Trail Builder's Companion

March 2001

For the planning and development of recreation trails in Alberta.

Alberta TRAILNET

ALBERTA SPORT, RECREATION PARKS & WILDLIFE FOUNDATION
Enhancing Alberta's Communities

Alberta
COMMUNITY DEVELOPMENT

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Disclaimer

- Alberta Community Development and Alberta TrailNet disclaim liability for any injuries, damages, or claims which may arise by any person relying on the information contained in this document. Specifically, Alberta Community Development and Alberta TrailNet are not responsible for determining the suitability of the information provided here for a particular project.
- This document provides you with a variety of recreation facility ideas. In some cases, particular companies are named if they are the only known supplier of a product. This does not constitute an endorsement. The user takes all responsibility for determining if any concept, service, or procedure is appropriate for the particular application. The drawings are not intended for construction purposes.

Acknowledgements

Primary Information Sources

- Alberta TrailNet
- Alberta Environment
- Environment Canada

Sponsors

- Alberta Community Development
- Alberta TrailNet
- Alberta Sport, Recreation, Parks and Wildlife Foundation

Additional copies

- Alberta TrailNet, Toll Free 1-877-987-2457 (see order from at back)

RITE telephone line

- You can telephone any provincial government office in Alberta toll-free. Just dial 310-0000 and wait for the electronic operator to give instructions.

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Introduction

101 Using this manual

This manual presents information needed for the planning and development of most types of recreation trails. Specifications included here are generally useful for conditions typically found in Alberta. To keep the manual as helpful as possible, easily accessible information has not been reproduced. New ideas and products, sometimes from obscure sources, are offered for your consideration.

The intended users are people directly involved in planning and operating trails. The manual should be of interest to both volunteers with smaller organizations which cannot afford to hire professionals, and trail professionals looking for new solutions. The information has been drawn from a wide range of trail manuals, references, and individuals. All major aspects of trail construction are mentioned: design, trail materials, visitor services features, construction techniques, and operation.

The development process outlined in the first section will be especially useful for groups working on the Trans Canada Trail. The resulting proposals will likely have the information required for a quick and accurate appraisal, which could lead to partial funding.

Trails bring together many skills and disciplines which are beyond the scope of this manual. Some of the topics with an extensive body of literature include fundraising, volunteer management, engineering of bridges, and vegetation restoration.

Organization of this manual

The Trail Builder's Companion has two components: the Trail Planning Workbook and this reference manual. The workbook will lead the beginner through the various steps involved in trail development and the manual will provide details for consideration. Use the workbook! It is meant to be written in! If this bothers you, use a photocopy to record your notes.

The manual is meant as a reference, and is not intended to be read "cover to cover." Alberta TrailNet anticipates adding pages as new products or techniques are developed. The title "Companion" was chosen intentionally. Keep it close at hand and refer to it frequently. Each page or section is free-standing and can be removed and studied without losing context. Feel free to add additional references or notes.

Most pages begin with an abstract description of the problem or situation. The general response is given, with local examples where practical. These ideas are not intended to be a recipe, but a starting point for discussion. Trails have lots of room for creative solutions!

Feedback on this manual

Response from readers is essential for this manual to be totally functional. If you have an interesting trail feature, please send details to Alberta TrailNet for possible inclusion in this manual. It may be the use of innovative materials or a clear specification for a common product. Line drawings are preferred for illustration as photos do not reproduce well.

If you feel advice included in this manual could lead to an unsafe situation, please advise us immediately so appropriate action can be taken.

In keeping with modern construction practices, all dimensions given in this manual are in millimetres (mm), metres (m), or kilometres (km). Imperial units may be given as well.

Further information

Wild Rose Trail System: This proposal provides a provincial perspective on trail development. It shows how local and regional trails can take advantage of existing transportation corridors to improve recreation. The background and broad picture presented here can be used to substantiate a local proposal. This resource is available from Alberta TrailNet at a cost of $15, including shipping.

Guide to Alberta Trails: This report provides the most comprehensive listing of recreation trails in Alberta. It includes over 11,000 km of mapped routes open to the public. Use it to get in touch with local trail managers who may be able to offer support or advice. Or use it to generate fresh ideas for vacations.

Trail Talk Conference: This annual gathering of trail activists can provide a lot of information and motivation in a short time. Bring a friend and be prepared to show off your local trail or proposed route. The proceedings of previous conferences are available at a cost of $15 each.

Bookshop: Several important references are available at nominal cost from Alberta TrailNet. Please refer to the full list in the Appendix. These can be ordered by calling toll free 1-877-987-2457.

Trent Fleming Trail Studies Unit: Under the direction of Dr. John Marsh, this office gathers and distributes a wide range of trail-related material. Use their web site (see below) to find out exactly what they have in their collection, and to access a variety of other sites.

Internet Sites: Internet addresses constantly change and move. However, these should put you in touch with other trail enthusiasts and managers:

- Alberta TrailNet
  www.albertatrailnet.com
- Trans Canada Trail Foundation
  www.tctrail.ca/
- Active Living-Go For Green!
  www.goforgreen.ca
- Rails to Trails Conservancy
  www.railtrails.org/
- TrailPAQ
  www.trailpaq.com

- American Hiking Society
  americanhiking.org/
- Trent Fleming Trail Studies Unit
  trentu.ca/academic/trailstudies/
- Canadian Pacific Railway 3-Year Plan
  www.cpr.ca
  (choose "corporate")

Case Studies: You can learn a lot from other trail managers. Try using trails yourself and consciously note what did and didn't work for you. Keep an inexpensive camera handy and take pictures to show others what you saw. Take a few moments to ask staff how they feel about the trails and what they would change. The field staff may give you a different perspective from the "office" people.

Notes:

102 Benefits of trails

Today's recreation professionals are faced with a substantial need to document the specific benefits of recreation facilities. Take a minute to consider what your community would be like with no recreation facilities. No swimming pools, skating rinks, theatres, golf courses, tennis courts, bowling alleys, or community centres. No parks, picnic sites, or playgrounds.

Obviously, there would be little point in living in such a dismal place. Just a little reflection has shown us that recreation does not deserve to be labeled as a "frill" or dispensable extra expense. However, our society today has a strong motivation to spend public money in the wisest manner possible. This trend to efficiency clearly favours the development of trails which provide many benefits to nearly all segments of our society. You are encouraged to study the following list and use the most appropriate benefits to help substantiate your proposed trail. Be as specific as you can.

Alberta TrailNet and Alberta Community Development believe that by listening to all interested parties and acting in an open and supportive manner, the needs of the entire trails community can be met. Remember to demonstrate that all aspects of a trail program are positive. The benefits from these trails should flow to all stakeholders, including the landowners.

Recreation benefits

Trails, because of their linear nature, pass close to many homes, providing easy access for many people. The heavy use of our urban trail systems and our national parks illustrates the popularity of these "community" facilities. In fact, many of these trails are stressed due to a high level of use. Exactly how high is this use? Research conducted by the Rails-to-Trails Conservancy found that in 1994 alone, American railtrails were used 85 million times. A survey conducted for the 1997 Growth Summit also confirms the importance of access to the natural environment. Twenty-six percent of those questioned identified "nature" as what they valued most about Alberta. This ranked ahead of all other categories.

Recreation surveys by the Alberta government indicate that walking for pleasure and cycling are among the top recreation activities. To a high degree, this is because trails circumvent several barriers to participation. The cost of equipment can be very low, especially when compared to motor sports and downhill skiing. There are no admission fees, and, with trails reaching into many communities, the access is easy. In particular, the typically gentle grades of abandoned rail lines allow a wide variety of uses. Having fun together builds strong families and a foundation for a stronger society.

As a demonstration of the popularity of cycling, Statistics Canada reported that Alberta leads the way in bicycle ownership. In 1989, 58% of Alberta households had at least one adult bicycle, an increase of 8% since 1980.

It should not come as any surprise that we also lead the way in the use of horses. According to the Alberta Equestrian Federation, about one-third of all Canadian horses live in the Calgary region, amounting to over 30,000 head. Just in the Calgary area, 79 equestrian associations and 25 clubs have been formed. Together, these people inject $220 million annually into the economy.

Social benefits

Trails, by their very nature, are a perfect multi-generational facility. Parents, children, and grandchildren can all enjoy themselves together. This support of family values is very hard to measure, but a visit to any trail will show many families having fun together.

Who can argue with the desire to provide a safe place for children to play? Whether they use bikes or horses, children deserve a place protected from vehicle traffic. This is especially true in the rural areas, where traffic moves faster and industrial vehicles are common.

On a broader scale, the trail-building process builds a stronger social fabric. Community participation is a solid way of providing trail services, because it yields benefits from the process as well as the product. By stimulating new partnerships and relationships, trail development results in a stronger and more dynamic community. Trail development is a human-scale project which requires close experience with the environment. Trails create pride in their builders in a way that more expensive projects can not. This will, in turn, bring a sense of empowerment to the person and the community.

We must not forget that Alberta was built by settlers who arrived, in many cases, on trails. Now, trails provide a suitable place to commemorate our pioneers and celebrate their contributions. In fact, trails can maintain the traditions of horse travel. The traditional activity of driving horse-drawn wagons is experiencing a revival.

In today's context of concern for the environment, the trail network can provide a medium for individuals and groups to channel their energies into a "green" project by learning to work together to improve their community.

Alberta TrailNet and Alberta Community Development recognize the social benefit of many people joining together to achieve a common goal. We know that the finished trails already encourage group outings which provide a positive aspect of community involvement for many trail users.

Community benefits

Participation in a trail project provides an opportunity for greater ties and involvement, whether it is between neighbours or neighbouring municipalities. Through cooperation in a worthwhile project, a sense of community will be generated by the increased communication. Already some towns have been drawn together by a joint trail. Black Diamond

and Turner Valley, Elk Point and Heinsburg, and the towns within the Crowsnest Pass provide three excellent examples. Further opportunities abound for towns to be connected by these increasingly popular activities.

The development process stimulates leadership opportunities which build strong communities. Each trail facility contains elements of local character and regional influence, and reflects the hard work, enthusiasm, and commitment of individuals, organizations, elected officials, and agencies. All are able to take pride in having worked together to successfully complete the project.

Health benefits

Pay now or pay more later! Investment in outdoor recreation as a preventive health service makes dollars and sense. The Alberta Active Living Task Force has documented a financial return of 50:1 on money spent to increase physical activity. Trails provide this important public service to our citizens by encouraging wellness through various recreation activities. For this reason, recreation trails form an important means of implementing the government's Active Living mandate.

Trail activities are especially valuable as aerobic exercise. According to recreation and health professionals, people who are physically active enjoy life more fully, are less prone to injury, and are more productive at work and in the community. In fact, Americans who exercise regularly have 14% fewer claims against their health insurance and spend 30% fewer days in the hospital. Trails provide each person an opportunity to exercise at their own level.

Active living:

- helps prevent stroke, colon cancer, and psychological problems
- manages heart disease, stroke, diabetes, osteoporosis, and other health problems
- helps reduce the stress of everyday life
- helps maintain functional independence in later years of life
- helps release the build-up of negative tension, anger, and adrenaline
- helps individuals build confidence, self-esteem, and feelings of success

School children have been identified as particularly at risk due to a sedentary lifestyle. Increased obesity among young people indicates an increased chance of heart disease and other serious health problems. **Go For Green** has embarked on a national program called ***Active and Safe Routes to School*** which encourages children to walk or ride bicycles to school. Obviously, trails can play an important part in this program. Various materials can be ordered through their web site at: **www.goforgreen.ca**

Ecological benefits

Greenways are linear corridors of vegetation which connect natural areas. These often make use of land which has been considered unsuitable for development or intensive agriculture. By connecting larger parcels of habitat, the greenways enable larger and more diverse wildlife populations to flourish. At the same time, greenways can often accommodate unobtrusive human use such as trails.

A trail generally occupies only a small portion of the right-of-way, leaving the remainder for green space. This becomes valuable habitat for plants and small animals. Larger animals will use the same route for transportation, moving from one "island" of habitat to another along the connecting natural corridor. The narrow strip of natural ecosystem is valuable far beyond what its small area would suggest.

In come cases, this human use of a sensitive area gives sufficient rationale for its protection. The preservation of trail corridors for recreation provides a lower impact on ecosystems than most other uses. Without a trail, the land could be perceived to have little value, and might be subject to development. Areas subject to flooding, slumping, or similar hazards often can be protected in this way. The creation of local trails is a concrete action that average people can take, which will benefit both the natural environment and other people.

Climate change has become a global problem. To reverse this, our governments have pledged to make substantial reductions in the amount of carbon dioxide and other greenhouse gases which we produce. With passenger transportation consuming 16% of Canada's total energy budget, alternate modes of travel can make important contributions to this goal. Calgary's Bow River Pathway shows that significant numbers of Albertans do commute by bicycle if trails are safe, attractive, and available. The recent start of commercial trading in carbon credits may offer a means of financing new trails while helping with a serious global problem.

Other environmental benefits can include: serving as a buffer around watersheds and wetlands, providing benign access to rivers and lakes, protecting ecosystems, and providing green spaces for the enjoyment of current and future generations.

Educational benefits

The diverse natural and cultural features of the province provide an excellent setting for educational activities by bringing students closer to Alberta's environment. Many subjects can be taught best in an outdoor setting because this is the real world in which all students will live. Nature is stimulating, nature is exciting, and all students can relate to nature at their own level. Trails enable students to access

these resources. As our educational system moves towards an emphasis on informal learning, interpretive centres, museums, and similar institutions will use trails as important local learning resources.

In addition, trails themselves are an important educational resource. Historic trails define the settlement and trading patterns connecting many historic sites. Our modern trails will, in many cases, re-create these routes as the users re-enact the travels of early Albertans.

