting with the implementation committee.

The mandate of the implementation committee is to promote the sponsorship for the Arboretum conceptual plan. According to the sponsorship, the implementation committee will administer the sponsored money for a project of their choice or the interested party can attribute the sponsorship to a specific project of the Arboretum; political lobbying can be also carried on by the committee to all levels of government using the emissary of the agricultural representants, the farmers' unions, etc. The promotion goals must be defined as a means to eventually increase the usage and the participation into the Arboretum evolution.

Along with the promotion mandate, the implementation committee will inventory the budgetary needs and constraints. The nursery authorities have so far estimated that the site work can be absorbed in the annual nursery budget. Because of this situation, the committee should

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chapter 2. Design Synthesis and Development

section 2.4. Implementation

subject

division

address a list of projects easily achievable in using recycled materials and nursery by-products along with the participation of the surveyed local civic groups.

Finally, the implementation committee will control the quality of the overall evolution of the Arboretum, and supervise the integration of the sponsored projects in the Arboretum concept and objectives. The evolution of the Arboretum will require from the committee to transform components of the conceptual plan according to the existing constraints and to adapt it in using the public participation as a continual source of user needs information.

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chapter 2. Design Synthesis and Development

section 2.5. Conclusion

subject

division

To conclude the conceptual planning and user programming of the P.F.R.A. Arboretum of Indian Head, Saskatchewan, I listed possible future investigations and developments to keep the Arboretum alive and well for the coming generations.

The subsidiary agreement on the Qu'Appelle valley of 1975, involves federal departments such as the Department of Regional Economic Expansion, Environment, Industry, Trade and Commerce and Indian and Northern Affairs. The Qu'Appelle Valley Development Study, published to substantiate the subsidiary agreement, outlines the lack of well established and upgraded cultural and historic sites along the Trans-Canada Highway, and that at major destinations. This lack of sites deters through-traffic from staying longer in the province. The Qu'Appelle Valley Development Study has three objectives:

- To ensure the long-term productivity of the Qu'Appelle Valley's recreation and tourism resource base;
- To increase the benefits from utilization of this resource base;
- To improve the management of the land and water resources of the Qu'Appelle Valley to meet existing and future uses of these resources.

The Arboretum conceptual plan fits the first two of the three above objectives. The future Arboretum will attract a constant flow of visitors that will spend money in the Qu'Appelle Valley area during their daily stay, also the Arboretum has the potential for creating permanent and casual employments. Another element that will support the Arboretum in its request for assistance to the Qu'Appelle Valley implementation board is that the P.F.R.A. is an administrative branch of D.R.E.E.

Beside the economic investigation the Arboretum authorities will have to investigate new methods of community involvement to the Arboretum development. Along with the use of community involvement methods, regular visitor behavior surveys will permit the elaboration of appealing calendars of activities.

In the future development of the Arboretum, a new Tree Nursery Administration Complex building will be

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chapter 2. Design Synthesis and Development

section 2.5. Conclusion

subject

division

MAINTENANCE GUIDELINES

Proposed Administration - Laboratory Complex:

The choice of the location of this building in the south section of the existing arboretum can satisfy the objectives previous to this conceptual design stage, as long as they can be well integrated in the existing arboretum.

According to the objectives, the building has to be a landmark for orientation purposes. Even if the building is surrounded with the trees of the arboretum, this building will be quite obvious because of the curve of the road that leads the driver's view in the arboretum when he is coming in the Nursery by the visitor's entrance driveway. The building itself does not have to be more than one floor with a finished basement. More important is to enhance the signalization throughout the nursery for orientation purposes. Also, as part of the orientation concern, the building should be placed on the site so that the narrowest wall surface will face the south-east snow storm wind.

An attractive reception to visitors will first be accomplished by a right and clear signalization, second, a "U" type drive-in in front of the building, third a "patio" overlooking the formal beds, fourth an ornamental structure such as sculpture, monument, fountain, or a mixture of all of these items.

The parking space for the complex will be needed for about 20 vehicles. It was said that the employees of the complex will use the staff parking lot. This parking solution is not adequate to the weather of this country and also to the effectiveness anticipated from the administration section. A parking area can be easily established on the shoulder of the service road going to the back of the greenhouse. It is sheltered from east, west & north side from the physical elements and from the visitor view walking on the pathway of the arboretum. An ornamental fence might be necessary to completely block the view of parked vehicles along the arboretum planting.

constructed in the middle of the area designated as the old arboretum: further landscape architectural site study will determine the integration of the administration complex building to the Arboretum.

After the physical completion of the proposed user programs, additional possible programs will be necessary to keep the interest of the regular visitors. Proposed here a list of possible programs that have either been generated by myself or either generated and put forward during public presentation of the first conceptual draft on September 8th, 1980 at the P.F.R.A Tree Nursery (see Appendix "F"):

- The Hall of Fame can become a tree shelterbelt demonstration area;
- Programs for disabled people should be provided in the Arboretum;
- A wild-life study program can be finalized in the man-made florals theme area;
- An international exchange program on the demonstration of the foreign tree shelterbelt techniques that will integrate the adjacent production fields (B1, B2, T1 and W1) to the Arboretum;
- A study program can be established on the evolution of shoreline vegetation programs;
- Winter programs can study and present the effects of shelterbelts on the snow drifting patterns and the identification methods of woody materials using the buds and the tree branching habits for taxonomic key.

Finally, when the Arboretum fame will bring a constant flow of visitors, the Arboretum should consider a lighting system for night tours, an automatic sprinkler system and the establishment of a pedestrian and bicycle overpass over the Trans-Canada Highway.

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Saskatchewan
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chapter	APPENDICES
section	
subject	
division	

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chapter	APPENDIX A
section	Major Moments of the Arboretum History.
subject	
division	

5000 B.C.

The first form of an arboretum is attributed to the west Asian civilization of the Summerians. This first form of arboretum was part of the Ziggurat. The ziggurats were artificial, stylized hills created in a flat land by a people who yearned for the hills they had migrated from and whose gods and temples had to be set on high places. "They were pyramids built up of decreasing terraces, rectangular in plan...they were planted with trees, shrubs and vines. On top were the temple and a sacred grove of trees."*

2700 B.C.

With the Egyptian any tree was sacred, specially the Ficus sycomorus. Hyams says that exotic trees were particularly valued, for Egypt had few of her own; and like the native ones, they were held sacred. Every temple park had its grove of trees, and if their first purpose was religious, they were also a source of revenue and the subject of scientific study. The first botanical arboreta were in Upper Egypt. It can probably be attributed to the Egyptian physician Imhotep who had a steady program of research and plant introduction.

1500 B.C.

The sacred grove of each Egyptian temple had its own particular species of tree, of which 20 species have been identified as exotic. The Egyptian gardens were not planned to look at but to live in. Queen Hatchep-sut (1505-1483 B.C.) and Rameses III (1198-1166 B.C.) were great importers of exotic woody plants. Incense-bearing trees, such as Boswellia carteri were carefully dug up from Somaliland in spring and sent to Egypt planted in pots.

1100 B.C.

The Assyrian Tiglath-Pileser I carried off from Armenia, Cappadocia and Lebanon unknown trees that he planted in the parks of Assyria. This process was happening simultaneously for centuries in other countries.

*Edward Hyams, A History of Gardens and Gardening, published by Praeger, New York, 1969.

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chapter	APPENDIX A
section	Major Moments of the Arboretum History
subject	
division	

900 B.C.

During the Hellenic time described by Homer, the gardens such as the one of Alcinoüs were utilitarian gardens - kitchen gardens. They were walled and integrated to the house or the palace, planted with apple, pear, fig, olive, pomegranate and grapes. They were the courtyard planted with woody plants. The Greeks as the Sumerians had sacred groves of trees which were located either in the city or in the country. They were the Nymphaeum which were located along a stream, planted with poplars added with a spilling water basin and an offering altar. The statuary appeared when the nymphaeum started to be installed inside the cities.

814 B.C.

The evolution of the Sumerian ziggurat reached the peak quality with the construction of the Hanging Gardens of Babylon.

705 B.C.

Sennacherib brought from the Hittites land vines and fruit trees to plant his garden near Nineveh.

500 B.C.

The Athenian sacred grove of trees established in temple precincts became gardens. Cimon had the Agora of Athens planted with trees which were probably the first street trees in Europe. The example had been followed by Thebes and Sparta. Soon the Agora became the traditional hero sanctuary associated with the gymnasium.

Beginning of the Chinese Royal Palace Gardens; landscaped hunting parks laid out under the influence of the Taoist nature worship. It was a work of anti-architecture.

400 B.C.

The Greeks started to hold private schools in open gardens such as Plato's, and later on the famous garden school of Epicurus near Dipylon Gate in Athens.

330 B.C.

With Alexander the Great's Conquest appeared the orientalisation of the Greek Empire. The Eastern culture inspired the planting of botanical gardens such as Theophrastus.

285-246 B.C.

During the new Hellenic period, under the emperor Ptolemy Philadelphus the royal garden as well as the public garden was occupying a quarter of the whole area of Alexandria. In cities, such as Antioch, the garden plants were only trees.

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architecture
university of manitoba

chapter	APPENDIX A
section	Major Moments of the Arboretum History
subject	
division	

106-43 B.C.

Under Cicero the Romans learned from the Greeks and created large parks such as the Academies which consisted of grass, portico, statues, groves of trees and water works. These large parks reached the vulgarization level with garden makers such as Lucullus with Byzantium.

A.D. 330

The first Christian Emperor Constantine got back to the small typical Hellenic city landscape using flowers as well as trees.

370

With the foundation in China of the Society of White Lotus, the Buddhist convert Hui Yuan introduces a second generation of parklike gardens, the Lu Shan Parks. They were as anti-architecture as the Taoist nature workshop.

1100

In Tokyo, the physic gardens increased in popularity. The physic gardens were collections of woody plants.

1475

The villa Carreggi of Lorenzo dei Medici, in Florence, is doted with a collection of trees and shrubs.

1500

In Milan, the villa of Cardinal Trivulzio is planted with a collection of hedges, fruit trees and vines.