Benefits for existing facilities

Trails will tie together a wide range of existing tourism facilities and attractions, making them accessible for a whole new clientele. Alberta's trail network will provide improved access to many existing trails, and heightened awareness of their existence. The widespread availability of trails across Alberta will increase the overall demand for them, as people come to expect to find them everywhere.

Other facilities not specifically associated with trails will receive increased use. These include bed and breakfasts (B&Bs), and rural museums and recreation sites. The general atmosphere will encourage visits by people who have come to expect trails as a pleasurable way to travel. In particular, Germans are used to an extremely well-developed trail network, and will feel more at home spending their holidays on trails.

The winter use of trails, particularly for snowmobiling, can extend the tourist season. In Ontario, lodges and restaurants in popular areas now stay open all winter. Facilities may even find this to be their busy season, as there is reduced competition from campgrounds.

Notes:

103 Economic benefits of trail development

The economic benefits of trails are quite substantial and well-documented. The advantages of a provincial trail system are widespread, with trails often acting as major drawing points for an entire area. Spending by local residents and visitors can help support recreation-oriented businesses and employment.

Increased tourism

Tourism has become Alberta's second largest industry, but the benefits have been focused in the mountain parks, Calgary, and Edmonton due to a lack of facilities in other parts of the province. A provincial trail system will attract a small but significant number of visitors to Alberta's smaller communities. Our parkland and grassland scenery has great potential which has not been explored yet.

New businesses such as bicycle shops and snack bars often appear in response to the needs of trail users. Other economic spinoffs from trail use occur in businesses such as lodging and food establishments, shops, and other services (National Park Service, 1990). A dramatic example of this is the town of Dunedin, Florida. The downtown area suffered from a 35% storefront vacancy rate until the Pinellas Trail came into town. Now, storefront occupancy is 100% and business is booming!

Furthermore, trails help improve the overall appeal of a community to visitors, and increase tourism. There is no better way to hold a tourist in town for one more meal than to send them out on a trail!

But tourism is not limited to towns. Modern tourists are interested in learning about their surroundings, including our farms. Urban people are eager to learn more about the "country," and they have little opportunity while speeding down highways. In meeting this need, agri-tourism has become one of Alberta's fastest-growing businesses. Rural trails can showcase modern agriculture while generating some welcome income. The small scale of these enterprises enables them to supplement the traditional farm income. Landowners can start up relatively easily, with little capital outlay. The steady traffic along the more popular trails can bring visitors to the farm gate!

Alberta TrailNet and Alberta Community Development recognize that not all people want their community to become a tourist destination. There can be positive and negative impacts as a result of tourism development and this must be taken into consideration.

Quality of life

Quality of life is clearly an important factor when businesses are relocating. The presence of trails and other recreation facilities has been credited with attracting many head offices to Alberta.

Economists have measured the amount of money spent by trail users. In the United States, it varies from $3.97 per day for a suburban trail to $25.85 for longer, more distant trails (Moore et al, 1992). Given the large number of users, this adds up to substantial totals. Along the Trans Canada Trail from Cabana, Quebec, to Edmundston, New Brunswick, a noticeable increase in commercial activity occurred, even before the trail was finished.

Snowmobilers generated an economic impact to Alberta of approximately $162.6 million during the 1994/95 season (AB Economic Development & Tourism Economic Analysis & Planning Unit, Sept. 1995). In addition to the $74 million in sales of new machines, this includes the cost of other equipment, clothing, fuel, food, and accommodation. Taxes to all levels of government are significant, with $30.9 million going to the federal government, $9.8 million to the province, and $4 million to local jurisdictions. For example, the Crowsnest Pass hosted a weekend jamboree attended by 700 snowmobilers. A local impact of $300,000 was estimated by the Crowsnest Pass Economic Development Board.

A recent study of the economic impact of the Bruce Trail (Schutt, 1998) showed that this 800 km trail also generates substantial business, both in the immediate vicinity of the trail and in the region. With each hiker spending an average of $20, about 200 jobs were generated within 10 km of the trail. An additional 800 jobs were estimated to be supported in the general region.

At present, significant amounts of money are taken from Alberta by local residents travelling to other provinces or states for recreation. What a waste! Many of these people would spend their money here if comparable facilities existed.

Alberta has spectacular scenery! Lets show it off to best advantage! The provincial trail system will provide abundant opportunities to enjoy this natural beauty! Individuals and companies are investing in leisure industries and recreation-related activities as never before. Trails will complement the more traditional tourist facilities already found here.

Although the direct economic benefit generated by the spending of trail users is the most evident effect, the qualitative and indirect benefits are significant. Trails can affect the health, productivity, and happiness of trail users which will, in turn, lead to the avoidance of health care costs for all Albertans. A fit workforce has been demonstrated to be a productive workforce. Meaningful leisure activity can reduce the high cost of vandalism. Parks and recreation

services often motivate the relocation of businesses to an area, and act as a catalyst for tourism.

Increased tax revenues

Trails also contribute to an improved quality of life in the community. Property values of nearby suburban properties rise due to the creation of a trail. Boulder, Colorado, has documented a 32% increase in land values adjacent to a new greenway. Increased tax revenue from these homes was expected to pay for the development costs within three years. And people were eager to live there!

Finally, municipal, provincial, and federal tax revenues will increase due to the increased economic activity created by the Wild Rose Trail System.

Notes:

104 Approach to trail planning

Image and attitude

Alberta TrailNet and Alberta Community Development aim to project a particular image: professional, positive, and high quality. We encourage all trail developers to also strive for these traits.

"Professional" simply means that the group operates in a systematic and organized manner. All operations are planned to reduce future operational costs while not overbuilding for the present demand. Simple but well maintained facilities and personal service will be appreciated far more than fancy architecture.

The quality of a trail has often been equated with the expense of the contract or the width of the pavement. These are narrow interpretations. Remember that the final judge will be the user. What makes a great visit? The user's experience begins when they first hear of the trail and continues until they leave it. The cheerful greeting at a trailside shop is as important as the trail's hardware. Aim for a total experience by involving all the people along the trail.

Well-designed trails allow smooth transitions between different segments, and always seem to have the support facility right where it is needed. A master trail builder once said that a person should be able to walk a trail blindfolded; it should flow across the topography effortlessly. (Test this with caution in mountainous areas!)

The trail is not the main attraction, but the facility that gives access to the attraction. A good trail is invisible. There should be no sign of the construction, and the facilities should complement the surroundings. Any vegetation cleared during construction should be moved to a site where it can decompose without observation.

This is not to say that trails should be boring. Quality trails have a sparkle that can only be described as "pizzaz" or "joie de vivre." Their combination of style and attitude suits the environment. Make trails flowing, interesting, and dynamic. Excellent trails have a sense of drama with new vistas springing up at every turn. Urban trails should bring a narrow strip of nature to the city, while embracing the lively interplay of the cultural environment. Consider having an artist on the planning team, and let them have a loose rein. For example, many trails through unremarkable urban locations in Britain have been invigorated with sculptures along the route.

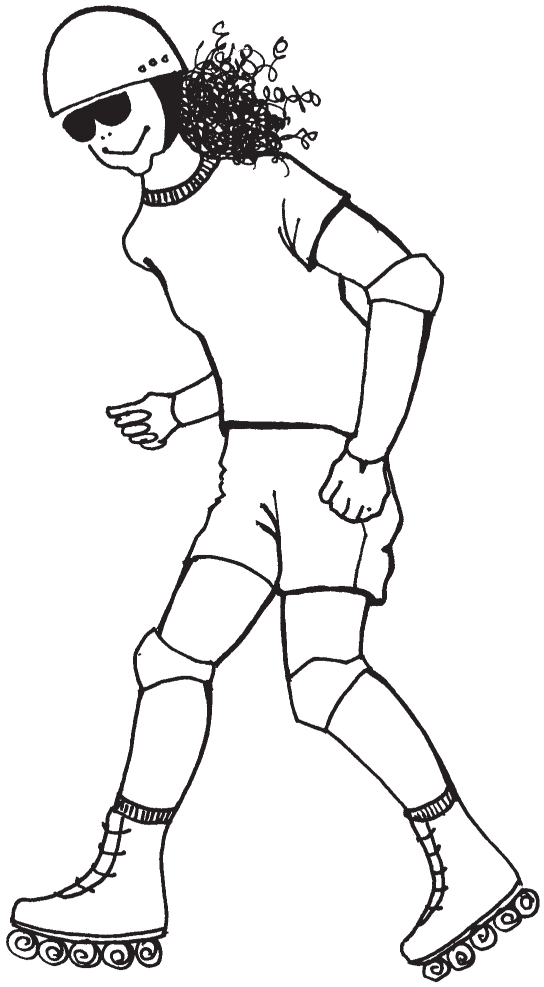
Trail approval process

Every trail requires a sponsor that will plan, construct, and maintain the route. Permission from the landholder or managing agency is also required. Partnerships between the government and not-for-profit sectors are one way of managing projects with limited resources. These arrangements are becoming more common, although they require extensive communication and a clear explanation of the trail group's objectives. Before approaching an agency to suggest this, put yourself in their position - what would you want to know if someone suggested inviting the unsupervised public onto your property? Section 107 indicates the management concerns that your proposal must address.

The draft proposal must be discussed with the owner to receive feedback. When the project is approved in principle, it must be brought to potential funding organizations if the managing agency is not prepared to pay for the trail.

If the proponent hopes the trail will become part of the Trans Canada Trail, please refer to Section 106.

It must be stressed that the TCTF will only provide partial funding, and other sources must be sought. A later section deals with sources of funding for Alberta trails. The entire approval process will take at least two months. Start early, to establish a workable timetable for your project.



Notes:

105 1998 National Survey on Active Transportation

This study was conducted by Environics International on behalf of **Go for Green**. Technical and financial support was provided by Health Canada. The following material has been taken from the 17-page Summary Report. For further information, please contact **Go for Green** at (613) 562-5313, or you may order this publication at their web site: **www.goforgreen.ca**

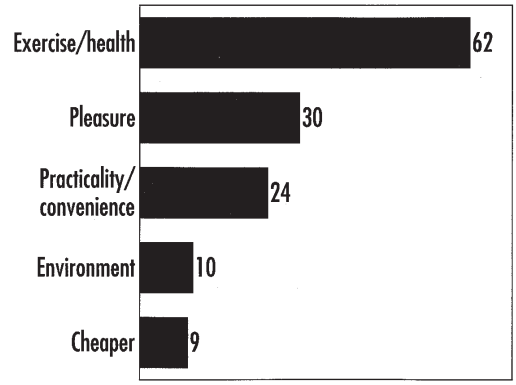
Purpose of Study

The major objective of the 1998 National Survey on Active Transportation is to establish a baseline of participation in active transportation (walking and cycling) among adults and school-aged children.

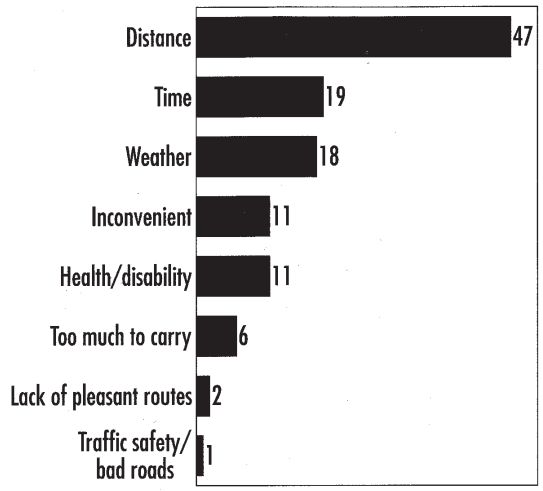
Walking

- 85% Canadians report walking for leisure and recreational reasons.
- Canadians are motivated to walk more as a mode of transportation. 82% agree that they would ideally like to walk more often than they do.

Main Reason for Walking as Mode of Transportation
(TOTAL UNAIDED MENTIONS)



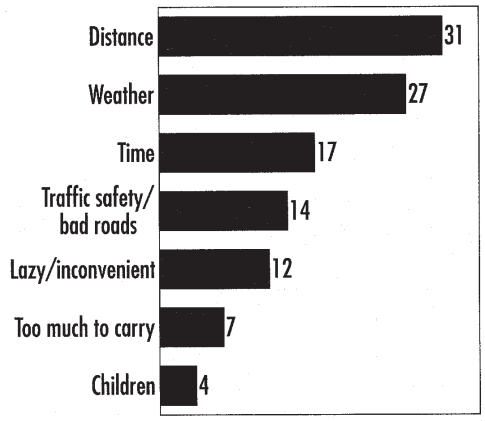
Main Barriers to Walking as a Mode of Transportation
(TOTAL UNAIDED MENTIONS)



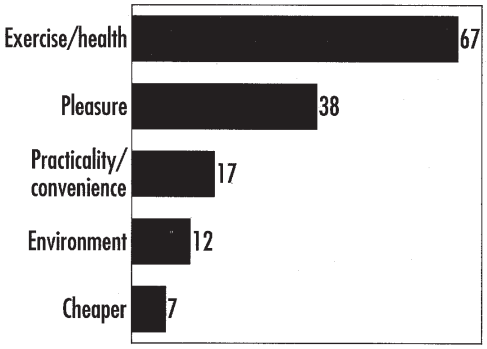
Cycling

- Interestingly, pleasure is a significantly more important reason for cycling to low activity respondents than to high activity respondents. This may suggest that Canadians who engage in a low level of cycling activity are less likely to respond to appeals that suggest cycling is "good for you," and more likely to be receptive to those that reference "pleasure" and "quality of life".

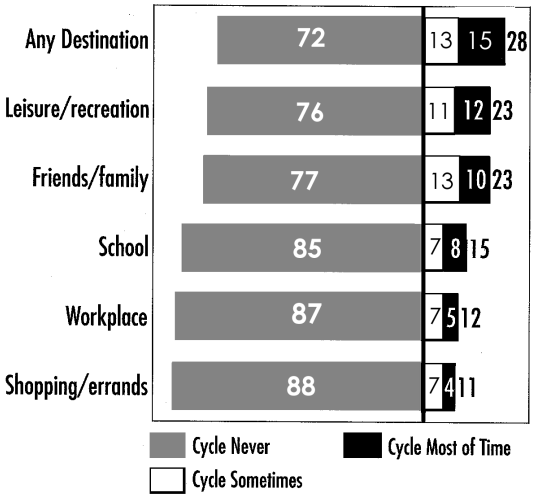
Main Barriers to Cycling as Mode of Transportation
(TOTAL UNAIDED MENTIONS)



Main Reason for Cycling as Mode of Transportation
(TOTAL UNAIDED MENTIONS)



Current Participation in Cycling as Transportation
CANADIANS LIVING WITHIN 8 KM OF DESTINATIONS (BASE=84%)



Source: Go for Green

- As with walking, Canadians do not point to the environment as a main reason for their cycling activity.
- Safety is perceived as a major obstacle to cycling. When asked directly, 45% of Albertans believe that cycling is dangerous because of vehicle traffic.

Active transportation and children

- Just over one in three (36%) Canadian children walks to school most of the time. However, among those living within one kilometre of school, over eight in ten (86%) walk most of the time, and among those living one to three kilometres of school, half (50%) walk most of the time. Only five percent of those living beyond three kilometres walk.
- While nine in ten Canadian children own a bike, only five percent take a bicycle most of the time. While six percent of those living less than one kilometre from school cycle most of the time, a slightly higher proportion (9%) living one to three kilometres from school, cycle.
- For children, distance is the major barrier to walking, mentioned by 53% of parents, followed by weather, mentioned by 11%.

Opportunities

- The survey finding that the vast majority of Canadians not only can, but want to, participate more in active transportation is a very positive sign.
- It is clear, however, the key issues are barriers related to perception of "convenience" and "safety." People already want to participate, but feel they cannot. In this context, it should be noted that "calls to action" without efforts to address barriers may just lead to feelings of guilt and resentment.
- Study results suggest that both walking and cycling may be encouraged by focusing on quality of life and quality of "time" benefits. As many Canadians already cycle for leisure and recreation, it is not a major leap to recognize the added "quality time" benefits of integrating these activities into our lives as active transportation.
- Efforts to increase walking as a mode of transportation would be particularly positively received by people over 55. Similarly, efforts to increase cycling as a mode of transportation should be well received by boomers with families living in major urban centres and medium sized cities.

Key findings	**Alberta %**	**Canada %**
Presently walking:		
▪ As a mode of transportation "at least sometimes"	57	58
▪ Among respondents living within 2.5 km	73	72
Attitudes toward walking:		
▪ Never have time to walk (agree)	32	31
▪ No pleasant places to walk near my home	10	15
Presently cycling:		
▪ As a mode of transportation "at least sometimes"	34	26
▪ Among respondents living within 8 km	36	28
Attitudes towards cycling:		
▪ Support government spending on bike lanes	79	82
▪ Would use bike lane	68	70
▪ "Most Canadians view people who cycle to work as odd" (agree)	33	24
▪ "I think people who cycle to work are odd"	9	7

Source: 1998 National Survey on Active Transportation

106 Application to become part of the Trans Canada Trail

In 1994, Alberta TrailNet was named the provincial trails council that would represent the Trans Canada Trail (TCT) in Alberta. Since that time, TrailNet has encouraged communities to apply to become part of this new national dream. Although TrailNet has identified a preferred route, which it believes to be feasible, TrailNet does not designate where the trail will go. Instead, TrailNet receives proposals and allocates partial funding for construction based mainly on;

- the landholder's approval for the long-term designation of the route for recreation, and
- connection with existing segments of TCT, or proximity to the "preferred corridor".

Individuals, organizations, or communities interested in hosting part of the TCT are encouraged to contact Alberta TrailNet as early as possible. Much of the route is now confirmed, and the rest will be determined soon. The map (on page 161) indicates the corridor that TrailNet believes offers the greatest probability of being completed by 2000. Other communities not close to this route may be connected by joining the Wild Rose Trail System (see Section 203).

Potential trail operators are invited to submit an application for admission. This should include a letter of permission from the landowner(s), if different from the operator, and a map indicating the trail's proposed route. An explanation of how it will connect with existing TCT segments should be included if the route is not close to the preferred corridor. Alberta TrailNet's Trail Development Committee will consider this proposal and advise its Board of Directors.

If the proposal is approved in principle, the route will be registered as part of the TCT, and the operator will be asked for a more detailed development plan, including a budget and provisions to accommodate the five core activities (hiking, cycling, equestrian, nordic skiing, and snowmobiling, where locally desired and practical). The outline of a project proposal, found in Section 107, will guide the operator in providing a complete proposal.

The TCTF only provides partial funding for these trails. The amount received can be used to lever more funds through matching grants or supporting employment programs. The exact size of the grant will depend on the level of donations, the cost of previous projects, and the difficulty of the construction (see chart below).

TrailNet's Board of Directors will recommend the amount of TCT funding for ratification by the TCTF's Builders Committee. The funding will be paid in installments as the project progresses. A final report documenting the costs of the project, as well as the end results, will be required.

The TCT is very much a grassroots program depending on local groups to take the initiative. However, Alberta TrailNet will make every effort to support the operators.

Responsibilities of a Trail Operator

A trail operator is the group or organization which formally sponsors a segment of the Trans Canada Trail. The responsibilities of the operator can be summarized as:

- contact all adjacent landowners, resource industries, and other local stakeholders to explain the concept and seek their support
- request and receive permission from the landowner/manager to use the right-of-way for a trail
- plan the trail so as to accommodate two core recreation uses in each season
- request partial funding from the TCTF through Alberta TrailNet, and secure all required additional funding
- manage the construction of the trail

Level of difficulty (AS OF JANUARY 2000)	Amount of support/km
Registration of existing trails: little or no construction needed	$ 150
Easy: existing service roads, railway right-of-way (r-o-w) with bridges	$ 400
Medium: some structures, or new r-o-w through easy terrain	$ 975
Hard: new r-o-w through challenging terrain; some structures	$ 1,800

Source: Alberta TraiNet

- promote and maintain the trail to ensure safe public access for the indefinite future
- maintain liability insurance coverage of at least $5 million to protect the trail operator, Alberta TrailNet, and the TCTF from lawsuits

At first, this list may appear a little overwhelming. Not to worry! Taken one step at a time, the trail-building process will move ahead smoothly. The rest of this manual explains how this can be done. The trail operator will generally be a government agency or a registered not-for-profit society. Any organization seeking funding must be a member of Alberta TrailNet.

Responsibilities of Alberta TrailNet

Alberta TrailNet has taken on a variety of tasks which can be grouped into two main roles:

1 removing barriers to trail construction and use in Alberta by:

- ensuring that the many benefits of trail use are widely known
- providing technical assistance and advice to local trail committees
- gathering and distributing information relevant to trail planning and construction
- working to change the *Occupiers Liability Act*
- presenting workshops and other educational events for trail managers

2 representing the Trans Canada Trail Foundation in Alberta by:

- consulting with local groups to determine the best route for the TCT
- advising the TCTF of what policies would best promote the TCT in Alberta
- assisting local groups in planning sections of the TCT
- soliciting donations from companies with local or provincial profile
- recommending the allocation of donated money to specific trail projects

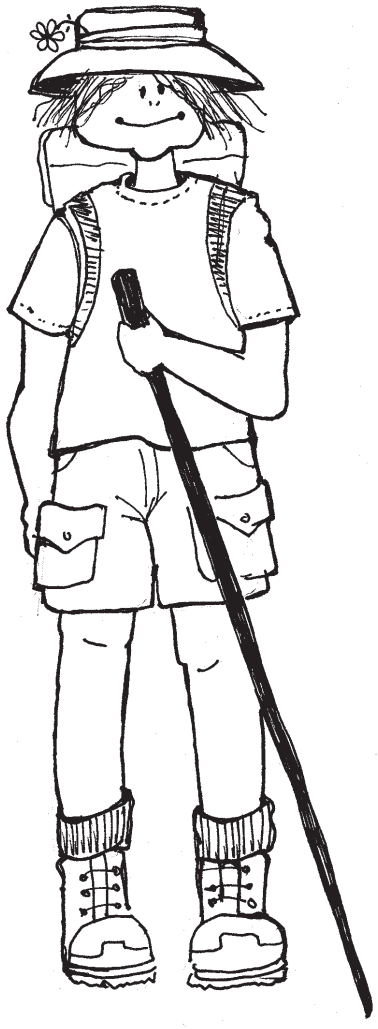
Responsibilities of the Trans Canada Trail Foundation

At this time, the TCTF has focused its efforts entirely on encouraging the development of the TCT. This single route is the basis of a rapidly-growing national trail network, that may lead to an expanded role for the TCTF. At this time, however, the tasks of the Foundation are:

- promoting the TCT nationally
- soliciting donations from individuals across the country, and from national corporations
- ensuring provincial trail councils are in place to represent the TCTF in each province
- setting such national standards and guidelines as may be considered necessary

Responsibilities of Alberta Community Development

- facilitate the development of the provincial trail network
- provide one-time funding in the amount of $1.1 million towards the design, implementation and construction of trails in Alberta.
- Examine and modify existing legislation or propose new legislation to enable orderly and comprehensive development of the TCT.



107 Preparing the project proposal

Every trail becomes a long-term community resource. As such, it must be well-designed, planned, and constructed to best serve the public, while still meeting the goals of the Wild Rose Trail System. Each trail should be unique and well-fitted to its site and users. Following is an outline for a trail development proposal to help you through this task.

This process works with you. It walks you through the design of your trail, mentions things you didn't think of, and actually helps you to design a good trail. Taking into account the site, users, purpose of the trail, and your goals, the process helps you develop a unique trail. The process improves the quality of trails while they are still in the conceptual stage. The rewards are excellent community trails that will be used and enjoyed for decades.

If you are proposing a trail project, you need to address all the issues in this section. By the time you complete the outline, you will know a great deal about how to create a good trail. Every proposed trail will likely have less than optimal factors, and the presence of these will not necessarily affect the approval of your trail. Keep in mind that all of these issues have to be considered at some stage in the birth and life of a trail. Completing the outline now helps you to think in advance of what you have to address.

When applying for TCT funding, **the items printed in bold type are essential and will be scrutinized by TrailNet's Board.** The Board may also use this outline when it periodically reviews the management of existing trails. In your written proposal, you may use any format you choose as long as you address all the issues in this outline.

A clear and simple project proposal will ensure that all involved parties know exactly what is being suggested, and who will be doing which task. This is not an attempt to bring in unnecessary bureaucracy. Trails are not difficult to build, but they are quite complex to plan. The process must be clear and consistent to be successful.

A. General Information

1 **Include information about the proponent: contact names, address, phone and fax numbers.** A brief history of the group, or a review of the general situation with regard to trails in the area, might help the Board appreciate the regional setting.

2 Briefly describe the location of the trail and why a trail is desirable here. Include the purpose of the trail (destination, recreational, connector). **Explain how the trail connects with existing TCT or potential TCT corridors.**

3 Who are the expected users? In broad terms, how many of each user type can be expected now and in the future? When will the operating season begin and end for each user type?

4 Is the trail clearly suited for some users more than others? **Which of the core TCT user groups will be accommodated? Bicycle, snowmobile, horse, nordic ski, pedestrian?** Can this trail be used by physically challenged recreationists?

5 What user conflicts can be expected and how do the trail design and operation mitigate or avoid them? What trail user groups are interested in this trail?

6 **Which surface should this trail have: asphalt, gravel, shale, natural, other? Why is this the best choice?**

B. Mapping

1 **Prepare a site map**, using a 1:50,000 scale topographic map as a base. (Expand to a larger scale if necessary to show the details.) Indicate all properties that the trail crosses, as well as the adjacent properties. Show the owners' names.

2 Transcribe to the site map all environmentally sensitive areas, including:

- geological hazards: unstable soil, avalanche hazard, rockfall, steep slopes
- wildfire hazard
- wildlife habitat: rare or sensitive species, fragile habitats
- floodplain
- scenic overlay: viewpoints and vistas
- historic and archaeological sites

3 On the mapped trail alignment, note the locations of existing structures or facilities, and where new facilities will be added, i.e., campsites, water source, trailheads, bridges, underpasses, large cuts or fills, large retaining walls, etc.

4 Indicate all intersections with roads and railroads.

C. Trail Corridor Guidelines

1 Briefly describe the desirable and undesirable features of the proposed trail corridor. Explain what can be done to mitigate any undesirable features.

2 Does the proposed route preserve, enhance, or create a corridor with many desirable open space values?

3 What present or future linkages or access would this trail create or preserve? Will it contribute to alternate urban transportation?

4 Are any branch trails proposed that would increase access, and if so, where?

5 **What are the potential impacts of the projected levels of trail use (both now and in the future) on adjoining private property owners, agricultural operations, public lands, and communities?**

6 If the proposed alignment follows property lines, highway rights-of-way, utility corridors, or other man-made corridors, what are the positive and negative features of this alignment? How does this proposal improve the users' experience if the alignment is less than ideal?

7 **Has permission been received to use all parcels of land? If not, what process will be followed to achieve this?**

D. Positive Users' Experience

1 What design features are planned that will help the trail achieve respect and appreciation of the land, a sense of belonging on its site, and a fresh user experience each time?

2 Briefly describe some of the ways in which a "limited unpredictability" will be built into the trail. How will the experience change from one visit to the next?

3 What aspects of the trail will make it enjoyable and fun to use?

4 Describe the sequence of ecosystems and environments the trail will pass through and how this will create an interesting experience for the user.

E. Relationship Between Trail and Site

1 Will the trail follow landforms and cross slopes in such a way that the trail seems to belong there? If not, why? How will the trail be designed and constructed in an unobtrusive way such that the trail seems like it has always been there?