1545

In Italy, the botanical garden of Padua was laid out in a radial principle. Its foundation is closely related to the discovery of the botanic collections of Montezuma, Mexico, by the Conquistadores such as Bernal Diaz and Cortez.

1550

In France, Rene du Bellay, Bishop of le Mans, physician traveller, established a collection of trees at Touvoye. Many of his specimens were imported from Asia.

1660

In England, lilacs from Iran are cultivated.

1728

In U.S.A., John Bartram, planted the first American arboretum on the banks of the Schuylkill River, near Philadelphia. He was appointed 50 years before the American Revolution as Botanist of the King of England and had for mandate to exchange plants with this country. His arboretum became and still is a public park of the City of Philadelphia.

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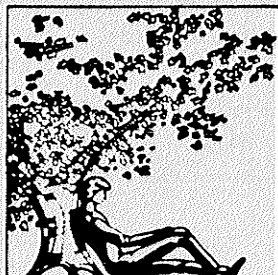


chapter	APPENDIX A
section	Major Moments of the Arboretum History
subject	
division	

- 1755 Duhamel du Monceau, Head of the French Marine, gathered a collection of a thousand species of trees from Europe and North America. He planted this collection on his estate of Veigny and du Monceau. He wrote the "Traite des Arbres et des Arbustes qui se Cultivent en France".
- 1775 John Bartram's cousin, Humphrey Marshall planted a number of trees near Bradford Meeting-House, in the village of Marshalltown. Marshall published also the "Arbustum Americanum" the first descriptive book on indigenous woody plants in U.S.A. written by a native-born American. His tree collection is still surviving.
- 1825 In France, Pierre Phillippe Andre de Villemorin established what is still the most important set of dendrological stations in Les Barres, near Loiret. This arboretum still exists under the French Government management, and known as "Arboretum National des Barres".
- 1830 In Delaware County, West of Philadelphia, John Evans had a plant exchange with Sir William Hooker of the Kew Garden to plant this arboretum with little-known plants.
- 1838 John Claudius Loudon described an arboretum as being this portion of a garden or a park reserved for the growth and display of trees.
- 1840 In England, opening of the Derby Arboretum; it was a 2000 acre site given by Joseph Strott as a conservation area and landscaped by J.C. Loudon as a social recreative area.
- 1841 Henry Winthrop Sargent, with the encouragement of A. J. Downing, planted on a 22 acre site by the Hudson River a collection mostly of conifers at Wodenethe, New York. It has been a short-lived effort that inspired his relatives such as Horatio Hollis Hunnwell and Charles Sprague Sargent.
- 1848 In Great Britain, it was the opening of the Kew Gardens; the Kew Gardens is a 300 acre systematic national arboretum landscaped and managed by William Hooker. The gardens have been a Royal Residence Garden since the middle of the XVIIth century.

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chapter APPENDIX A

section Major Moments of the Arboretum History

subject

division

- 1852 Mr. H. H. Hunnewell developed on his estate in Charles River Valley, Boston - known as Wellesley - the first famous pinetum.
- 1857 In France, Alfonse Lavallee planted an arboretum at Segre. The arboretum included a botanical library and an herbarium. All specimens of this arboretum have died because no provision was planned to perpetuate this one-man effort.
- 1868 In U.S.A., the 28 acre Arnold Arboretum, located in the Jamaica Plains, Massachusetts opened its gates.
- 1870 Josiah Hoopes was the first one to devote his arboretum entirely to evergreens; she also wrote the "Book of Evergreens". The pinetum was located at West Chester, Pennsylvania.
- 1874 In U.S.A., Charles A. Dana established his private collection of woody plants on a small island by Long Island.
- 1887 In Canada, it is the inauguration of the Dominion Arboretum, administrated by the federal government of Ottawa; it contains 3300 species and varieties of woody plants.
- 1900 In Belgium, the Arboretum of Tervverum became the first forest arboretum created by Professor C. Boomer who imported for the occasion ecological associations and transplanted them in their natural order.
- 1902 In Canada, the Tree Nursery of Indian Head, Saskatchewan started its operations.
- 1917 Fort Anne became the first Canadian National Historic Park.
- 1930 Approvement of the National Parks Act by the Canadian government; it was essentially the same act as the Rocky Mountain Park, but the Parks shall be maintained and made use of them as to leave them unimpaired.
- 1941 The 200 acre Royal Botanical Garden, Ontario is opened

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 Saskatchewan

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chapter	APPENDIX A
section	Major Moments of the Arboretum History
subject	
division	

- 1946 The 70 acre arboretum of McGill University, the Morgan Arboretum, Montreal is founded.
- 1949 In British Columbia, the Vancouver Board of Park Commissioners with cooperation of the Canadian Pulp and Paper Association undertook the establishment of a 50 acre arboretum in the Queen Elizabeth Park.
- 1953 In Canada, the Historic Sites and Monuments Act is adopted; it had for its mandate a Canadian program of commemorating persons, places, and events of prime national historic and prehistoric interest.
- 1963 The Ontario Zoological and Botanical Garden is opened.
- 1964 First set of Canadian policies for national parks.
- 1967 First set of Canadian policies for national historic parks.
- 1970 The University of Guelph opened a 34 acre arboretum.
- 1971 The University of Alberta created a .7 acre Botanical Garden, in Edmonton.
- 1973 The Muttart Conservatory, Edmonton, Alberta opened their thematic pyramids to the public.

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chapter	APPENDIX B
section	Summarized Interviews
subject	Interview on May 20th, 1980 with Dr. Gordon Howe, Superintendent PFRA Tree Nursery
division	Nursery

For Dr. Howe the conceptual plan is the result of and the equivalent of a development plan and a public relation program. Dr. Howe agrees to my design process: I will develop a conceptual plan from the analysis of the current users of the arboretum grounds.

The analysis of the current users will be realized by personal interviews of the P.F.R.A. Tree Nursery heads of sections, major technicians, representants of diverse civic groups of the Town of Indian Head.* Also it will be possible to accomplish the analysis of the past users by using data that have been collected in the files of P.F.R.A. for the last 10 years.

From the analysis of the current users, programs will be developed for the major categories of users and interests.

The programs will be explained by using graphic and/or audio-visual methods of presentation. Each program will be joined with an explanation of its objective, the methods that are used to achieve the objective, and the management that is required to implement the objective.

A conceptual plan will also be put together. This conceptual plan will have to show the areas where each program is implemented.

Since the conceptual plan will not show the precise planting for each area, I intend to work closely with Dr. G. Howe, Superintendent of the P.F.R.A. Tree Nursery with whom I will meet weekly to discuss the progress of the project; and with Mr. G. B. Neill, Head of the Investigations Section and his propagation technician, C. Lindquist.

Dr. Howe has indicated (May 21st), that he would appreciate having a base map of the area to be developed. Later on in June, an inventory will be done on the grounds, using colored ribbons to point out plant materials that would need to be removed because of their poor value. Among the other concerns of Dr. Howe, it could be added that he judged that rolling landscapes are generally hard to maintain; that all the required ground work will have to be accomplished by the existing crews; that the programs have to be elaborated as self guided tours; that any vehicular circulation, other than maintenance, have to stay out of view, and out of interference with the visitors.

* From this interview, we have outlined a list of representatives of civic groups of Indian Head persons as well as other persons who could be resourceful in outlining past and future programs. This list of future interviews appears in section 1.1.2.

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chapter	APPENDIX B
section	Sumarized Interviews
subject	Interview of Donna Thompson, Wolf Cubs Leader of the Boy Scouts of Indian Head, on May 22nd, 1980.
division	

The purpose of the National Corporation of Scouts Canada is to help boys, youth and young adults develop their character as resourceful and responsible members of the community by providing opportunities and guidance for their mental, physical, social and spiritual development.

The Corporation divides the boys according to their age:

- between 5 - 7 years old they are called the Beavers
- between 8 - 11 years old they are called the Wolf Cubs
- between 12 - 16 years old they are called the Boy Scouts
- between 17 - 23 years old they are called the Rovers.

The Boy Scouts Corporation have a reward system for their members. The reward takes the form of badges and stars given for the achievement of work in a specific area of concern. Among the areas of concern of the Corporation that have engendered a badge program is the World Conservation's interest. The program is the "World Conservation Badge".

The general activity of the 10 Boy Scouts of Indian Head occurs mostly between September and May; nothing is organized during the holiday season. Parents are not directly involved in the activities of the Boy Scouts; they provided often the transportation means: for the groups and one of the mothers, a graduate nurse, joins the groups during their tours.

As a meeting place the Boy Scouts use the basement of the Memorial Hall of Indian Head since 1960. An arrangement allows the groups to use the hall free of charge, although if another civic groups wants to rent the hall at the same time as the Boy Scouts, the civic group will have priority. Their weekly meeting is always one and a half hours. Among the tours that have been done in the past years, they had a tour to the museum of Regina, to the Head Quarters of the R.C.M.P. in Regina. As a course of income, the Boy Scouts organize a bottle drive each year.

In the past they came to the grounds of the Tree Nursery for a guided tour to see the beavers by the Reservoir, for an identification tour with visiting Wolf Cubs and for watching the planting and shipping process of the trees.

Mrs. Thompson has indicated that because of the limited activity of the group, they are not able to use the picnic shelter facilities of the interpretive grounds of the P.F.R.A. Tree Nursery. The average age of the Cubs, as an example, makes it very difficult to plan an outdoor activity when the weather is uncertain.

They are very interested in using the grounds of the Tree Nursery more intensively as long as they could find an appropriate meeting place. Mrs. Thompson suggested as possible program, the "World Conservation Badge" program. Here are the requirements of this badge:

P.F.R.A. TREE
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chapter	APPENDIX B
section	Summarized Interviews
subject	Interview of Donna Thompson, Wolf Cubs Leader of the Boy Scouts of Indian Head, on May 22nd, 1980.
division	

Requirements & Where to Wear

Wolf Cubs

NOTE: Shown in brackets are items of Star or Badge work, which, if done first, will qualify a boy for the Conservation Badge or, if done to earn the Conservation Badge, should also be applied toward the achievement of stars and/or badges.