2 How will trail structures blend with or enhance the landscape?

3 **Describe the site preservation and revegetation techniques that will be used to protect trailside vegetation.**

4 What site features will be highlighted and how will this be done?

5 How will the environmentally-sensitive areas be handled?

6 What are the possible impacts of adjacent landowners and agricultural operations on trail users?

7 Is the trail subject to flooding? What is the estimated frequency? What can be done about it?

8 Are there alternate alignments that could eliminate or mitigate any problems revealed elsewhere in the proposal? If so, why weren't these proposed?

F. Safety and Human Aspects

1 **In what ways will safety be designed into the trail?**

2 How will the width(s) of the trail and other design features accommodate the expected number and type of users?

3 If the trail crosses any driveways, roads, or railways, how will these intersections be handled?

4 How will the privacy of neighbours along the trail corridor be preserved?

5 If this trail is to be used in the winter, what features will be incorporated for winter use?

G. Construction

1 Who will build the trail (contractor, volunteers, agency staff)? Who will coordinate this project?

2 List all construction features and indicate the standard to be used, as well as the unit cost of each feature. Include each special feature, such as bridge, retaining wall, boardwalk, and trailhead.

3 **Summarize the total costs and revenues in a budget. Indicate what amount each partner will contribute. How much is being requested from the TCTF?**

4 In what season will the trail be built? What role will weather play in the scheduling?

5 Are parts of the trail difficult or unusual to build? What special precautions have been taken to prevent problems?

6 Will construction require a special short-term construction easement for access, or other special considerations?

H. Maintenance

1 **Who will have maintenance responsibility for this project? Has this organization agreed? Is the group a member of Alberta TrailNet, and does it have at least $5 million in liability insurance for both itself and adjacent owners?**

2 What aspects of the design give the trail the minimum maintenance requirements?

3 Estimate the expected maintenance requirements for the trail at four months, one year, five years, and 20 years.

4 Have arrangements been made with the trail contractors, trail operator, landowners, and other stakeholders for formal design and maintenance review at four to six months and one year after completion?

5 **What is the proposed maintenance schedule?**

I. Stewardship

1 What group will have jurisdiction over this trail for the enforcement of regulations?

2 **Describe the proposed management plan. Include the rules to be applied to trail users. If there are any difficult management issues, how might the issues be addressed?**

3 Have all level emergency services been involved in developing the management plan: police service, fire department, ambulance, rural crime watch, search and rescue?

4 How will wildfire be prevented and controlled if it occurs?

5 Who will be accountable for implementation of the management plan? Are there partners who can assist in the management of this trail, and if so, in what ways?

6 Will seasonal trail closures be needed due to sensitive wildlife, fire hazard, or other reasons? How will these be handled?

7 How will this trail be promoted, and by whom?

Notes:

Section 200

Planning Your Trail

201 Who will use the trail and why?

You already have answers to these questions, or else you would not be considering building a trail. Write them down. Talk to some of your friends. Do they agree with you? If you are finding general support for your ideas, you must be on to something!

Remember that good ideas are easy to produce, but getting action takes a lot of hard work. This means research, documentation, study, writing, and public speaking. Be ready for the long haul. But the rewards are worth the effort. You will not find a more fulfilling task, and the work invested by the entire group will build a stronger community as well as a valuable recreation facility.

If you have a particular route or destination in mind, you may be able to skip this step. If you simply want trails to enjoy, take a look at your district through new eyes. As a child, look at the access from residential areas to schools and corner stores. As a cyclist, how safe is it to ride on the streets? Can visitors find the trails? Do the trails lead to interesting places, as well as the hotels and restaurants? Your idea of interesting may not be typical: factories are interesting to workers; shopping centres are very interesting to many people in the area.

Through this simple exercise, you have gone a long way to defining your target audience. Each of these will have a preferred type of trail. Just as roads vary from winding neighbourhood streets to divided highways, trails also vary in their design. At the same time, all trails will ideally connect into a network, just as all roads do. And all trail users will behave in a manner that allows all types of users to enjoy all parts of the network. Listed below are a few examples of different styles of trail.

Amount of use

The number of people who will use a proposed trail is very difficult to estimate. In most cases, a year or two will be needed for the trail to achieve most of its potential. It is safe to say that trails are very popular, and that all organizations developing them have felt that the effort was easily justified by the level of use. A few trends are evident that will help justify developing certain types of trails, or managing the trail in particular ways.

- With the general aging of our population, less strenuous recreational activities are gaining popularity, especially walking and the related observation of nature, and casual cycling.
- Overall, participation in physical activities has been increasing at the rate of 1% per year. This may seem small, but adds up to a substantial 25% over the period of the surveys.
- Urban trails were once feared as a source of criminal behaviour. Now, they are recognized as positive community facilities, and houses adjacent to trails receive a substantial (up to 15%) premium when being sold.
- Some trails in Alberta's recreation and wilderness areas are used less due to a decrease in the popularity of hunting, and a lack of maintenance. At the same time, similar trails in the national parks are used more as a result of broad media coverage.
- Nearly all Alberta towns and cities have urban trail systems. People now actively participate in outdoor recreation, but are looking for a somewhat wilder experience.
- Off-road cycling is rapidly gaining in popularity. The demographic structure of our population suggests that the more sedate double-track riding will grow even faster than the single-track style. (Can you believe that the first commercial mountain bike was sold as recently as 1981?)

Trail Characteristics

Style	Typical user	Construction
Residential	Family, children	Winding, granular surface, through parks and greenspace
Commuter	Adults	Straight, asphalt surface, often along or even on arterial roads
Interpretive	Vacationers	Short (1-2 km), wide but winding, almost always a loop
Rural	Adults	Long (> 10 km), straight, granular or natural surface, few services

Source: Alberta TrailNet

- Snowmobiles have become very reliable, allowing multi-day trips of several hundred kilometres to become popular, wherever support facilities allow.
- The improved organization of provincial recreation associations has led to better cooperation between user groups, and greater tolerance of shared-use trails. Members of recreation groups behave better than non-members, because they have received some instruction and are subject to positive peer influence.
- The "parcours" or exercise track, with equipment spaced along a formal trail, has been very poorly received, although it seems like a good idea to recreation professionals.
- Two of the most common reasons for not participating in physical activity are the cost of equipment (21%) and the cost of admission (17%). Trails avoid both of these problems.
- Trails are used less by the very poorest of our population. The cost of a bicycle can be a significant barrier, and these people often do not have the time, energy, or motivation to use trails.

Source: *Alberta Recreation Survey, 1996*

Notes:

202 Organizing your information

The strip map

Trail development means a change in the existing land-use of a particular area. You want to become the manager of this land. Like other land managers, you will find maps are an essential part of your project. Maps organize and summarize information related to land. You will need many different types before you are finished: vegetation, land ownership, topographic, political, roads, and others. Air photos can be thought of as a special type of map.

As the project proceeds, you will gradually determine the important data which you will need to summarize this. Pipeline engineers, professionals in the linear development business, use a special technique called a strip map. Because the pipelines (and trails) are narrow corridors, the map also can be quite narrow.

Ideally, the strip map is a photocopy of a topographic map, 1:50,000 or more detailed. It will have a blank band along the top where resource information can be summarized. This includes landowners' names and telephone numbers, vegetation types, sensitive habitats, historic information, locations of reference photographs, and any significant existing development. Especially good views can be indicated with large arrows showing the direction. Identify human developments such as residences, abandoned buildings, and utility lines of all kinds. Access points and proposed developments should be highlighted. Along the bottom of each page is another band where construction notes can be placed at the appropriate points. This becomes the Trail Log as all the developments are recorded. (See Development Plan, Section 423.)

During the exploratory stage, the map may be up to 10 km wide. As the corridor becomes more definite, the map can focus on a narrower strip. Remember that this is a working document, so mark it up! Transfer the data to a master copy, and take out a copy of the most recent version on the next trip. This is a remarkable way of organizing a vast range of data.

The strip map's use will not stop with the trail opening, though. The points of interest and other resource details shown on it will be a basic source of details for people writing interpretive brochures or leading guided walks. If kept up-to-date, it will become a priceless aid in maintaining the trail.

Those with access to computer-assisted drafting can scan the map or air photo, and then superimpose various types of data in different colours. Beyond the efficiency of not having handwritten comments, this gives the project an organized and professional image. Often, high school or college drafting classes are looking for projects. Many municipalities will already have much of this data entered in a computerized Geographic Information System (GIS), and can make it available to the trail group at little cost. (See Section 508.)

Topographic maps can be obtained from stores that specialize in maps in both Calgary and Edmonton.

Air photographs provide an excellent map of vegetation, and they are generally more current than maps. A sheet of plastic or tracing paper will allow you to make notes without wrecking the photo. These photos can give a stereo image if you buy them in pairs; just specify this when you order them. It is not much more expensive if you have a larger area to cover, since you will need many of these anyway. To order, call the Alberta Government at 310-0000, and ask for the Air Photo Library. You will need to provide the legal description of the land and a credit card number for purchasing photos.

The resource book

Much of the information that you acquire will not be site specific, but will still relate to the project. This could include summaries of regional history, natural history, or other resources. Photos taken on exploratory trips or initial construction bees should be reproduced and labelled. Collect all press clippings related to your project. A copy of your most recent proposal will be useful. (Leave out the cost figures. These should not be released until they are finalized, and then only in the context of exactly what is being built.)

Gather all these materials together into a three-ring binder. Separating the topics with dividers will help find the needed information. This book makes an excellent resource book and can be easily taken to public meetings, or private discussions with landowners, potential funders, and decision-makers.

Notes:

203 Investigate the big picture

Before plunging into the details of the planning process, we must remember that trails support several types of transportation. By definition, transportation means moving from one place to another. This requires that the local trail fit into a larger framework, and that the trail be constructed and operated in a manner compatible with the adjacent portions of the network. Let's look at the larger picture to set the stage.

Trans Canada Trail

Canadians have always been a nation of trail builders. Now this great tradition continues in the form of the Trans Canada Trail (TCT). This national endeavor is managed by the Trans Canada Trail Foundation (TCTF), a registered charitable organization solely dedicated to making this trail a reality.

The TCT will wind its way through every province and territory, linking thousands of communities along its route. It will be a shared-use trail, accommodating walking, cycling, horseback riding, cross-country skiing, and snowmobiling (where possible/desired).

Planning Process

Planning is simply a process of identifying your objective, then determining the best way of reaching it. This process involves many smaller steps. At some point, however, the vibram hits the trail, and the managing organization is asked for approval. The document reviewed by this group is often referred to as "The Plan," although it will be revised and changed many times before the project is completed.

Developing a plan can be thought of as a spiral path gradually approaching the ideal product. The attached workbook will help you get started in this process. First, the target must be defined. Out of necessity, this plan will be general, because you will not have much information to base it on. But the goal will get you started in the right direction. As more details are gathered, the project will become more definite. Each step will point to more information that is needed. As an example, consider the following hypothetical project. Notice how the goals become more specific as the project proceeds. Also notice that at every stage of the planning process, some type of decision must be made before the project proceeds to the next phase.

	Example Goal	Information needed
1.	Trail from A to B	Existing trails in area Type and amount of use they receive What type of trail (if any) is needed here?
2.	Bicycle & pedestrian trail from A to B	General support in community Possible corridors or other locations Where should it be located?
3.	Shared-use trail through enviromental reserve, >2 m wide, suitable for commuting	Estimated cost of trail, including amenities Draft managing agreement Formal feedback from public Formal approval from managing authority.
4.	Asphalt path, 2.4 m wide x 5.7 km long x 10 cm thick, with 15 cm of gravel subgrade	Which contractor will produce the best possible product within the budget and time available?

The planner, whether a professional or an interested volunteer, must ensure that all the options are considered, and that all the relevant people are fully involved. Documenting the process is just as important as the actual planning. This can be as simple as keeping a file of your correspondence, as well as any advertisements or press clippings. Important or potentially controversial telephone calls can be summarized with a memo to file, and a copy to the other party.

Source: Alberta TrailNet

To ensure the trail is being planned and built according to local needs, a Trails Council has been established in each province or territory. These councils work with local trail and community groups to coordinate the planning, construction, and maintenance of the trail. In this province, Alberta TrailNet represents the Trans Canada Trail Foundation.

We must admit that trails are not just a Canadian phenomenon. At several places, the TCT will connect with the growing system of historic and recreational trails in the United States. A continental system is on its way! In Europe, a multi-national trail system is one of the less-known innovations brought about by unification of the European Economic Community.

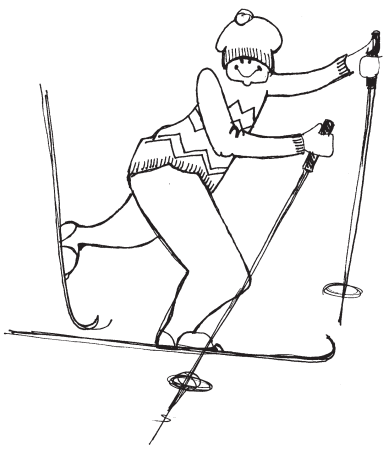
At the same time, it must be observed that shared bike and pedestrian pathways are largely North American. In much of Europe, the rural roads are very narrow, with slow moving vehicle traffic. Bicycles fit in well with these roads, leaving the pedestrians to use the numerous natural surface pathways. Trail developers should remember this option of sharing the roads. This can be accomplished either by reducing the vehicle speed through traffic-calming methods, or by choosing existing little-used roads.

Wild Rose Trail System

The Wild Rose Trail System aims to connect most towns and cities in Alberta with major recreation areas and parks. The Trans Canada Trail provides the trunk for this network, with many branches leading from it. When complete, the trail system will give immediate trail access to the large majority of trail users. The proposed routes are largely based on existing rights-of-way, which could also be used for recreation.

Trail proponents can refer to this document to find out what opportunities have been identified in their area. You are encouraged to expand on this report, providing more detail for your area. The maps are available in digital format from Alberta TrailNet, so you can add your own information. Please send updated versions back to Alberta TrailNet, to improve their database.