- Participate if possible as a six or small interest group in two of the following projects:
 - clearing a creek (Red Star #13);
 - making, setting up and maintaining a bird feeder, bird table, bird bath or bird nesting box (Black Star #8 and #12);
 - taking part in a nature survey (Black Star #12);
 - taking part in an anti-litter campaign (Red Star #13);
 - arrange a nature trail or competition for the members of your pack. (Have one six or small interest group set up for other sixes in the pack - each to set up a different trail.);
 - choose a wild animal, tree, fish or bird. Discover all you can about it and report your discoveries on a wall chart, in a log book, through a scrap book, etc. (Black Star #2 and #11 and Observer Badge);
 - visit a zoo, botanical garden, natural history museum or see a film about animals or plants. Report on your observations (Black Star #6, #11, #13);
 - own or take care of a pet* for a period of three months. Keep a record of the pet's behavior, feeding habits and how you took care of it. Know how to recognize and treat simple illnesses and what special care is needed in breeding. (Black Star #11 and the Pet Keeper's Badge);
 - or similar projects which your six has suggested and have been approved by your leader.

*Do not keep wild animals as pets. The following animals do not suffer in captivity if looked after well: guinea pigs, hamsters, rabbits, cats, dogs, pigeons, ducks, budgerigars, sheep, goldfish, tropical fish.
- Go on a trip with your six or small interest group into the countryside:
 - find some examples showing how man has damaged nature and some examples showing how man has improved nature (Cub Book Section 15);
 - write down some rules for good behaviour in the countryside (country code) and show that you are doing your best to keep them. (Cub Book Section 15) See Observer Badge for these also.
- As a six or small interest group:
 - watch a film or slide presentation or listen to a short talk about some animal, bird, fish or plant life that is in danger in Canada, then give some ideas as to how you can help save them. (Pack Project);
 - make a poster showing the endangered animal, bird, fish or plant and add your own message as to how we can help save them. (Tawny Star #12).

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chapter	APPENDIX B
section	Summarized Interviews
subject	Interview of Donna Thompson, Wolf Cubs Leader of the Boy Scouts of Indian Head, on May 22nd, 1980.
division	

4. As a pack, six or small interest group project:
- learn how a plant grows, how a butterfly develops, how a frog develops
 - each six/group to draw the stages of development of one of the above (Black Star #3 and #11);

As a six or small interest group demonstrate one of the following:

- how water rises from the ground and soaks the soil (capillary action) (Black Star #10);
- the existence of oxygen in the air (Science Experiments);
- how plants produce oxygen (Black Star Section of Cub Book).

5. Individually:

- plant a tree or lay some grass on an area where there is no vegetation cover or plant plants in a window or balcony box or indoors in a flower pot. (Black Star #5 - Gardener Badge or a Trees or Canada Project).

Wolf Cubs will wear the World Conservation Badge on the left sleeve between elbow and service stripes.

Scouts

Scout requirements are the same as the gold-stage conservation achievement badge. A scout completing the gold-stage conservation requirements will receive both the world badge and the gold badge. Together, they count as one badge under the outdoor category toward earning the Pathfinder Award.

The World Conservation Badge is worn on the back of the sash, six inches below the shoulder seam.

Venturers

Requirements:

1. As a group, discuss together with your advisor, and/or a specialist in this field, what constitutes the natural environment and the effect that man has on it, indicating how the balance of nature is being disturbed and what must be done to regain the essential balance.

Some points for discussion should be:

- the meaning of such terms as ecology, conservation, environment, balance of nature, life cycle, food chain, biocides, recycling, photosynthesis, organic and inorganic material, biodegradable matters, humus, carrying capacity, non-renewable material;
- the effects of fire on wildlife, of deforestation, overgrazing, soil erosion, water pollution, air pollution, and the effects of mankind in general (overpopulation, tourism, etc.);
- causes of flooding; methods of flood control;

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Indian Head
Saskatchewan

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chapter APPENDIX B

section Summarized Interviews

subject Interview of Donna Thompson, Wolf Cubs
Leader of the Boy Scouts of Indian Head
on May 22nd, 1980.

division

- how the extinction of animal and plant species affects the ecological balance;
 - what are the benefits of predatory birds or mammals;
 - investigate the impact of human hunting activities and that of predators. Analyse and evaluate any differences;
 - how oxygen moves in a cycle.
2. Take part in at least two activities which are concerned with the environment. (This may be done in cooperation with other agencies.) This should include the study of an environmental problem, its causes and possible remedial action. The report on the field work carried out should be supported with photographs, maps, sketches and any other evidence, e.g.:
- make a map of the legal garbage dumping places and make this available to the public in your community;
 - find in your community an area with "natural green", and "mad-made green", identify and evaluate the differences;
 - obtain, adopt and develop a piece of land as a nature reserve or help the owner of such a reserve to manage it;
 - play an active role in a local, national or international conservation project;
 - take part in a project for the improvement or beautification of the local area;
 - carry out a camera safari and then display your evidence of animal life or interesting vegetation;
 - carry out a boat expedition and study wild fowl or pollution;
 - take the initiative to carry out a conservation information project including, for example, the gathering of public opinion, printing of hand-outs, arranging a public display, making exhibitions, etc.
3. Become aware of the major conservation organizations and institutions in Canada and in the world.

On a map show and become aware of the major nature reserves in Canada and why they have been created.

Know where to obtain copies of the federal and your provincial conservation laws.

Venturers will wear the world badge either:

- 1) on the left sleeve between elbow and service stripes, or
- 2) on the sash above the service stripes.

* BOY SCOUTS OF CANADA WORLD CONSERVATION BADGE
Requirements & Where to Wear

P.F.R.A. TREE
NURSERY *Arboretum*
Indian Head
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chapter	APPENDIX B
section	Summarized Interviews
subject	Interview of the Board of Directors and Officers of the Horticulture Society of Indian Head, May 22nd, 1980.
division	

The Indian Head Horticultural Society was founded in 1926. John Walker, former Superintendent of the P.F.R.A. Tree Nursery, was one of the charter members of this society. Prior to 1926, the school gardens existed. They were established after the First World War as an education tool for the Prairie schools. The Indian Head Horticultural Society derived its formation from these school gardens who were growing plants for the survival of the early farmers. Nowadays, the I.H.H.S. works in close relationship with the Provincial Horticultural Society. Each year the P.H.S. provides the I.H.H.S. with a plant to be tested for its hardiness in the area: this year it is the Japanese Peony.

The I.H.H.S. has 115 members, 65 junior members and about 15 honorary members. Their main activities are the children's gardens, the annual garden show and the memorial planting. They have had some activities, with other civic groups of the town, in the past.

The I.H.H.S. members have taken a grafting workshop at the P.F.R.A. Tree Nursery in 1979, with Dr. W. H. Cram as instructor. Although their interest in the grounds of the Tree Nursery is very low, the directors of the I.H.H.S. explain that their decreasing interest for the grounds began with the reduction of the flower beds, consecutively with the departure of the last gardener. In fact the gardener was also taking care of the grounds and the greenhouse where indoor plants were grown.

A second reason for loss of interest in the Tree Nursery is the unpaved access road from Highway No. 1. Since most of the members, excluding the children, are women of an average 40 years of age, often widows, the gravel road is not suitable for walking; it is too far from the town; and as well it is too dusty and bumpy for biking. Also the corner of Highway No. 1 and No. 56 is considered as a highly dangerous corner, not suitable for pedestrian crossing. To conclude this opinion the board of directors consider that the pavement of the road is necessary if we want their members to participate.

Here is a list of other ideas suggested by the board to initiate programs suitable to interest them:

- more beds of flowers
- fruit and vegetable gardens
- indication on tolerance of plants - soil, light, moisture
- ground cover section
- hanging plants section
- herbs planting
- native flora planting
- rockery
- topiary
- interpretation of tree: growth habit, flowering time, fruit colors, role in the fauna and flora
- hobby farm
- display on poisonous plants
- display from their fall show
- winter facilities for winter sports.

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chapter	APPENDIX B
section	Summarized Interviews
subject	Interview of Mr. A. Charlie Thompson, Technician in the Investigations Sec- tion, May 23, 1980.
division	

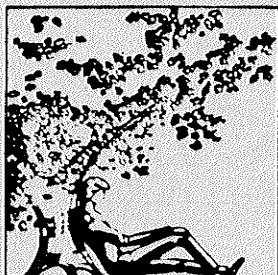
Under supervision of Investigations Head, schedules, conducts and supervises technical and manual tasks, related to greenhouse and field studies of applied research on nutritional and irrigation problems for nursery production of tree seedlings. (Plus many other smaller related duties.)

"For my position, I rarely use the interpretive grounds for anything, to do with my work.

I've used it for personal reasons to observe the look of a certain shrub or tree and how it would fit into my home grounds.

For future - I would personally like to see it expanded, however, the upkeep may pose a problem. It could serve as a demonstration show piece to interested people who are planting and landscaping. It also could be utilized as study area for students of forestry, botany, landscapers, horticulturists, gardeners, etc. as well as a splendid rest or picnic area."

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 NURSERY *Arboretum*
 Indian Head
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chapter	APPENDIX B
section	Summarized Interviews
subject	Interview with Dusty Worden: Entomology Technician on May 23rd, 1980.
division	

A) Main Duties

1. Insect control research projects for the required information on biology of insect development and habits, and to evaluate various chemical and cultural control methods.
2. Surveys of nursery to assess insect and mite infestations and disease infections extent of damage including the rearing of unknown insects to determine identity and applied chemical controls required.
3. Spray of pesticides for insect control on all established plantings, sowings and seedlings of deciduous and coniferous, shrubs and tree species under nursery production.

B) Uses Made of Area

- family picnics and insect collection area.

C) Ideas

- Planting of tree species in blocks for identification purposes, evaluation of insect, mite and rodent damage per species. Fountain, poisonous plant identification plot, continue flower beds, set up an area for bird attraction (marsh area, etc.).

"My comments are probably nothing new."