Notes:



204 Start the plan

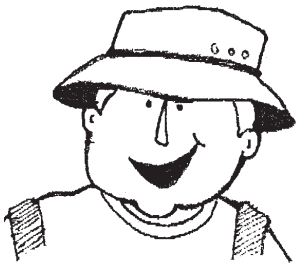
Having reviewed the regional picture, it is now important to focus on your particular community. What do you and your neighbours want and need? Is there a possible place for the trail? **Define your first objective** in terms of what problems this trail will overcome or solve. (For example: We need to give children a safer way to get to school.)

Write down this information in the workbook or on a computer, if you haven't already started. Your ideas are too important to forget!

Most groups have a fairly general objective, such as "Provide a place for recreational biking in the Town of Fairfield." If this is the case, begin identifying opportunities and constraints on the map. Show tourist attractions, malls, schools, all parks and recreation sites, as well as environmental reserves, with a bold pen. Include the full extent of all the sites; even if they are of secondary interest, they may well provide a connection to other sites. On the other hand, you will have some sites or areas that are not practical or even possible to cross with a trail. These constraints include major highways, rivers, high speed railways, and heavy industrial areas; show them with a contrasting colour.

Bridges are critical transition points. Highway bridges often make provision for pedestrians, and so become a link in the trail. Railway bridges can provide a grade separation from pedestrians and bicycles, enabling them to cross the railway safely. If bridges need to be built or if existing bridges require major renovations, the expense can be enormous. Try to have these changes included in the regular maintenance program, even if it means waiting a few years.

Now, how many linear features already exist in your area of interest? Start a list, then put them on your map. Other groups have made use of the following linear features:



Word of the day

Grade Separation:

When two modes of transportation are kept apart by a difference in elevation. Overpasses are an excellent example of this, but berms and ditches also achieve the same purpose. Railway level crossings show how dangerous the lack of a grade separation can be.

- river banks
- abandoned or little-used rail lines
- dikes along rivers
- berms along primary highways
- environmental reserves
- highway rights-of-way
- irrigation canal service roads
- power line or pipeline corridors
- abandoned, seasonal, or little used roads
- unused road allowances

Urban areas have some under-used features with excellent potential. First, watch for large parking lots. These seas of asphalt are rarely, if ever, full of cars. The pavement has been installed in an effort to reduce or simplify maintenance. A right-of-way can be created by planting a narrow greenstrip, giving both pedestrian and bicycle access to the mall or office building. Even a row of parking wheel stops will give some protection. School yards, while they are already green, are rarely used after school hours. Making this space part of a local trail system will give safe access to the school for the children, while linking the school to the rest of the community.

Long-distance trails will have places where a trail does not make sense. Minor roads can be considered for use as connectors in these cases. Paved highways should have a shoulder at least one metre wide before they are promoted for cycling. Gravel roads should not have regular industrial traffic (logging, mining, oil field service).

By this point, you will find that some of the points of interest can be connected with the existing linear features. Look carefully at the remaining objectives. Would a minor purchase of land make a significant difference? Could new developments be adapted to include trails? And finally, is the potentially available route worth the effort? In some cases, you will have to prioritize the routes to keep the project manageable.

Land-use planning

Recreational trails use part of our land base. In this respect, they compete with many other land uses. In all of Canada, every square metre of land is already allocated for some purpose, and administered by some agency. Your committee must demonstrate that recreational trails are either compatible with the existing use, or more valuable to the owner than the existing use. The first alternative may meet with less resistance than the second.

First, find out who owns or manages the land now. A legal secretary or real estate agent can get you started. A title search might bring interesting results, since fences do not always show the property lines. Watch for bends or jogs in fences where the legal plan shows only a straight line.

Environmental reserve

Urban municipalities have a category of land known as "environmental reserve." No, this is not a progressive approach to habitat preservation. Instead, the term means that the land is too steep, wet, soft, or prone to floods to be built upon. It has become "park" land by default, but this doesn't prevent you from building a trail across it. In fact, a trail will become a "use" that will occupy the land, and help prevent more intensive uses from being suggested. The municipality owns the land, and you must go through these channels to gain formal access to it. Most parks and recreation departments will be supportive and will help you get permission.

Project statement

Are these opportunities starting to come together? A trail planning workshop (Section 301) can help the community determine the best plans. This will become the Project Statement, sometimes called the Terms of Reference, which summarizes the project in a page or less. The result should include: interim project name, who will be served, who is on the committee, the type of users to be handled, where (approximately) the trail will go, and how the project will proceed. This will guide the project, and may be used to pull the participants back on course if they become distracted.

Notes:

205 Environmental considerations

Damage to landscape/wildlife

Since the earliest days of Banff National Park, trail development and environmental protection have proceeded together. An initial desire to access the scenic and wildlife attractions has led to a need to protect these for future generations. More recently, the Western Canada Wilderness Society has used "witness trails" to bring the beauty of endangered landscapes to the attention of the broader public.

Trails can focus existing use in a narrow corridor. One Wisconsin trail accommodates over 50,000 users, mainly mountain bikers, each season. The reported environmental degradation is not significantly different than when "only" a couple of thousand people used these same trails. Without a designated trail, these people would impact a far greater area with random riding.

At the same time, increased access may cause increased pressure on the natural environment. The types of impact vary widely, from the pounding of alpine meadows, to the changing of grizzly bear behaviour. New impacts are still being identified as we gain a better understanding of how our ecosystem operates. For example, the balance between caribou and wolves in northwestern Alberta has been unintentionally jeopardized by recreationists. Snowmobile tracks give the wolves an unnatural advantage, enabling them to travel farther and hunt more effectively. One response to this has been to designate and maintain specific snowmobile routes, thereby limiting the impact.

The authors of this document encourage the thoughtful and thorough evaluation of all environmental impacts of a proposed development, even when not legally required. The trail must have an environmentally positive impact on the region. If all stakeholders cooperate, this need not be a long or onerous task.

Many municipalities have conducted studies of environmentally sensitive areas within their jurisdiction. The studies provide a good idea of what types of problems may occur. Talk to the local planning agency to find these documents. Any threatened or endangered species will require special consideration as well.

Negative environmental impacts fall into two general classes: damage to the landscape or wildlife due to the construction, and impact due to increased human access.

The first type can be greatly reduced by following existing rights-of-way, where the damage has largely been done. We assume that the road, railway, or power line will provide a stable base for a trail, with little modification to the landscape being needed.

Overuse of trails can and does adversely affect Alberta's environment. In general, this means that more, not fewer, trails should be built. However, many people would be happy spending their time closer to home in the more durable rural areas. Trail proponents should not assume that the users will demand to see the most sensitive sites.

Human impact

Human impact can also be greatly reduced through proper behaviour. For example, problems with bears were once common in mountain campgrounds. These confrontations have been greatly reduced through firm, or even rigid, enforcement of regulations.

In some cases, existing trails are deteriorating due to over-use. This could also be described as under-maintenance. Can user fees be applied to directly pay for better maintenance or "hardening" of the trail? If this is not conducive to the desired experience (i.e., wilderness adventure), then limiting the numbers of users may be the best solution. In some cases, people can be redirected to more appropriate routes, but a quota system may be required. Formal research on the relative effects of different types of travel, summarized in Cessford (1995), indicates no significant difference in the impact of bicycles and pedestrians. More important factors in trail degradation are the slope, intensity of rain, and the soil type. In the absence of site-specific studies, trail managers are encouraged to implement visitation limits equally, where required, for all types of users.

Local environmental organizations should be involved with the trail committee from an early stage. They will be able to point out potential problems and may even have some solutions. In any case, they will be commenting on the project eventually. The earlier they get involved, the more likely that a better plan will be created. To find environmental groups, contact the Federation of Alberta Naturalists at (780) 427-8124, or consult the Directory of Environmental Organizations published by the Pembina Institute.

Environmental Impact Assessment (EIA)

Initial EIAs can be done by local organizations, preferably in conjunction with the local environmental group. If serious potential impacts are identified, then professional help should be sought. Once the project proposal has been firmed up, three steps must be taken:

- identify the issues as precisely as possible
- study the cause and effect of these impacts
- implement mitigation measures to reduce the impact

Your strip map should indicate where the proposed route passes through natural habitat. Environmentally sensitive areas and other potential concerns should also be added. This map will be a critical resource when talk-

ing to professionals about possible concerns.

A single meeting with stakeholders should help to identify most potential problems. Some are obvious: bears and alpine meadows in the mountains, fire hazard in the grasslands, and sensitive wetlands across northern Alberta. Threatened species are usually well-known locally, but check the most recent listing. Don't forget the aquatic environment: bridges may need federal approval due to possible disturbance of fish habitat.

Chances are that similar problems have been researched somewhere else in Alberta. Have a committee member, preferably someone with a science background, interview environmental specialists. These include Fish & Wildlife staff, college or university professors, and prominent amateur naturalists. Document each interview and send a copy of the notes to the person for confirmation.

How to mitigate potential issues

With the extent of the problems determined, your group is ready for solutions. Again, keep the environmental groups involved. You will find that naturalists and recreationists have many common interests, and they will be supportive of the project. Together, you can search for ways to reduce the environmental impact while maintaining the essential recreation experience. The following list indicates ways to mitigate potential issues:

- move the route to the edge of a sensitive area, instead of going through the middle
- do the construction during a less sensitive season
- "harden" the trail surface to ensure users stay on the trail (boardwalk)
- keep the trail to a low standard to discourage casual use
- restrict the size of the parking lot to reduce physical impact and to limit use
- stress potential problems and the proper behaviour at the trailhead and/or in brochures
- limit the number of users or the period of use (hours per day or seasonally)
- recommend or require specific equipment (gas stoves, no lug soles)
- involve all user-groups in joint maintenance projects
- focus the recreational use on fewer trails, which would be of a higher standard

Notes:

206 Historical and cultural resources

Many people find the history of their area interesting. The remains of previous times can remind us of our ancestors, and emphasize our own mortality. People have lived in Alberta for hundreds of years and by understanding their lives, we are better able to understand our landscape, which they have helped to shape.

Trail builders should be aware of this value and make every effort to avoid destroying the remaining evidence. Proposed trail routes following historic routes are obvious candidates for serious study, but all parts of our province have signs of ancient residents. Respecting this heritage is not only considerate and good marketing, it is the law!

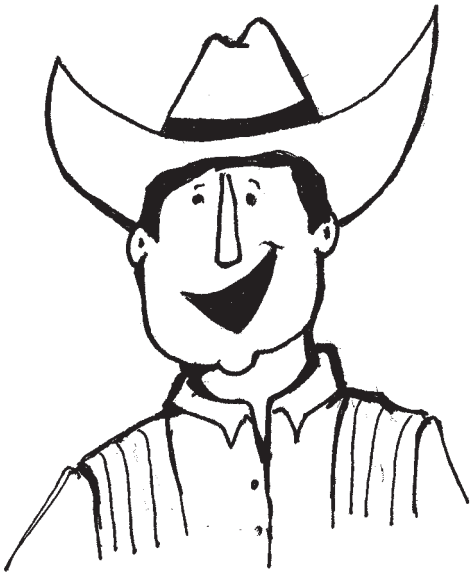
Alberta Historic Site Service should be consulted in the preliminary stages of every trail project. Depending on their information on your site they may require an Historic Resource Impact Assessment.

Impact assessment

A concise presentation of some basic information will enable them to quickly assess your case and recommend the proper action.

They will need to know:

- where you propose to put the trail
- what type of development you intend, particularly to do with disturbance of the soil
- what historic sites already are known, and what you intend to do with them, how you intend to protect them.



Questions Alberta Historic Site Service will ask are:

- Do these sites or structures provide significant evidence to further the understanding of Alberta history?
- Do these remains constitute a historic landmark that should be preserved in their original location?

In the meantime, do not "tidy up" the site. Only the most recent of litter should be removed. Piles of tin cans, old machinery, and derelict buildings can give precious insight into the region's past. These will become part of the story which visitors love to learn.

Historic transportation routes are only now being appreciated as historical resources. Partly shaping the settlement pattern, and partly determined by settlement, trails record evidence of a poorly understood aspect of our history. Our modern tourist, travelling rapidly across the country, can appreciate the challenges of early transportation.

Alberta Historic Site Service may decide that the site warrants a Historical Resource Impact Assessment (HRIA).

The factors studied are:

- Age: in general, older sites or artifacts are more valuable than younger ones
- Merit: the quality of the site or building, relative to similar features
- Context: how the site relates to the major themes of provincial or regional history
- Events: relationship to significant historic events
- People or institutions: whether the site documents the lives and/or actions of significant people or organizations in our past.

This research must be carried out by a qualified professional, who will determine the significance of the site and what development will be suitable. That person can also recommend mitigation actions. The trail sponsor must remember that a significant site will bring considerable interest to the trail, even if it means more complex planning. Once the plan is confirmed, some removal of certified junk may be in order!

Archaeological sites

Aboriginal people lived in all parts of this region, but evidence of their lives is particularly visible in the grasslands. A brief survey by a trained professional will enable trail planners to avoid disturbing the important sites while providing good data for interpretation. Alberta Historic Site Service will advise you if the entire route, or perhaps just the campsites, should be studied.

Historic trails

History buffs eagerly participate in the reopening of historic travel routes. This is particularly exciting when the original ruts of the wagons are still visible. This brings up a philosophical question: Which is more important to preserve, the historic ruts or the historic route? Some trails have been developed a few metres away from the actual route, while protecting the old ruts. Many historic trails moved many kilometres over the years, and a short detour does not detract from the concept. In cases where more recent travel has already altered the evidence, it may be acceptable to put the new trail right on top of the old, perhaps with some levelling first. The approach may vary from place to place, even along the same trail.