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chapter	APPENDIX B
section	Summarized Interviews
subject	Interview of Carl Lindquist, Propagation Technician on May 23rd, 1980.
division	

Supervisor of Propagation Section, a unit of the Investigation Section, P.F.R.A. Tree Nursery, Indian Head, Saskatchewan.

Main Tasks - under supervision of the Section Head - I conduct research to solve problems relating to propagation of all trees and shrubs species produced on the nursery (cuttings and seed). Overwinter storage of plants and seed, plant maturity, packing of trees for shipping, diseases of plants, winter injury, cultural problems and monitoring of production crops.

Also I conduct a tree improvements program, by selecting and cross pollination of selections. Test species for adaptation in various climatic and soil regions on the prairies for the shelterbelt program.

Use of Present Arboretum. To study growth habits of various species, diseases and insect infestations. Check bloom, collect pollen, collect seeds.

- family picnic area
- ski trail in winter
- bird and squirrel watching
- show people what certain tree or shrub species look like
- assist students in plant collection and identification
- photography

New Area. Uses same as previous but in a large and better planned area.

- larger plant collections - introduced species hardy in this area
- native berries, shrubs, trees, flowers
- interesting design with walks, screens, built-in water ways, hills, marshes, etc.
- fall color area
- collection of best flowering trees and shrubs, lilac, hedge roses, rosybloom crabs, hardy on the prairies
- collection of best fruit: plum, cherry, apples, etc.
- better labels
- information areas introducing each section, brief highlights to promote interest
- place to sit down to view the area
- area for winter scenes, hoarfrost, weeping birch, bark color, etc.

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chapter APPENDIX B

section Summarized Interviews

subject Interview of L.K. Alspach, Herbicide
Technician, Investigation Section,

division May 26th, 1980.

The following is a brief summary of the function of the herbicide unit:

Conducts herbicidal research projects to develop safe and effective treatments for use in the production of 24 tree and shrub species. Such research involves the following stages:

- 1) screening of candidate herbicides for crop tolerance, in the greenhouse;
- 2) small field plot trials of the most promising herbicides to determine efficacy, safety and optimum rate for each species tested;
- 3) further evaluation with the most promising treatments.

Research projects are also conducted to establish herbicide treatments for use in shelterbelts. We are then able to provide weed control information to those people who receive trees from us.

In addition to the above research we are, from time to time, involved in cooperative research projects with commercial nurseries or provincial forest nurseries in order to assist them in the establishment of a herbicidal weed control program.

The herbicide unit also oversees the chemical weed program used on the Tree Nursery. This chemical weed control involves 70% of the annual nursery sowings or plantings.

The grounds and arboretum area has received limited herbicide applications in the past. Treatments included: MCPA, on lawns, for dandelion control; paraquat plus linuron for pre- and post-emergence weed control under the existing trees and linuron, applied in the fall, to provide pre-emergence weed control during the following season. At this time I would anticipate that the same amount of herbicide application will be required for weed control in the future.

The arboretum, flower gardens, grounds area, etc. are not used by the herbicide unit, at present. I personally, along with friends and relatives, have made use of the picnic, lawns and flower garden areas for recreational purposes.

As discussed with you earlier, it is possible that a shelterbelt could be planted in the grounds area, for the purpose of demonstrating the degree of weed control that could be obtained using the herbicide practices described in the handbook "Shelterbelt Weed Control". Another possibility for the grounds area, would be an area where different species of common weeds could be planted or sown and labelled, to assist the visitor in weed identification. There is of course, an obvious danger in such a venture. Perhaps a collection of good photographs, appropriately displayed would be a more sensible alternative.

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chapter	APPENDIX B
section	Summarized Interviews
subject	Interview of Dave Gruber, Assistant Foreman, May 27th, 1980.
division	

The duties of the assistant foreman are to organize and co-ordinate daily nursery production activities for seed harvesting, spraying, seeding, irrigating, weeding, harvesting, storage and packing, maintenance of nursery production areas, hedges, plantations and service roads. Plan and supervise on a daily basis up to 50 employees through 7 crew supervisors from spring to fall carrying out nursery production activities.

When crews are unable to perform duties in the field we have sent them into the grounds area to prune trees and cut out all dead wood, cut lawns, etc. As assistant foreman, I have shown quite a few people through the demonstration hedges as they wanted to know what certain tree species looked like as a hedge.

My family and myself have used the area for picnics and over the years have enjoyed the flower gardens. We have brought our friends out to look at the flower gardens when flowers have been in full bloom.

As this is a tree nursery, I think we should have more trees which we are growing in the grounds area so people would have some idea what the different types of trees look like.

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chapter	APPENDIX B
section	Summarized Interviews
subject	Interview of Dan Walker, Tree Planting Technician, May 28th, 1980.
division	

Occupation: Tree Planting Project Technician:

- Planning Assistance visits at farms throughout Manitoba and Saskatchewan. Assistance in planning farmstead, field and roadside shelterbelts;
- Manning Tree Nursery displays at various fairs in Manitoba and Saskatchewan;
- Allotting of tree material to Manitoba;
- Other required duties throughout the winter months.

"So far, I have not really used the interpretation grounds professionally, except to demonstrate areas of the nursery through tours.

Personally, I have used the area for picnics, showing people the nursery, cross country skiing in the winter, cycling in summer, etc.

One main area that should be developed is the area south of the tall Siberian larch stand where there is a large expanse of grass which is seldom used and is an eyesore when the grass is dry as it is now. Perhaps tree the area in from the main entrance road and expand picnic grounds.

I suggest that more area be designated as picnic grounds, i.e. more barbecues and tables in more places on the north of the main access road into the nursery.

The picnic area as it is now is well-treed and very attractive. It should be left as it is, it just should be expanded.

The parking lot area (staff parking lot) should be separated from the grassed area east of it by a hedge of cotoneaster or some such species.

The area where Morden Co-op test plantings once were, should be grassed as an extension of the picnic area.

The area east of pumphouse for reservoir #1 should be utilized as an area for various tree species as in the arboretum. (This includes the area up to the N-S road which runs past the east side of the nursery.)

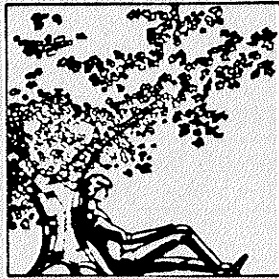
The entrance into the picnic area from the main entrance road could also be worked up and used as an arboretum. Again, the dried up grass is an eyesore.

More footpaths could be utilized throughout the treed area so that a winding, circular tour could be taken from the picnic grounds parking lot, through the flower gardens, arboretums, hedge demonstration, etc. and back to the starting point. This would allow visitors to see all that is to be displayed in this interpretation area with one leisurely walk through the NE corner of the nursery. (This could also become a permanent cross country ski trail in the winter.)

The arboretum as it is now is quite good, the trees, though, should be pruned up and clearly labelled, the soil around each of the trees should be worked and kept clean.

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chapter	APPENDIX B
section	Summarized Interviews
subject	Interview of Dan Walker, Tree Planting Technician, May 28th, 1980.
division	

Some of the trees which are labelled in the arboretum are so far back from the grass that people can't see them without walking in under the trees -- this should be considered in planning any other arboretum areas."

Other ideas:

- rock gardens
- solid log children's playground
- park benches
- lighting of area
- pave picnic area road
- lookout point onto reservoir #1
- main entrance into nursery - could be improved
- label areas clearly with attractive signs

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chapter	APPENDIX B
section	Summarized Interviews
subject	Interview of Mr. Lloyd Peterson, president of the Indian Head Natural History Society on May 28th, 1980.
division	

The Indian Head Natural History Society was founded in 1971. The main reason for its foundation was to make it known in Indian Head who were the members of the Saskatchewan Natural History Society, located in Indian Head. Subsequently to the social nature of the I.H.N.H.S. foundation is also a very practical one which is related to the membership renewal, distribution of the Provincial Natural History Society publications. The I.H.N.H.S. supports the Provincial Natural History Society in every way. Both have their main interest in the conservation of nature and preservation of natural historical elements.

The summer activity of the society is orientated towards short tours in the surroundings of Indian Head. Usually the short tour program is as follows: on the site observation tour in groups with portable equipment, picnic, free observation, coffee-time and discussion. The destination of the organized summer tours is fixed according to a point of interest such as rare plants, birds sanctuary, local artifact location (buffalo rubbing stones).

During the winter, the Society presents films and guest speakers. They also have put together the "Christmas Bird Count": - the members are divided into groups and sent to respective sites, one of which is the Tree Nursery, to count the number of species of birds as well as the number of birds by species.

Among the other activities, the I.H.N.H.S. has the annual meeting of their board of directors and the annual general meeting. They are also invited to participate in all the activities of the Provincial Natural History Society.

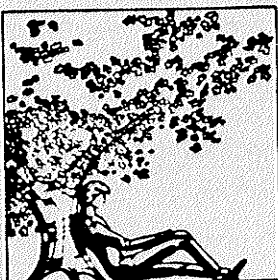
Among the immediate needs of the Society that can be integrated into the development of programs for the Tree Nursery, Mr. Peterson expresses that the first thing to be accomplished to attract the members of his Society would be to improve the wildlife habitat. Along with this improvement, the I.H.N.H.S. is looking for a place to meet.

Mr. Peterson suggested that the wildlife habitat could be improved around the water reservoirs in using floating islands and increase the variety of emerging vegetation. The reservoirs are the sites for all kinds of migratory and permanent birds, squirrels, jack rabbits, weasels, coyotes, and occasionally white tail deer and red fox.

In the meeting place, the I.H.N.H.S. could present the winter films, put on permanent displays of the Blue Jay publications, exhibits and use it as a research and observation room.

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chapter	APPENDIX B
section	Summarized Interviews
subject	Interview of Mr. K.W.Thompson, Head of Distribution and Development, on May 29, 1980.
division	

Major Duties:

- (a) Organization of distribution operations
- (b) Off-Nursery extension
- (c) Organization and planning of technical services to farmers
- (d) Planning larger scale projects

Present grounds used primarily for tours and for picnics.

"Most demand for grounds by public are centered around their desire to see tree and shrub material suited to their home sites. Therefore, I suggest samples of various species of trees complete with labels indicating scientific and common names, adaptability and growth habits. If the species flowers or has some outstanding seasonal characteristic then a photograph may be relevant.

None of the material should be planted in straight rows but should be groups (e.g. evergreen ground covers, foundation plantings for north side, south side, varying flower beds (costly, may not be feasible), shade tolerant shrubs, etc.).

I favour gravel walkways with occasional signs to aid in self-guided tours (visitors would not be restricted to the walkways). To add interest various ground structures of different types such as gazebos (protection from rain, etc.) benches, bridges, etc. could be added for demonstration purposes.

I also favour the development of a brochure relating to the arboretum providing a map and self-guided tour instructions. A full description of all plant material should be included. This description must be complete enough (perhaps with photographs) to allow off-nursery use by the public, i.e. the brochure could be used as a public relations tool at off-nursery courses. In addition, there could be brief notes outlining the garden structures and a bibliography of publications where the reader can obtain additional information.

Other items that could be added along the tour route include items of local historical significance relating to the nursery and the Town of Indian Head. (Indian Head is one of the oldest towns in the prairies and the Experimental Farm was one of the first five in Canada. The largest corporate farm in Canada, the Bell Farm, was located here and the CPR camp overwintered in Indian Head during construction. There is also an interesting story of how the name of the town originated. Arnold Dales of the Museum Association can provide additional details.) Items relating to the nursery could describe reasons for inception, description of the larger tree plantings in the prairies, trees used for shelterbelts and their use in shelterbelts. The latter could be incorporated into 30-40 foot shelterbelts planted in a specific area of the arboretum. Remember there is a difference between the appearance of trees in a shelterbelt and trees in ornamental and specimen plantings.

One other possibility is a larger area which could be set aside for barbecues and large gatherings (e.g. family picnics, scheduled tours, etc.). The existing facilities

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 Indian Head
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 dept. of landscape
 architecture
 university of manitoba

chapter	APPENDIX B
section	Summarized Interviews
subject	Interview of Mr. K.W.Thompson, Head of Distribution and Development, on May 29, 1980.
division	

leave a lot to be desired. Larger functions, of course, would have to be scheduled in advance.

I do not favour the incorporation of play areas for young children (e.g. swings, etc.) since these facilities are provided in other areas and present special problems for maintenance and liability insurance. A playground is not the intended use of the arboretum.

It may be possible to incorporate cross-county ski and walking trails both within and outside the arboretum. Summer self-guided tours should include the Production plots.

The above ideas are extensive and outside many current budgetary restrictions. It may be impossible to incorporate any of the above without additional man-power."

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Indian Head
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chapter APPENDIX B

section Summarized Interviews

subject Interview of Mr. Bruce Neill, Head, Investigation Section, June 2nd, 1980.

division

"As head of the Investigations Section of the P.F.R.A. Tree Nursery, Indian Head, it is my responsibility to directly supervise the Plant Propagation Unit and the Entomology Unit and indirectly supervise the Herbicides Unit and Soils Unit. The major objective of the Investigations Section is to provide recommendations on the production of the 24 tree and shrub species based on practical research on such things as: sowing rates, dates and depths; alternate shelterbelt species; regional test plantings; plant selections; chemical defoliation; refrigerated storage of plants; seed storage; insecticide screening; insect life history studies; alternate insect control (pheromones); herbicide screening; fertilization requirements; salinity problems. In addition, the section does some work on off-nursery projects such as: Dutch elm disease survey; shelterbelt weed control demonstrations; land reclamation plantings; varied public enquiries.

Currently my main uses of the interpretive grounds on a professional basis are:

1. to view labelled trees and shrubs so I can become more familiar with species grown on the prairies;
2. to train new Investigations staff in the recognition of tree and shrub species;
3. to show members of the public (tours and office visits) the growth and form of various species; and
4. to serve as a source of seed and scion wood for use by my Propagation technician.

The frequency of the above uses has been very small over the past 2½ years that I have been employed at the nursery.

My main uses of the interpretive grounds on a personal basis have been:

1. to use as point of interest when giving a tour of the Indian Head area to friends and relatives. The flower garden area is usually especially appreciated.
2. to use as a picnic site for civic groups. I have been to one organized picnic (Beta Sigma Phi) in the interpretive grounds since I've been a resident of Indian Head.
3. to use as a cross-country ski area. Five to ten times per winter I use the grounds for skiing.

In the redevelopment of the interpretive grounds I would suggest that the following should be included:

1. Self-guided interpretive programs for the enjoyment and education of the public. The nursery receives a number of visitors each year, and with some P.R. and development I'm sure more would come. Some suggestions for interpretive programs include:
 - a. hardy trees and shrubs currently recommended for shelterbelts on the prairies. Appearance, growth rates, uses, problems, restrictions.

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Indian Head
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chapter APPENDIX B

section Summarized Interviews

subject Interview of Mr. Bruce Neill, Head, Investigation Section, June 2nd, 1980.

division

- b. use of trees, shrubs and flowers in landscaping a home;
 - c. shelterbelt maintenance;
 - d. a nature trail along the reservoir explaining points of interest (e.g. plants-animals-water associations). Both summer and winter trail could be incorporated with the winter trail suitable for cross-country skiing.
 - e. use of trees for energy. Feasibility of wood-lots, comparative B.T.U.'s from various tree species. Economics of using wood for home fuel use (e.g. use of poplar).
 - f. history of the P.F.R.A. Tree Nursery and the production of trees at the nursery;

A pamphlet would describe each program and would direct the visitor to various marked stations where points of interest would be elaborated upon. Each tour could have it's own colour coded route through the interpretive grounds and the rest of the nursery.
2. Interpretive center. A simple interpretive building should be constructed or the existing kitchen shed modified to provide a focal point for the interpretive grounds. Such a building could serve as a starting point for both self-guided tours and guided tours. It could also function as a shelter for groups using the interpretive grounds (e.g. school classes, Boy Scouts or Girl Guides Natural History Society, etc.) The building could be used as a permanent enclosure for displays of various sorts.
 3. Promotion of the interpretive grounds to the public: The public should be encouraged to use the grounds. The area should be promoted by:
 - a. putting up suitable signs along #1 Highway that will give notice to the tourist that the Tree Nursery is open to the public. Such signs should be placed at a suitable distance east and west of Indian Head to allow ample time for the tourist to make a decision to stop.
 - b. promotion of the accessibility of the grounds to local civic groups and school groups.
 - c. a tour guide should be provided on an annual basis. He would be responsible for promoting the grounds area and for organizing and giving tours to interested groups. As the area becomes more popular, he could set up daily tours at designated times. He would be responsible for making sure that the self-guided tour program operates smoothly. He could direct specific questions about tree nursery policy or shelterbelt problems to suitable nursery personnel.
 4. Research needs - In the past the arboretum area has not been used routinely as a research area, but instead served as an infrequent source of seed or scion wood from specimen trees. The future use of a new Arboretum area would again serve a similar function. The testing of various tree material would continue to be done in other locations on and off the nursery. Perhaps part of the new grounds area could be incorporated as a test site or an area could be set aside as an example of research being carried out. For example a number of poplar clones can be planted in an area and could serve the following purposes:

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chapter APPENDIX B

section Summarized Interviews

subject Interview of Mr. Bruce Neill, Head, Investigation Section, June 2nd, 1980.

division

- a. a test site for the Investigations Section;
 - b. an example of research being carried out;
 - c. a stopping point for the "Trees for Energy" tour;
 - d. a stopping point for the "Trees for Shelterbelts" tour.
5. Employee needs: A new interpretive grounds area could still serve as an educational area for new tree nursery employees wanting to become more familiar with various tree and shrub species. One of the self-guided tours proposed for the public could serve as a starting point for this purpose."

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chapter	APPENDIX B
section	Summarized Interviews
subject	Interview of W.L.H.McDermaid, Head, Administration Section on June 6, 1980.
division	

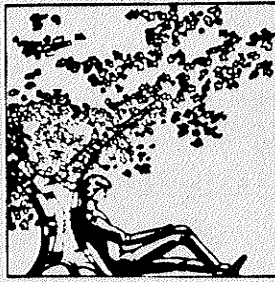
The Head of the Administration Section is responsible for all "Staff" functions of the Tree Nursery. Staff functions can be defined as common requirements to all Sections; Personnel, Finance, Purchasing, Communications, Stores and Other Administrative support services.

Little involvement in the use of grounds area; mainly used as an illustration to occasional visitors, as to the potential of planned shelter planting to enhance the growth of tender plants.

The re-development should continue to illustrate to our clients that proper shelter in our prairie climate can expand the utilization of their farm homes, also create a more pleasant environment to contribute to the quality of life in the prairie region.

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chapter	APPENDIX B
section	Summarized Interviews
subject	Interview of Cliff Herndier, Distribution Unit Leader, on June 6, 1980.
division	

Interpretation Grounds

1. Cliff Herndier - Distribution Unit Leader.
 Allocation of available tree species to approximately ten thousand applicants in the prairie provinces by zone and soil conditions. Organize packing and shipping operation of some 6 million trees and 45,000 bales to 79 Agricultural Representative districts for redistribution to applicants. Prepare monthly reports of trees allotted by province and species. Compile statistics for annual distribution by species, province, type of planting and utilization.
 Summer months - travel in Saskatchewan and Manitoba to assist farmers in proper design of their farmstead and use of tree species. Inform the public of chemicals available to help in maintenance of shelterbelt plantings.
2. Personal - Mainly used for family picnics and leisure walks to enjoy the flowers and shrubs.
 Professionally - While providing bus tours, this area is used as a source of background history on the nursery. The demonstration hedges and flower beds were discussed in passing as well as the arboretum. Some tours if time permitted used these areas for a closer look at tree material available to the public.
 Office guests are sent to the nursery to see the different types and shapes of trees and pruning methods which can be used.
3. Specimen plantings of tree and shrub species should be established. These should be labelled to provide visitors with the information they need to give them guidelines for selection of suitable species. New demonstration hedges, with recommended spacings are needed to show the density of branching and height of growth.