Cultural features

In this manual, the term "culture" refers to the sum total of a region's architecture, industry, lifestyle, art, and history. This often reflects the ethnic origin of the residents, enriched by their adaptation to the physical conditions and resources found there. Any artifacts should be conserved, as described above. But beyond this, the living culture itself can be fostered through sensitive development. Facility design can draw on the local style for inspiration. Interpretive messages should stress what makes the local area unique. The local community can use the trail as a link between important sites, restoring the continuity that may have been lost. A full experience can be created with cooperation between the museum, art gallery, trail sponsor, and ethnic associations.

Contact:

Historic Site Service
Alberta Community Development
Old St. Stephen's College
8820 - 112 Street
Edmonton, AB
T6G 2P8
Telephone (780) 431-2327
FAX (780) 427-5598

Notes:

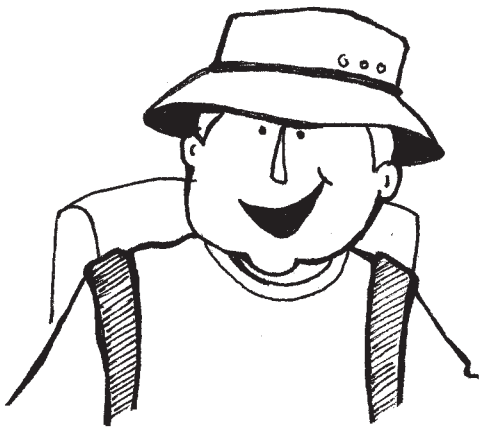
207 Accessing private land

Buying land is more complex than buying a bicycle. When you buy a bicycle, you have the rights to do anything you want to it: ride it, rent it, paint it, or even destroy it. When a person "buys" land, they only acquire some of these rights. For example, you may not be allowed to build certain types of buildings on it, build close to the perimeter, or pump the oil from it.

This can work to your advantage, though. Your trail group can acquire the right to operate a trail across the land without actually purchasing the land. This is called an **easement,** and is a permanent, legal right that will continue even if the "owner" of the land sells to someone else. The sale of this right by the owner is entirely voluntary, and the price can be up to one-third of the total value of the land. This can be a good way for the owner to get part of the value of the land immediately without having to sell it. The owner must realize that the value of the land may decrease because this right has been removed. On the other hand, the value may go up if a future buyer is a trail enthusiast. Revenue Canada has recently changed the Income Tax Act (Bill C-28) to make provision for landowners to donate an easement to a charitable organization, in exchange for a tax receipt. Contact the Environmental Law Centre at (780) 424-5099 for more details on conservation easements in Alberta.

Trail access agreement

The landowner may not want to sell the land or give an easement, but may still be willing to have the trail cross the property. This can be a good option, especially in rural areas, although most groups will be reluctant to invest much money without having title to the land. If your group decides to go this route, work with the owner to draw up an agreement that clearly outlines the responsibilities of each party. (Refer to the example attached.) Even with the cancellation clause, it will encourage both parties to take the situation more seriously, and the trail will have a better chance of surviving. It will also direct any possible litigation toward the trail group and away from the landowner. This is good, assuming that you have adequate insurance.



Several private utilities in Alberta own land, although it may appear to be public. Owners of power line rights-of-way, railway lines, and irrigation canals must all be dealt with as private owners, just on a larger scale. It is useful to note that railways have a legal obligation to facilitate any "reasonable" request to cross their line. The definition of reasonable is open for discussion. In the past, power companies have allowed trail development within their right-of-way, with appropriate consultation beforehand.

In terms of gaining access, trail sponsors should treat public land which is leased to private individuals or companies as if it were private property. Of course, when permission has been received, the government's approval will also be needed.

Purchasing right-of-way

The trail group may feel that purchasing the right-of-way is the best option for ensuring permanent access to the route. The cost is really quite minor, compared to the cost of building the trail. Even a short distance of land acquisition can make a large difference in the character of a trail. For example, the village of Milo bought a 15-foot wide strip along the edge of a pasture. The fence was moved, leaving the trail and road right-of-way together.

On a larger scale, the Bruce Trail Association in Ontario, with a membership of tens of thousands, was forced to constantly reroute their trail as ownership of the right-of-way changed. Eventually, they began a policy of buying the route whenever the owner wished to sell. The association then legally sub-divided the right-of-way from the bulk of the parcel, and resold the remainder. The prestige of living next to the Bruce Trail is such that the land sale more than covers the legal fees required.

These two case studies highlight the main advantage of buying the land: security of tenure. The trail group must weigh this against the potential drawbacks: responsibility for taxes, weed control, and perhaps fencing. If the group should dissolve, this land will be passed on to whatever organization is designated as receiving the assets of the association. In summary, this approach will likely be advantageous for a stable association with an active membership and a popular trail.

Notes:

Alberta TRAILNET

11759 Groat Road
Edmonton, AB T5M 3K6
Tel: 780-422-7150
Fax: 780-422-2663

SAMPLE Trail Access Agreement

This agreement is made as of the _____day of _____, 20_____

between: _____
(the Owner/Occupier)

and _____
(the Trail Group)

Whereas the Owner/Occupier is the registered owner or the authorized occupier of the lands legally described as:

_____1/4 Section(s)_____Township_____Range_____West of_____Meridian,

in the county or municipal district of:_____
(referred to as "the Lands")

And whereas the Trail Group is a member of Alberta TrailNet Society, the authorized representative of the Trans Canada Trail Foundation in Alberta;

And whereas this Trail Group has requested the right to use the Lands of this Owner/Occupier for the Trans Canada Trail; the parties agree to the following conditions to ensure that these activities occur in a mutually beneficial manner:

1. The Owner/Occupier will:
   - grant the Trail Group permission to operate a recreation trail for the purposes of:
     hiking bicycling horseback riding snowmobiling cross-country skiing
     (strike out and initial any modes of travel not allowed)

     Upon that portion of the Lands as designated on the attached Schedule "A" (the Trails). Schedule "A" will include a map, of 1:50,000 scale, or a photocopy of the municipal land ownership map.
   - grant access to the Lands for the purpose of establishing, opening, closing, upgrading, and maintaining the Trails, provided the Trail Group receives prior verbal consent before accessing the Lands; and
   - charge no fee to either the Trail Group or the individual users for the use of these trails.

2. The Trail Group will:
   - ensure that the Owner/Occupier is consulted regarding the design, construction, and operation of the trail; carry out all construction and maintenance at its own expense;

TRANS CANADA TRAIL
SENTIER TRANSCANADIEN
TM/MD

- Indemnify the Owner/Occupier from claims or damage arising from trail users by maintaining third party liability insurance with a limit of at least $5,000,000 to cover trail uses specified herein. A Certificate of Insurance should be attached to this Agreement as Schedule "B";
- maintain the Trails in a suitable condition for the uses allowed above;
- post appropriate signs regarding safety, appropriate behaviour, and use; and
- remove, on at least an annual basis, any litter accumulating along the trail.

3. The Trail Group hereby indemnifies the Owner/Occupier against all liability claims, damages, or expenses arising out of any act or neglect by the Trail Group, its employees, agents, or volunteers in or about the Lands, or arising out of any breach by the Trail Group of any provision of this Agreement.

4. This Agreement may be terminated by either party, without cause, by giving 60 days written notice to the other party at the address designated below.

5. If any term of this Agreement is determined to be invalid or unenforceable by any court, such determination will not invalidate the rest of the Agreement, which will remain in full force as if the invalid term had not been made part of this Agreement.

6. The Owner/Occupier and the Trail Group acknowledge that they do not rely upon any information or statement, oral or written, express or implied, given to each other.

7. This Agreement constitutes the entire agreement between the Owner/Occupier and the Trail Group, and any previous agreements, written or oral, express or implied, between the parties or on their behalf relating to the use of the Lands are hereby terminated and cancelled. Any modification to this Agreement must be in writing and signed by the parties or it will have no effect and will be void.

8. In the Agreement, words importing the singular number will include the plural, and vice versa, and words importing persons will include organizations and vice versa.

9. Each party will, at the request and expense of any other party, sign and deliver such further or additional documents as may be reasonably considered necessary or desirable by the respective parties to properly reflect and carry out the true intention and meaning of this Agreement.

10. This Agreement will be construed and enforced in accordance with, and the rights of the parties will be governed by, the laws of the Province of Alberta.

Owner/Occupier

_____
Signature

_____
Name

_____
Address

_____
Town

(_____) _____–_____
Telephone

Trail Group

_____
Signature of President

_____
Name

_____
Address

_____
Town

(_____) _____–_____
Telephone

208 Accessing public land

The provincial government administers most land in what is known as the Green Area: the non-settled region to the north and west of the province. In addition, the province administers provincial parks, grazing reserves, grazing leases, some irrigation canals, transportation and utility corridors around Edmonton and Calgary, and other public lands. A visit to **Alberta Agriculture, Food and Rural Development, Public Lands or Alberta Environment** in your local provincial building will inform you of where the public land is in your area.

Land Standing

Once you have found land that seems suitable for trail purposes, you may wish to follow two paths simultaneously. First, speak with the local field person with the particular department that handles the land in question. Ask them to do a "Land Standing" on the parcel of land you're interested in to find out if the land is occupied and by whom. Find out what their concerns may be and whether the department will be likely to support recreational use of the land. This will give you the background to write a formal letter to the minister involved. In this, you can outline the general project and how your group will deal with the concerns. Keep this very general because you will almost certainly be referred to the local field representative for specific arrangements. This letter serves the purpose of keeping the minister posted, while showing the local staff that you are willing to follow the proper procedures.

Alberta Infrastructure

Some trail operators may wish to develop a trail near or within the right-of-way of a numbered highway. These roads are the domain of Alberta Infrastructure, and are intended for transportation. If a trail is proposed in the area, several valid concerns will arise and this department's regional office should be approached to examine alternatives. Will the increased separation lead to greater safety for existing pedestrians and bicyclists? Does the right-of-way have room for a trail as well as the existing road and future expansion? Does your trail group have insurance and sufficient public support to be a viable organization? How will the trail cross driveways and other road access points? Several trails have been developed along highways for safety reasons. The best examples are from Bentley to Gull Lake and from Black Diamond to Turner Valley.

Most public land has already been leased to some organization, such as a forestry company. Your trail group, if it is a registered society, may be able to acquire an additional disposition on this land. This additional license will require a "consent to occupy" or "consent to withdraw" from the existing disposition holder. (See Sections 207 and 209.) The present organization may be more comfortable being a partner with a recreation group and leaving the lease as it is.

License of Occupation or Temporary Field Authorization

Regardless of which department administers the land, the government will want to formalize the existence of the trail through a formal disposition. The most flexible method is called a License of Occupation (LOC). This creates a legal right-of-access, and transfers the obligation for maintenance to the trail group. A single LOC can cross several pieces of property, which is important because each license requires an annual fee. An alternative is the Temporary Field Authorization (TFA), which may be easier to get but offers less permanence. With either of these, the user group does not have exclusive rights to the land. That is, the group may not restrict access to other user groups.

To receive an LOC, the group must submit a proposal which includes the length and width of the trail and a survey or descriptive plan. All planned infrastructure, such as bridges and access points, must be disclosed at the time of the application. "Blanket" LOCs are not permitted. Although road allowances are administered either by Alberta Infrastructure or by the municipality, any activity planned for those lands must be described in the proposal and shown on the map.

If applying for a TFA, a survey is not required. However, a general description is needed, preferably shown on an air photo or a map which includes the township and range. TFAs may be issued from the local district (field) office and are best suited for seasonal (non-multiple use) activities such as hiking, cross-country skiing, snowmobiling, dogsledding, etc. These are temporary in nature and therefore must be applied for annually. The authority may be supplemented with a departmental Protective or Consultative Notation (PNT or CNT), which ensures other departments will be aware of the new land use.

Both the TFA and LOC may require security deposits when the letter of authority is issued. The amount for a TFA is discretionary, and the amount for an LOC is under review (currently $50 per year).

For an LOC to be registered, the route must be surveyed. This is easy along roads, but surveying wooded areas may be impossible without first cutting a line through the forest. (A GPS survey may be acceptable, depending on the location, and will avoid the need for any cutting. Ask first!) To avoid extensive clearing, discuss the following process with the local manager. This has worked well in several locations, and in fact, is how the railways were originally surveyed.

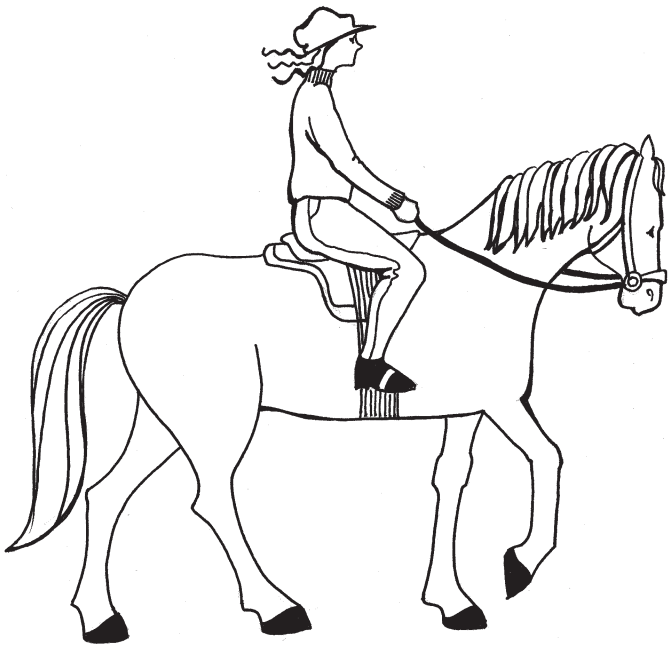
Suggested steps are:

- receive approval in principle for the route. A temporary permit may be issued.
- flag the route carefully, paying particular attention to any adjacent leases or properties.
- clear trees and brush from the trail alignment.
- survey the route. The license will extend a specified distance on either side of the trail.
- receive the LOC, and undertake trail construction

Interdepartmental Committee on Recreation Corridors (ICRC)

This group of government employees meets regularly to discuss the government's response to trail issues. The intention is to provide positive and consistent response from all departments to requests for assistance from trail operators while facilitating the provincial trail network. If your project seems to have unreasonable problems with provincial departments, contact a member of Alberta TrailNet's executive, and the matter can be brought forward to the committee.