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chapter APPENDIX B

section Summarized Interviews

subject Interview of Mr. Bev Jackson, foreman,
 on June 6, 1980.

division

Mr. Jackson's duty is to oversee the work of the crews of the production section. In the actual maintenance of the interpretive grounds, Mr. Jackson considers that it always has been an area taken care with the left over crews, especially since that the prior head gardener has not been replaced.

Vandalism has been very rare in the past: snow-mobiles would go through the seedling beds of conifers.

In the future, these grounds should have someone employed full time, but generally the area is adequate the way it is to receive visitors.

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chapter APPENDIX B

section Summarized Interviews

subject Interview of Mr. Carton, Principal of
 Indian Head High School, June 9, 1980.

division

In the past the Indian Head High School never had to ask for trees on arbor days from the P.F.R.A. Tree Nursery. Mr. Carton reports that the nursery approached on its own the authorities of the high school to provide them with professional assistance and plant materials for the front landscape of the school grounds.

Mr. Carton and his wife use the grounds of the nursery all year round. During the summer it is for picnics, strolling, family reunions, and during the winter, for cross-country skiing. What they mostly like about the grounds of the nursery is its peace and its sheltered atmosphere.

As far as the interpretation of some activities of the high school to the nursery grounds are concerned, it is always a question of transportation. The nursery is far enough from their school to have to rent a bus each time they would like to come over. It is an important limiting factor.

After forgetting about the transportation, the science teachers would probably be interested in nature or any interpretation trails; the home economics teacher takes her students to the experimental farm for outdoor cooking courses which also could be done at the nursery as long as bar-b-ques are available; the physical education teachers organize each year cross-country skiing courses in the adjacent fields of the golf course; the music teacher has put together different brass bands and is habitually very interested in opportunities to play outside of their school. Mr. Carton will contact the above teachers to define their needs in relation with the nursery.

Among the suggested opinions, Mr. Carton looks forward to the possibility of having the students involved in a symbolic arbor day at the nursery. During this arbor day the students would plant a tree labelled with its common and scientific name, as well as the name of the student and the date of planting.

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chapter	APPENDIX B
section	Summarized Interviews
subject	Interview of Mr. John Sawkey, Principal, Indian Head Elementary School, June 9, 1980.
division	

Mr. Sawkey has been recently appointed to his function of principal of the Indian Head Elementary School in September 1979. Probably because of the extra work required to get acquainted by his new functions, Mr. Sawkey did not visit the Tree Nursery yet. Even if he was not able to feed me on any information about the use of the nursery by his school, he will introduce the topic to his teachers and subsequently will contact us.

The librarian uses the picnic grounds to reward annually the students (grades I-VI) that helped her in her tasks.

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chapter APPENDIX B

section Summarized Interviews

subject Interview of Mrs. Isabel Simpson, 4H
 Chief Leader and Sewing Leader, June 10,
 1980.

division

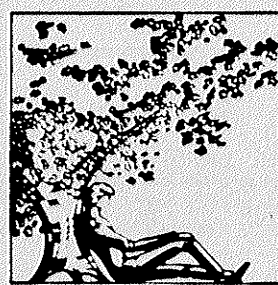
The 4H Association has been in existence in Indian Head on and off since 1960. The actual association has existed since 1960 and counts 29 members and 8 leaders. Their activities are centered around their motto "the head, the heart, the health and the hands". The members are mostly children of elementary and high school age. They choose their project and learn to do by doing it under the supervision of a leader.

Currently, the 4H uses the basement of the United Church for their meetings; they use the pavillion of the Experimental Farm for activities such as the gym day and the animal exposition. In the past they have used the interpretive grounds for their activities such as baseball, picnics, tours for 4H groups on an exchange travel, up to the time that it did create a conflict. The conflict occurred on a Sunday where the members were playing softball by the picnic grounds. At one time the ball went in the direction of a group of visitors dining at a picnic table; there the ball was grabbed by one of the visitors who kept it away from the 4H members. Today when the 4H members want to play baseball, they go to the Experimental Farm owned by the Department of Agriculture of Canada.

Before presenting any ideas on the redevelopment of the interpretive grounds, Mrs. Simpson affirms that there is no reason to duplicate the services already offered by the Experimental Farm, since we have to be more and more money conscious. Among activities suggested by Mrs. Simpson for the 4H that could be integrated into the interpretive grounds are a lawn croquet area, a horse shoes area, a softball diamond, cross-country skiing and even horse back riding trail system. From experience, Mrs. Simpson outlined that elderly people enjoy the nursery for the peace of its picnic area.

P.F.R.A. TREE
NURSERY *Arboretum*
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chapter	APPENDIX B
section	Summarized Interviews
subject	Interview with Mr. Larry F. Sukava, Senior Planner, Saskatchewan Tourism and
division	Renewable Resources, June 13, 1980.

As senior planner of Tourism and Recreation, Mr. Sukava is very interested in any development that is possible to occur at the Tree Nursery. In 1978, the Qu'Appelle Valley Tourism and Recreation Planning Program, along with Tourism and Recreation Planning Branch of the Saskatchewan Tourism and Renewable Resources published a report entitled "Development Strategies for the Qu'Appelle Valley":

"This report recommends strategies for management and development of the tourism and recreation opportunities of the Qu'Appelle Valley in order to optimize the social and economic benefits according to the objectives of the Canada-Saskatchewan Subsidiary Agreement on the Qu'Appelle Valley.

The objects of the Qu'Appelle Agreement are, in summary form: to ensure the long-term productivity of the recreation and tourism resource base; to increase the benefits from utilization of this resource base by improving economic opportunities for Valley residents, and increasing recreation opportunities for nearby urban residents; and to improve the management of land and water resources in the Qu'Appelle Valley.

This report is the first stage of a three-stage planning program as per terms of reference approved by the Qu'Appelle Valley Management Board. Existing information, supplemented by selective research in deficient areas, was used to determine strategies for development of future tourism and recreation opportunities in the Qu'Appelle Valley. Input from public participation will be part of a feasibility evaluation of the development proposals."*

The Town of Indian Head is included in this development. The P.F.R.A. Tree Nursery itself is considered as an important asset that should be more taken advantage of. Here are some abstracts from the Development Strategies Report:

- "4) A visitor centre at Indian Head should be developed to interpret the agricultural development of southern Saskatchewan and encourage side trips into the the Qu'Appelle Valley.

The Dominion Experimental Farm, P.F.R.A. Tree Nursery, and the round Bell barn (all located at or near Indian Head), are existing sites which could be interpreted in conjunction with the visitor centre. An historic development complex could include reconstruction of portions of the Bell Farm and a historical demonstration farm, with working examples of different agricultural eras. An auto-tour of cultural and historical sites could be promoted to include the visitor centre at Indian Head along with other significant sites at Lebret, Fort Qu'Appelle, and the Motherwell Homestead (a National Historic Site) near Abernethy."*

The implementation of the visitor centre will occur in the next five years. Its location is not determined officially yet, but it might probably be on Highway #1, in front of the Esso gas station.

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chapter APPENDIX B

section Summarized Interviews

subject Interview with Mr. Larry F. Sukava, Senior Planner, Saskatchewan Tourism and

division Renewable Resources, June 13, 1980.

Mr. Sukava suggested to resolve our signing problem to get in touch with the Signing Agency of Transport Canada. Meanwhile Mr. Sukava said that he would be available anytime to give more information and to meet with the Superintendent of the P.F.R.A. Tree Nursery.

-
- * Tourism and Recreation Development Strategies
 for the Qu'Appelle Valley
 Produced by Qu'Appelle Valley Tourism and
 Recreation Planning Program
 Tourism and Recreation Planning Branch
 Saskatchewan Tourism and Renewable Resources
 Regina, Saskatchewan
 September, 1978.

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chapter	APPENDIX B
section	Summarized Interviews
subject	Interview of Mr. Bill Wood, Consultant of Outdoor Programs, Board of Education, Regina, June 13, 1980.
division	

One of the functions of Mr. Wood as consultant of the outdoor program is to approve or disapprove the tours submitted by the different teachers of the City of Regina. In this tour approval process Mr. Wood meets with the concerned teacher to prepare the tours.

The submissions for the tours usually arrive at the Board of Education in January and the approval process is completed by the end of March. It is at this period that Mr. Wood starts to prepare the tours with the teachers. The preparation of the tour can take diverse forms, according to the site proposed for the tour. Audio-visual shows, appropriate courses, emulation techniques are among the methods used by the teachers in preparation of the tours. Also during and after the tours, other educational stimulation techniques are employed to fully interpret the tour to the day to day exercise and evaluation of the students.

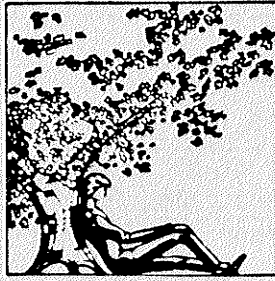
Although the budget of the outdoor programs has been cut back drastically by 55% in the last year, more than ever co-operation is needed between the governmental agencies to assure the survival of this effective and pleasant educational media that is outdoor education.

Certain basic elements of information have to be made available to achieve the proper preparation of a group of students scheduled for a guided tour of the P.F.R.A. Tree Nursery. Mr. Wood proposed the following list of elements that should be prepared by the Nursery:

- A Learning Resource Kit: the kit would be put together for the students and be composed of tour field guides, handouts describing the history, the activities and the plant species appearing in the Tree Nursery, labelled samples of seeds, leaves, bark and colouring books.
- A Tour Summary: the tour summary should present to the teacher the different topics covered by tour guide some weeks before the tour.
- A Tree Index: the index should contain an exhaustive woody plant list with description and habits of the trees to inform the teachers before the tours.
- A Teacher Spring Tour: the teacher tour of the P.F.R.A. would permit the interested teachers to get acquainted with all the possibilities of the nursery site as well as to get the learning resource kit, the tour summary and the tree index.
- A Diversity of Tour Topics: the guided tour should present the buildings, the irrigation system, the water schedule and the equipment.
- A Souvenir: the students should be able to bring back either a pack of seeds, or a tree that they could plant at their school, or any significant experience that could remind them of the tour and be used as post-tour educational material.

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chapter	APPENDIX B
section	Summarized Interviews
subject	Visit of Mr. Bill Wood to the P.F.R.A. Tree Nursery at Indian Head, June 20, 1980.
division	

During his visit, Mr. Wood got a guided tour through the interpretive grounds and the production grounds. Mr. Wood was happily surprised to see such a place. The site can offer so many possibilities for recreation and education. If the interpretive grounds are developed to allow interpretation programs on trees -- their history, shape, leaves, shadows, ages -- maintenance techniques, and flowers regrouped by themes -- edibility, herbs, medicinal, etc., -- the tour through the production grounds could be left aside to the profit of a slide show and more time in the interpretation grounds.

Mr. Wood suggested a meeting in the second week of September rather than during the month of August because most of the concerned people would be in September back to their regular activities. At this meeting the teachers under the Regina School Board could be invited to participate to the finalization of the conceptual plan for the interpretive grounds.

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chapter	APPENDIX C
section	Recommended Roadside Environment Plants
subject	
division	

Astragalus caespitosus

(Nutt.) A. Gray

Hedysarum alpinum L. var

americanum Michx.

Parnassia palustris L.

Primula mistassinica Michx.

Tufted Milk-Vetch

American Hedysarum

Northern Grass-of-Parnassus

Dwarf Primrose

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chapter APPENDIX D

section Recommended Moist Forest Plants

subject

division

- | | |
|----------------------------------------------------------------------------------|-----------------------------|
| <u>Aralia nudicaulis</u> L. | Wild Sarsaparilla |
| <u>Asclepias verticillata</u> L. | Whorled Milkweed |
| <u>Aster cordifolius</u> L. | Blue Wood Aster |
| <u>Aster macrophyllus</u> L. | Big-Leaf Aster |
| <u>Chimaphila umbellata</u> (L.) Bart.
var. <u>occidentalis</u> (Rydb.) Blake | Common Pipsissewa |
| <u>Claytonia caroliniana</u> Michx. | Carolina Spring-beauty |
| <u>Clematis verticillaris</u> DC. var.
<u>columbiana</u> (Nutt.) A. Gray | Rock Clematis |
| <u>Cypripedium calceolus</u> L. var.
<u>pubescens</u> (Willd.) Correll | Large Yellow Lady's-slipper |
| <u>Cypripedium candidum</u> Muhl. | White Lady's-slipper |
| <u>Dryopteris filix-mas</u> (L.) Schott | Male Fern |
| <u>Epilobium angustifolium</u> L. | Common Fire-weed |
| <u>Geum macrophyllum</u> . Willd var.
<u>perincisum</u> (Rydb.) | Large-leaf Avens |
| <u>Helianthus laetiflorus</u> Pers. var.
<u>subrhomboides</u> (Rydb.) Fern. | Stiff Sunflower |
| <u>Hyposix hirsuta</u> (L.) Coville | Common Gold-stargrass |
| <u>Lilium philadelphicum</u> L. | Wood Lily |
| <u>Maianthemum canadense</u> Desf. var.
<u>interius</u> Fern. | Canada Bead-ruby |
| <u>Monarda fistulosa</u> L. | Wild Bergamot Bee-balm |
| <u>Phlox pilosa</u> L. | Downy Phlox |
| <u>Polygala paucifolia</u> Willd. | Fringed Polygala |

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chapter	APPENDIX D
section	Recommended Moist Forest Plants
subject	
division	

<u><i>Polygonatum canaliculatum</i></u> (Muhl.) Pursh	Great Solomon's Seal
<u><i>Psoralea argophilla</i></u> Pursh	Silverleaf Psoralea
<u><i>Psoralea esculenta</i></u> Pursch	Indian Breadroot
<u><i>Psoralea lanceolata</i></u> Pursh	Lance-leaved Psoralea
<u><i>Psoralea tenuiflora</i></u> Pursh	Few-flavored Psoralea
<u><i>Pteridium aquilinum</i></u> (L.) Kyhn var. <u><i>pubescens</i></u> Underw.	Bracken
<u><i>Pyrola asarifolia</i></u> Michx.	Pink Wintergreen
<u><i>Pyrola asarifolia</i></u> Michx. var. <u><i>incarnata</i></u> Fern	Pink Wintergreen
<u><i>Pyrola chlorantha</i></u> Sw.	Greenish-Flowered Wintergreen
<u><i>Pyrola elliptica</i></u> Nutt.	Common Shinleaf
<u><i>Pyrola minor</i></u> L.	Lesser Wintergreen
<u><i>Pyrola secunda</i></u> L.	One-sided Wintergreen
<u><i>Pyrola virens</i></u> Schweigg.	Greenish-Flavored Wintergreen
<u><i>Solidago juncea</i></u> Ait.	Sharp-toothed Goldenrod
<u><i>Solidago rigida</i></u> L.	Stiff Goldenrod
<u><i>Trientalis borealis</i></u> Raf.	Starflower
<u><i>Uvularia sessilifolia</i></u> L.	Small Bellwort
<u><i>Veronicastrum virginicum</i></u> (L.) Farwell	Culver's-root
<u><i>Viola pensylvanica</i></u> Michx. var. <u><i>leiocarpa</i></u> (Fern. & Wieg.) Fern	Yellow Wood Violet
<u><i>Viola pubescens</i></u> Ait.	Downy Yellow Violet

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chapter	APPENDIX "E"
section	Maintenance Guidelines
subject	
division	

MAINTENANCE GUIDELINES

Cedar's Care:

Most of the cedars appear to be planted at what is now a poor location because of the lack of moisture. The cedars* that border the entrance to the flower beds are lacking of moisture. Some people said that they have reached their mature stage, maybe for this part of the country but not near of what they can look like in their natural habitat. Cedars inhabit moist, sometimes swampy areas along banks of streams.** Also the children find an immense pleasure to climb among the trunks of the cedars and pull away the smaller branches leaving only the tip growth. They jump from the trees to the ground which compacts the surrounding grounds reducing the drainage quality of the grounds.

* *Thuja occidentalis L.* -
 White Cedar, American
 Arborvitae

** References no. 31.

To rejuvenate the cedars, the analysis of the soil is necessary, if the acidity is too low, peat moss, pine needles and dried blood can be mixed into a mulch to be spread around the base of the cedars.

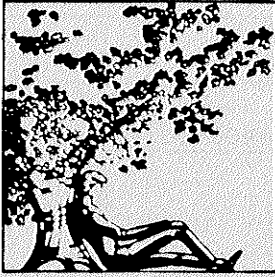
To increase the water regime of the cedars, soil should be placed to form a berm, located outside the rain drop line of the canopy, then water should be poured frequently inside of the bermed area. The berm itself should be fixed by using logs or trunks that will make a barrier to the pathway leading to the flower beds. This barrier will also discourage some children from jumping from the trees.

Compost:

Next to mulches, composting should become another management practice suitable to save money and energy in the interpretive grounds. Each year at least \$400.00 is spent in chemical fertilizers in the interpretive grounds. This money can be invested in hiring a helper for the gardener for one week or two to produce and spread compost, as well as other fall tasks.

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chapter	APPENDIX "E"
section	Maintenance Guidelines
subject	
division	

* Rick: an outdoor stack of hay, or straw, etc., usually thatched.

"You should have a rick* or open bin in which to make the compost. You can use ordinary wire fence or boards attached to solid posts, or open brickwork, to make such a rick some 3 to 8 feet high and 3 to 5 feet wide and of any convenient length. One end should be made with removable sides for convenience in building up the compost and for taking out the material.

Material like autumn leaves can be laid down in layers some 6 to 12 inches thick.** To each layer of organic matter is added dried manure in a proportion of 5 lbs. per 16 ft²; if the mulch required is for plants loving only a slight acid soil (Ph 5.5 to Ph 7.) wood ashes should be added to the dried manure.

"The leaves or grass or wood chips should be moistened as they are added. The pile is built up in this way, layer after layer, and finally topped with a 1 to 2 inch layer of garden soil.

As it is built up, the material should be packed with the feet around the margins but only lightly in the middle -- so that the center will settle more than the margins and water added to the surface will gradually moisten the whole.

Some gardeners use pits, but it is better to build from the surface of level ground. The material needs to be moist but not soggy. Decomposition without air leads to loss of nitrogen.

After 2 or 3 months of moderate to warm weather, the pile should be turned for best results, although that is not entirely necessary. In turning into another rick, you can cut down vertical sections in the old one and put them horizontally in the new one, being careful to keep any dry materials to the inside.

In regions having cool, frosty winters, compost made from autumn leaves in November and December may be turned in the following May or June.

A pile that is made too large may overheat, with a loss of nitrogen.

If the pile is kept reasonably moist and has a cap of garden soil (besides the soil between the layers), it should have no odor.

* References no. 16.

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chapter	APPENDIX "E"
section	Maintenance Guidelines
subject	
division	

Applications of good compost or stable manure to the garden are about 4 to 40 bushels to 1,000 square feet."*

The production of the compost will require four compost containers: one for summer slightly acid compost, one for summer highly acid compost, one for winter highly acid compost and one for winter slightly acid compost.

Also the gardeners should have an easy access to piles of garden soil, wood ash, organic matters (leaves lawn clippings etc.) and dried manure.

The compost containers should be located closest to where that type of compost will be used. The highly acid compost containers should be built by the old larch and white spruce plantation on the north end of the football field, and the slightly acid compost containers should be built by the greenhouse (bldg. #13).

Mulches:

"One of the most important uses of organic matter by the gardener is as a mulch. When so used it reduces the damaging impact of rain or irrigation on the soil. This is very important because it increases the infiltration of water and reduces erosion. An organic mulch conserves soil moisture by reducing evaporation, and helps to suppress weed growth."**

The tree nursery produces an average of 6 million trees per year and also a lot of by-products. Most of these by-products are looked at as garbage rather than as a potential source of recyclable materials. Among these by-products are young trees, mature cut-down trees, branches, leaves, needles, grass clippings gravel, stone, boulders.