The ICRC distributes a series of fact sheets which describe the interests of each provincial department. These can be obtained by calling 415-0267 on the RITE line or from your Regional Provincial offices.



Notes:

209 Approaching landholders

Some information for this section was kindly provided by Deb Comfort, Red Deer, Alberta, and Hanne Smith Heintz, of Rossland, BC.

Many rural residents tend to enjoy the quiet and privacy that their rural life style brings. Trail planners can reasonably expect that rural landowners will raise a number of concerns related to the prospect of trails adjacent to their lands. In addition to their rural lifestyle choices, land is the basis for business among the majority of rural landowners. Farmers, relying on the land and agricultural products for their main source of income, will have vested interest in trails crossing their land that may affect agricultural operations. It is for this reason that it is very important to involve rural landowners in your trail planning from the outset. Their concerns and issues need to be addressed to their satisfaction.

Reducing conflict

Trails require land that has generally been used for some other purpose. Where land forms the basis for the entire economy and culture, changing the type of land use is a process that requires respect and considerable discussion. In addition, what may seem to be a harmless and even pleasant social interaction to a trail user can be seen as an unwanted intrusion. Because rural residents easily track the movement of people by watching or listening for vehicles, pedestrians, cyclists or equestrians can easily surprise residents with their quiet means of travel.

Trail use has been grouped with other perceived concerns such as:

- centralized service reducing access for rural residents
- reduced rural services
- decreased profitability for agricultural business
- environmental limitations on agricultural activities
- encroachment by non-agricultural urbanites

To a certain extent, these attitudes can be offset by acknowledging concerns and promoting some of the values of local trails. For example, in areas where recreation use may be very light, it may be preferable to refer to as "greenspaces" or "greenways." These linear spaces also support wildlife conservation which most farmers value. When seeking cooperation from farmers, be aware that much like any group, the opinions of family and peers are influencing factors. This can be expected where land ownership is measured in generations and nearby farmers are often lifelong friends. Approach receptive and influential people first. Draw attention to the benefits such as local people, including their own children, may be using the trail. Try to provide specific examples, such as the names of the riding or snowmobile clubs. Education and historical aspects of trails also support the traditional outlook, historical societies can be staunch supporters.

When it comes to contacting the interested parties, each one wants to be the first involved and have a significant say regarding the final outcome. Alberta TrailNet has developed a process that attempts to meet these objectives with the least possible friction.

Contact the municipality

First, Alberta TrailNet has ensured that provincial and rural municipal government agencies are aware of the Trans Canada Trail and the trail development process. The Wild Rose Trail System Plan has been put together with substantial input from recreation associations, landowner representatives, and the general public. This document identifies, in general terms, where recreation trails would be feasible. All MLAs and rural municipalities received copies of both the draft and final document. Advertisements in many rural newspapers made rural residents aware that the plan is available.

More specifically, many rural municipal councils received personal presentations regarding the trail development process. Alberta TrailNet anticipates speaking with all councils on the Trans Canada Trail corridor in the near future.

Each trail sponsoring group will have its own preference regarding how to begin contact with landowners. Alberta TrailNet recommends that the sponsor should first contact the municipality, perhaps through their planner, recreation coordinator, or agricultural fieldman. This person can give more specific advice on the council's view and what information the counselors need. Generally, the presentation will include an overview of the TCT, Alberta TrailNet and the TCTF, the benefits that it would bring to the community, and the implications for the municipal government. An endorsement is not needed at this time, although it would be beneficial. The main purpose is to demonstrate that the sponsor is a legitimate organization with national affiliations, and that the individual landowners will be contacted before any plans are finalized.

Meet adjacent landowners

Following this initial contact with the municipality, Hanne Heintz recommends a group meeting of just the adjacent landowners. The meeting allows an open discussion while reinforcing to the landowners you are serious about addressing their needs. Everyone receives the same information at the same time, and can see their reactions. Smaller meetings to listen to concerns, address grievances

and identify local solutions will assist the process. Group meetings should be held only after substantial support has been received from prominent members of the group.

To gain the support of the landowners, you must address their concerns and interests. What is in it for them? Alberta TrailNet has discussed many of these topics in the brochure *Country Trails: Special Issues for Rural Communities*, which is available separately.

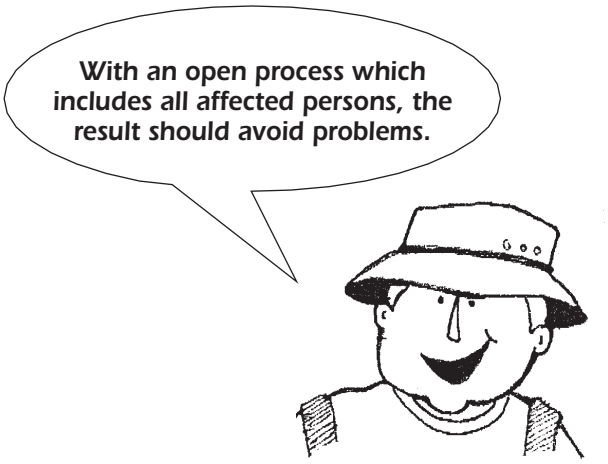
Realistically, adjacent landowners are going to be the first people to encounter problems if any occur. How will you minimize the problems caused by trails? If your committee has gone through Section 104 carefully, you should have answers for most of the questions. The provincial plan also has important information. However, local concerns will come up, and you must deal with them honestly. When stating the benefits of the trail to the broader community, ask the landowner what he/she would suggest. If the person is hostile, consider if the person is a landowner or an **adjacent** landowner. You might want to outline the particular concern to the municipal council and ask their advice.

Key points you will want to mention include:

- unmanaged recreation activities are already present (hunting, snowmobiling, berry picking, etc.), but have not been planned, have no formal facilities available, and have no group to remedy any problems
- vandalism happens now, but will be reduced if law-abiding people are present
- the TCTF insurance policy covers adjacent landowners against liability
- a code of behaviour will be promoted
- the local group will carry out regular maintenance, including litter clean-up
- the way in which contributions can be acknowledged
- how landowners will personally benefit, i.e., their favourite recreation can be accommodated, unwanted types of recreation can be limited, access across the right-of-way can often be improved for their convenience

Your main objective is to develop an understanding with the rural residents. They must see you as a reasonable and responsible organization. Look for ways to become a trusted source of information. For example, consider holding an objective workshop about landowner liability and how to reduce it. This will benefit all landowners, regardless of whether a trail is built.

You must recognize and deal with their legitimate concerns. Communication will be the key to this resolution. Don't ask a question that can be answered "NO." Secondly, they want to receive a clear idea of what the finished trail will be like and how it will be used. Having a clear plan will ensure credibility. For example, be ready to explain what the surface will be made of, what uses are anticipated, where the campsites will be, and how they will be operated.



210 Twenty common questions

(from landholders and some suggested responses)

Q Where is the trail going?

A It hasn't been decided yet, but where do you think the best route would be? Which location would best show off your area and make a pleasant place to relax? We look to local people for advice.

Q I already have problems with recreationists on my land. Why would I want more?

A We can provide trails and other facilities to properly handle these people, and a group which will maintain the site. Your problems will be reduced, even though the number of users may go up.

Q What if I have problems with the trail users?

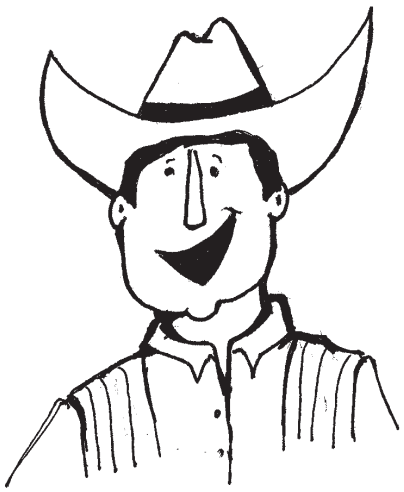
A Here is a number to call. We, the local trail committee, will fix it within (one week, one month, etc.).

Q City people don't understand how to behave in the country. Why should I put myself out for their pleasure?

A Few city people have the chance to experience a rural lifestyle. We are trying to give more people this opportunity by setting up the trail and support facilities to make their visit successful.

Q Can I cross the trail with my equipment and cattle?

A Yes. Appropriate crossing designs will be determined by the land user and the trail operator but should not pose a problem for trail users. In some cases, access along the trail can also be arranged.



Q Will you pay me for this?

A Not directly, because we are a charitable organization with a very small budget. But, we can give you a tax receipt for donating an easement to cross your land. You can get quite a substantial amount of your land's value, and still hold the title. Best of all, your community is getting a great recreation facility at no (or low) cost!

Q How will you keep hikers from interfering with my farm?

A We will keep recreationists on the trail by routing it in a pleasant location, building it well, and maintaining it. Very few people will leave an enjoyable and easy-to-follow trail to wander through fields and pastures. Where the trail passes near buildings, we can put up fences, tree plantings, or other barriers. Signs at all trailheads will explain what behaviour is appropriate.

Q What about my liability if someone injures themselves?

A First, you can help everyone by working to have provincial Occupiers Liability legislation changed. Second, lawsuits are very rare. In 30 years and millions of users, the Bruce Trail has not had a lawsuit. Third, our trail group carries liability insurance, as required by the TCTF. This policy automatically covers adjacent landowners for accidents related to trail users.

Q I am a farmer. I don't know anything about tourism business. How could I benefit?

A Tourism means hospitality, and you obviously have that. But I realize that tourism generally happens in the summer when you are already busy. Most trail-oriented businesses are small, have low overhead, and so are ideally suited to the young entrepreneur. Bike rentals, canoe or bike shuttle, guided outings, and campsites could provide meaningful employment for children or grandchildren. It could even bring relatives back to the farm, at least for the summer.

Q What activities are allowed on the TCT?

A The trail sponsor will control use based on public preference, trail quality, environmental impact, and user safety. The TCT expects two or more of the five core uses to be accommodated: hiking, biking, cross-country skiing, horseback riding, and snowmobiling (where locally desired). Additional non-motorized uses are encouraged. All terrain vehicles (ATVs) will be allowed where they are in traditional use, but funding by the TCTF will not be provided to support them.

Q How will motorized vehicles be controlled?

A Access points will have installed gates or other structures which allow passage of trail users, but restrict motor vehicles. Barriers will generally allow access to emergency and maintenance vehicles.

Q How will construction of the trail be funded?

A Most trails result from a partnership between the TCT, local donors, and government agencies. With donations of goods, services, and land access, the amount of cash required is really quite small. The money available through TCT metre sales can often be matched with various grants.

Q How will the trail be maintained?

A Trail maintenance will be the responsibility of the trail operator. It will be carried out by volunteer labour where possible, and contract services where required. Trails which have been properly designed cost very little to maintain, and will be within the means of most small groups.

Q What happens if the trail operator goes "out of business"?

A If Alberta TrailNet is advised of difficulties, we will try to arrange support or a replacement operator. Failing that, the trail will be closed by placing signs at the former trailheads until such time as a new operator is found.

Q Will trail users harass livestock?

A The majority of trail users are interested in recreation and leisure, so intentional problems will be very rare. Some difficulties may arise due to lack of understanding of stock, but these will be prevented through education.

Q Will the close proximity of the trail to rural homes result in increased theft and vandalism?

A Trail routes will avoid close proximity to farmsteads and farming equipment where possible. However, trail users generally respect the current land use but this issue will be emphasized in the trail behaviour signage.

Q How will damage to my property by trail users be handled?

A Damage as a result of normal trail use is not expected, any more than from road users. It should be a simple matter to confirm that your existing property insurance will cover this issue.

Q Who is responsible for trail users' dogs and will they be leashed?

A Trail users are responsible for their dogs and leashing would be a normal requirement. The trail operator will post signs indicating off leash areas that are an appropriate distance from ranching operations.

Q Who is liable for a fire started on the trail which spreads to private land?

A The trail operator would post signs prohibiting open fires except at campgrounds or where firepits are provided. Trails can be closed when fire hazard is considered extreme. At the same time, the property owner should have insurance to protect himself as he would in the case of a fire started on a roadway.

Q Who is liable for an injured trail user?

A Trail users are responsible for their own safety, and for determining if the trail is suitable for their abilities. Trail operators are expected to clearly state the conditions found on the trail, and maintain the trail to that standard. Trail operators often have plans for the emergency evacuation of injured users, and will respond to the best of their ability.

211 Rail trails

Abandoned rail lines make excellent bikeways, and can often be used for other modes of travel as well. Many books, articles, and reports have been written on this subject, and details of the conversion process can be found in the references. As far as the planning process is concerned, there are a few points to make.

Rail beds are natural trails, with gentle grades and curves ideal for leisurely cycling. The route often traverses some of the wildest landscape in the region, because stores do not spring up along railways the way they do on roads. This is a great way to cover a lot of distance in a short time. Construction is also easy because the ballast can make a fairly good surface, and the bridges, if still in place, can be spectacular in themselves.

It is important to identify some potential drawbacks to rail trails. Alberta's relatively flat terrain means that the railways are straight. This can be very boring when on foot! Bicycles move fast enough to keep the route interesting, generally. On the other hand, moving faster than a bicycle, say on a snowmobile or ATV, can be dangerous. These vehicles can reach quite high speeds on a straight route. This concern is not limited to rail lines, and the Alberta Snowmobile Association is developing a process to allow the enforcement of speed limits and other regulations.

Acquiring the rail lines

Because railways are such an institution in Canada, we have a range of legal aspects to using these rights-of-way.