As described in the section on "Pathways and Service Roads" there are uses for all the above materials for covering and edging. Transformation of the materials will be necessary for the proper use.

* References no. 16.

** References no. 22.

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chapter	APPENDIX "E"
section	Maintenance Guidelines
subject	
division	

Sawdust and wood chips are useful to mix into clay soils to improve their structure and as mulches. It has to be rotted and when moistened it give ideal acidity level for acid-loving plants. For rose gardens it is recommended to use about one-fourth to one-half cupful of finely ground dolomitic limestone with each bushel of sawdust or wood chips.

Mulching with grass clippings is a common technique practiced by gardeners to conserve moisture in the soil. Grass mulching is not recommended for areas where the temperature of the soil will be very important for starting perennials or annuals, but it will be very appropriate as an under-tree cover. Also in other areas grass clippings would be difficultly kept under control.

Mulching with stones, boulders, crushed stones is in this area the most outstanding type of mulching. The stones heat up the ground in the spring, keep the moisture during the summer and give away nutrients from their slow decomposition. Stones and boulders are easy to handle and their permanence over the years lowers the cost of maintenance. Their volume and density cut down on the growth of unnecessary herbs and enhance by their tones, colours and shapes, the ground texture.

Pathways and Service Roads:

The pathway borders can be a bed or a row of boulders, or logs cut from the dead trees in 4' lengths; any sort of border will be fixed to the ground by burying the material for half of its height. Variations can also occur by burying vertically the trunks with various heights out of the soil, boulders can be piled up into small stone walls.

The cheapest cover for the pathway would be wood chips. It can be done with a chipper and all the dead woody material. At this moment dead trees are piled in the nursery dump and burnt or, occasionally given away for home combustion. The wood chips will be laid down on the pathway between borders to prevent any sort of erosion.

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chapter	APPENDIX "E"
section	Maintenance Guidelines
subject	
division	

The spruces planted in rows for example around the arboretum, or the hedges area always look like a pallissade, a fence keeping people in one location until they can find a passage for going from one section to the other. These passages have to be obvious and inviting. In the case of the spruces, they can be pruned to form an arch entrance, high enough to prevent any sort of discomfort for the passerby from the needles, and the sides of the foreground of the arch entrance should be organized to announce the presence of the passage.

When the pathway crosses a road:

- if the road is paved, a texture painted on the road, or a different paving material such as cobble stone will indicate to the visitor the direction of the pathway on the other side of the road, as well as to indicate to any driver the location of pedestrian crossings.
- if the road is not paved, another type of mulch will be covering the pathway crossing the road, for example a light colour gravel can contrast with the darker colour of the wood chip mulch.

The service road leading from the north entrance to the visitor parking is actually covered with a slight amount of gravel. It is very poorly bordered and the mechanical erosion brings the gravel over the grassed area.

This road as well as the parking lot needs to be bordered. The bordering of the road is possible by first burying half of the circumference of boulders and 4' long logs forming the solid line of a curb. The curb will limit the erosion. The curbing of the road has to be graded to direct the runoff water towards the creek and the ditches. The road can be covered with wood mulch. A new coat of wood mulch will be necessary each 5 years. If money becomes available the wood mulch can be taken away and be used as mulch for the pathways or as part of the compost, and be replaced by grass-stone. The grass-stone is very attractive for service roads not necessarily used during the winter months. Grass-stone is a type of uni-stone shaped like a concrete grid in which can grow a ground cover.

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chapter	APPENDIX "E"
section	Maintenance Guidelines
subject	
division	

Specialized Crew:

In the past, any crews and any staff could be assigned to work in the interpretive grounds. It created chaos and confusion. Trees got killed, grass overcut, personal interest projects accomplished to the detriment of the overall maintenance of the interpretive grounds.

In the future, the responsible person for these grounds should submit seasonal schedules of the foreseen maintenance work. The schedule should be approved:

- if it is conscious of the conceptual design and maintenance guidelines for each area concerned;
- if it is energy conscious; using the most appropriate techniques of recycling materials rather than the throwing away technique;

Since the occupation of the crews on the production is not as efficient as it can be (examples have been frequent to show to organized tours) a crew of 5 to 10 employees, rather 10 than 5, should be assigned as the official crew working in the interpretive grounds. Using the same crew week after week in the interpretive grounds, the members of the crew will become sensitized to the objectives of the interpretive grounds. Their specialization will increase the quality of their work and a closer work relationship with the interpretive grounds supervisor.

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chapter	APPENDIX "F"
section	Minutes of Public Presentation of the First Conceptual Draft of the P.F.R.A.
subject	Tree Nursery Arboretum, September 8th, 1980.
division	

Minutes
 Meeting - Monday, September 8, 1980
 Utility Building
 19:30 - 22:30 hrs.

Persons Present:

Mr. G. Howe	P.F.R.A.
Mr. & Mrs. B. Neill	P.F.R.A.
Mr. & Mrs. C. Thompson	P.F.R.A.
Ms. P. Szombathy	P.F.R.A.
Mr. J. Elliott	P.F.R.A.
Mrs. S. Leach	P.F.R.A.
Mrs. Leach & Friend	
Mrs. Isobel Simpson	4H
Mrs. Elaine Williamson	4H
Mrs. M. Prior	H.S.I.H.
Mrs. C. Prior	H.S.I.H.
Mrs. R. Spear	H.S.I.H.
Mrs. Francis Ford	H.S.I.H.
Mr. & Mrs. L. Peterson	N.H.S.I.H.
Mr. & Mrs. K. Skinner	N.H.S.I.H.
Mr. & Mrs. C. Ashmore	N.H.S.I.H.
Mr. W. Holzapel	Ex. Farm
Mr. B. Wood	Consultant for Outdoor Program Regina School Board Division

The evening meeting was held in the coffee room of the foreman's office (Bldg. No. 14). This location allowed the guests to walk easily in the interpretive grounds before the meeting. There were 25 persons in attendance at the meeting. The guests were mostly from the Natural History Society of Indian Head, the Horticultural Society of Indian Head, the P.F.R.A. Tree Nursery of Indian Head and friends.

The program of the evening was elaborated to present the first draft of the Conceptual Framework Plan and the three User Programs. For introduction, a slide show was presented. The slide show presented in the first step, major features of the existing guided tours; the second step, a resume of the site and user analysis; and finally, the themes developed in the three user programs. Following the introduction I presented the draft of the Conceptual Framework Plan in detail.

After the coffee break, the guests sat down in discussion teams for one-half an hour. The team discussion opened up into an open discussion which presented comments.

Comments of their discussion:

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chapter	APPENDIX "F"
section	Minutes of Public Presentation of the First Conceptual Draft of the P.F.R.A.
subject	Tree Nursery Arboretum, September 8th, 1980.
division	

- work should be brought to the public's attention;
- more signs should be placed along the Trans-Canada Hwy.;
- advertisement could be done in concert with Sask. Travel and the Saskatchewan Tourist agencies;
- a name other than P.F.R.A. Tree Nursery of Indian Head is necessary for the interpretive grounds;
- the historical interpretation should incorporate the Tree Nursery as part of the cultural history of Indian Head, Qu'Appelle Valley and the area in general;
- special event days could be planned to celebrate, for example, the seasonal growth;
- the buildings should be available for workshops held by civic groups;
- the road heading from the Trans-Canada Hwy. to the Tree Nursery should be upgraded;
- the interpretation programs should be planned to include self-guided tours. Each stopping point should stimulate the curiosity and the attention of the visitors by asking them questions. Interpretation boards could be used as often as possible to enable them to walk around in the interpretation grounds without the visitor's pamphlets;
- the paving material of the pathways should allow a specific tour for handicaps, especially those using wheel chairs. Also for handicaps, a boat tour on the reservoir could present on a concise fashion the same information as in the educational program;
- for retarded children, and also the benefit of the general visitors, a special short tour should offer the stimulation of all five senses;
- citizen involvement, especially of Indian Head, should stay constant in this project. Newsletters, articles in local newspapers, invitations to local civic groups to come and use the facilities of the interpretive grounds, workshops should become standard activities for promoting the implementation of the Conceptual Framework Plan;
- a committee should be established to assure the ongoing future of the interpretive program. This committee should be composed of members of the P.F.R.A. Tree Nursery and members from the nearby area. The heads of this group should keep a constant communication between the inside and the outside of Interpretive Grounds. They could administer a non-profit budget as a corporation, keep an activity calendar, propose alterations and/or innovations, etc.
- for the next meeting other organizations should be contacted such as the Qu'Appelle Implementation Board;
- activities and programs in the Interpretive Grounds should be planned for all year round;
- native plants should be established in suitable environments;
- there is a need to propose in the elaboration of the requirements of the new administration complex building a multi-purpose room. This room would give to the visitors and civic groups a place to hold lectures, workshops, general meetings, collections and seasonal displays.

Recommendations:

I have recommended to the people who were at this meeting to keep in close contact with the P.F.R.A. Tree Nursery Administration. They should not hesitate to ask for assistance in the planning of their activities on the grounds of the nursery.

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chapter	APPENDIX "F"
section	Minutes of Public Presentation of the First Conceptual Draft of the P.F.R.A.
subject	Tree Nursery Arboretum, September 8th, 1980.
division	

I also recommend that anyone interested in writing articles for the newspapers about the Tree Nursery should do so. Interests and activities should be more than ever generated by anyone for the implementation of the Conceptual Framework Plan of the interpretive grounds.

Next meeting: sometime in Spring 1981.

Object: second draft of Conceptual Framework Plan and User Programs for the Arboretum of the P.F.R.A. Tree Nursery of Indian Head, Sask.

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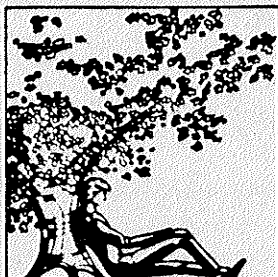
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chapter BIBLIOGRAPHY

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