Those routes discontinued before 1975 have generally been dispersed into private ownership. In cases where the lines passed next to public land, the province acquired them and incorporated them into the titles of the adjacent land. These are generally leased for grazing. In some areas, the landowners did not buy them, and the municipality now owns them. These rail beds can still be used for trails, but each landowner must be contacted as with other private land.

Lines abandoned after 1995 are subject to new federal legislation. This involves several clearly defined steps listed on the flow chart on the next page. Municipalities will have a minimum of six months after the initial notification before the line is sold to the public. In practice, the abandonment process has gone much more slowly.

The railway would prefer to sell the land as a single purchase, so trail organizations have an advantage over the adjacent landowners. Railways also have a very inflated idea of what the land is worth. The accepted method of appraisal is to take the price per hectare of adjacent land, and add 20% as a bonus for the continuous corridor.

The railway may accept a tax receipt for part or all of the value of the land. For example, CP Rail donated 1618 km of line to the TCTF on February 15, 1999. The value is being determined by Revenue Canada and will provide guidance for future transactions.

The railway retains some responsibilities for the line. A Certificate of Reclamation must be obtained from Alberta Environmental Protection, even if the line is disposed of. The railway remains responsible for any environmental problems which become evident in the five years after the certificate is received.

Your responsibilities

Once the trail group has acquired the rail right-of-way, it has a multitude of chores to tidy up.

Some of the tasks that must be carried out immediately include:

- assess the overall condition of the r-o-w
- identify and fix any safety concerns
- check for obvious environmental problems, review the company records and land titles
- look for specific instances or possibilities of land owner concern
- install signs indicating ownership
- talk to local groups and the media
- explain the plans for trail development along the line to all adjacent landowners
- renegotiate all legal agreements which have been made regarding the line. These include agreements for every road, utility line, or pipeline which crosses the right-of-way

The trail sponsor has similar obligations to those of any other landowner, with one exception: not-for-profit organizations can be exempt from paying municipal taxes. This status is at the discretion of the municipality. However, the route must be kept free of noxious weeds. Fencing may be an issue, depending on the use of adjacent land. Ranchers are required to build fences to keep cattle or horses on their own land. The trail operator's interpretation of these regulations is often discretionary and will be dealt with on a case-by-case basis. On the positive side, some lines have an excess of ballast which can be sold to local contractors.

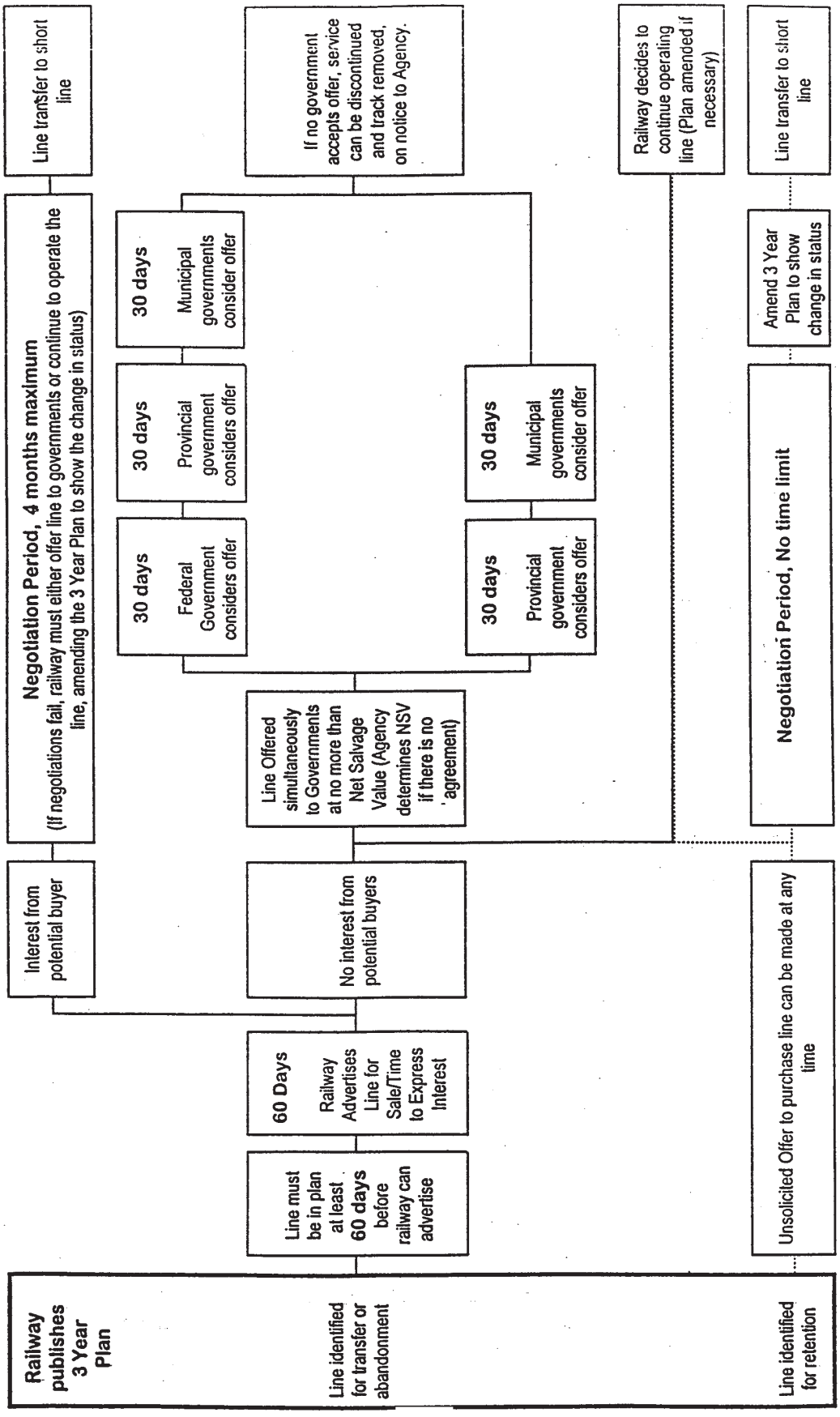
Rails with trails

The high demand for trails in some locations has resulted in trails being built within active rail rights-of-way. The United States already has 54 rails-with-trails, with over 70 more on the way. With proper planning, this can result in a safe recreation facility. The key factor is the speed of the trains: the faster the trains, the more secure the separation must be. In some urban areas, trails pass within a few metres of little-used spurs with little or no physical separation. In Calgary, the Bow River Pathway crosses the CPR mainline three times. These crossings are a simple gap in a chain-link fence, with warning signs. The fences end a short distance away, but serve to keep people crossing at specific points. In Medicine Hat, a major trail crosses a little-used spur with an unmarked level crossing. An Ontario trail group is working with a local short-line company and their insurance company to determine what adequate separation means for that situation. They plan to use earth berms and bushes to keep the people on the trail. A fence may be required in only a few places.

A high-speed coastal commuter train near San Diego will soon have a bikeway within the same right-of-way. A low fence will separate the two, with a taller fence being installed near the crossings. Stormwater culverts will likely be used for underpasses to give beach access. Most people feel that this will result in safer conditions because the path will draw away those pedestrians who now walk on the tracks. The better crossings will also be safer than the random crossings now encountered.

Notes:

Canada Transportation Act: Line Transfer/Discontinuance of Service



Note: The minimum elapsed time for discontinuance of service on a line is 180 days (210 days if line must be offered to the Federal government) from the time the line is identified in the 3-Year Plan for transfer or discontinuance.

Railways are required to offer lines to the Federal government only if a line crosses provincial or international boundaries, passes though an Indian Reserve or where the railway company has an agreement with the Minister for the use of the line in settling an aboriginal land claim.

Source: National Transportation Commission

Notes:

212 Take back the streets

For a hundred years, Canada's transportation budgets have gone to developing the road system. Some people suggest this has led to an impersonal society which views the landscape at 100 km per hour, if at all. On the brighter side, this investment has also dedicated vast amounts of linear space solely for transportation. This is a resource that can be adapted for more human-friendly movement.

As traffic slows down due to the volume of vehicles to be moved, other modes of transportation become attractive as potential options. Ensure that your traffic department recognizes the important role that bicyclists and pedestrians can play in alleviating traffic problems, especially when mixed with public transit (excellent case studies are presented in Rails to Trails Conservancy 1998).

Benefits for riders:

- better physical and mental health
- more consistent (and perhaps shorter) commuting times
- substantial financial savings
- increased safety

Transportation infrastructure makes up a substantial proportion of the total area within large cities. More effective use of bicycles will allow a saving in space, with more efficient use of land for residential or commercial purposes.

Bikeways

Our streets are theoretically available for bicycle use, but may presently be impractical and dangerous. A little care will help alleviate this. Hope and Yachuk (1990) describe a complete process for ensuring a bicycle-friendly city, but initial steps could include:

- orienting the grids on storm sewer grates perpendicular to the traffic flow
- making good bicycle racks as easy to find as car parking spaces
- ensuring the curb lane is wide enough to accommodate bicycles as well as cars

Simply painting a bike lane (1.2-2.5 m wide) on the right side of the road has been a successful method used in a number of cities to encourage riders. The lane should be marked with a bike symbol and the words "bike lane." Some European countries use blue paint for these markings, creating greater visibility. The bicycle traffic goes the same way as the adjacent cars.

Palo Alto, California, retrofitted existing streets in the city core to facilitate bicycle traffic. A quiet residential street parallel to an arterial road was chosen to become a "bicycle boulevard." Automobile barriers were erected at the mid-point of each block, preventing through-vehicle traffic, but allowing bicycles. This can be supported with signs, maps, and special traffic controls, all giving the priority to bicycles. Local residents support this change, as it reduces the spill-over traffic from the adjacent commercial district.

All methods of encouraging bicycles to use streets must be well-signed. Motorists must expect to see cyclists. Some new features will be unfamiliar, and must be given extensive publicity to ensure accidents do not happen.

Traffic calming

"Traffic calming" is a process that slows traffic by design changes to roads, reducing vehicle speed by means other than regulations. This approach is rapidly gaining popularity, and a search for this term on the Internet will provide many good examples and even design manuals. Some features will restrict bicycle traffic as well as motor vehicles, and should be avoided. Barriers and "no left turn" signs are examples. Other features will reduce fast traffic to bicycle speed, making cycling more pleasant and safer.

Raising the crosswalk to sidewalk height and creating what traffic engineers call speed bumps, will ensure that cars slow down, while reducing the barriers for the disabled. Painting the crossing will further emphasize the site. Reducing the curvature radius of sidewalks at street corners will slow motor vehicles while reducing the distance which pedestrians must walk to cross the street.

Seattle has installed over 600 small traffic circles at intersections. These slow the traffic without causing congestion. Vehicle counts remain the same after installation; they do not move to a new route. Since pedestrian injuries have been virtually eliminated at these locations, the city now receives over 100 requests per year to have them placed in local neighbourhoods. All of these traffic calming designs can be tried on an interim basis with movable traffic barriers. Remember, though, that both motorists and cyclists will take a while to get used to the new arrangement.

Public transit vehicles can be adapted to hold bicycles. This allows bikes to be used for the start and end of a trip, with the bus or light-rail transit used for the major part of the distance. Another alternative is bike lockers at the terminals, allowing bicycles to be stored until the return trip. These boxes offer greater security because the bike's accessories cannot be removed. In fact, the potential thief cannot even see if there is a bicycle in the locker. Since they only take up one-fifth of the space of a parking space, they are an efficient way to accommodate additional passengers.

Unused roads

Alberta has many abandoned roads. Watch for them and search for ways to connect them into a usable corridor. On the other hand, we have roads that never "were." Road allowances are potential roads that have been surveyed but never developed, and are available for public use. Although some municipalities lease them to adjacent landowners, they may still allow recreationists to use them, too. Part of the development process must be discussions with the adjacent landowners to ensure they are not adversely affected by the new use.

Under-used roads

Many of our early highways meandered across the landscape in a pleasant, if inefficient, manner. In some cases, these are kept active through force of habit rather than any urgent necessity. Rededicating them to be primarily used for recreation could provide a safe corridor while still allowing the infrequent local traffic. Many section roads also fall into this category, serving only the farmer adjacent to the road. These could be converted into a rural "bicycle boulevard." Through traffic could be directed to nearby roads by erecting periodic barricades, perhaps every mile or two, while still allowing the farmer access.

This approach allows enhanced recreation without hurting the local use. The road is already suitable for most recreational use, but improvements can be implemented if required. These offer promise of rights-of-way through districts with little other public land.

Notes:

213 Water trails

Rivers and lakes have been traditional transportation routes throughout Alberta. Native people travelled on rivers for thousands of years and, even now, they continue to use them, especially in the North. Lakes have been extensively used for recreation and many were the sites of Alberta's first provincial parks. With changing leisure patterns, rivers have also become popular recreation sites. These linear transportation corridors could easily become part of a recreation trail network.

Similarities and differences

Land and water recreation activities have many common points of interest beyond the simple enjoyment of leisure time in a natural setting. At a basic level, all of these activities are linear in nature. They require a long, continuous corridor, but with relatively little land on either side. Both land and water trails play an important conservation role by providing a human "use" of the corridor while allowing wildlife movement. Without this, the narrow strip would be susceptible to disruption because it would be considered "useless" by some decision-makers.

Both types of recreationists have similar needs. These include road access and some type of staging area. Along the trail, campsites, a source of drinking water, and toilets are necessary. Maps and other promotional material will help people find the site, and ensure they are heading in the right direction.

However, canoeing has the special challenge of the trips almost always being one-way. The participants and their rather bulky craft must somehow return to the starting point. Only very special local circumstances allow a real network of routes to develop. As well, the level of difficulty of each river can change from year to year, and will vary dramatically with the water flow. The level of water can change quickly, even during a single outing, creating a dangerous situation.

On the other hand, water travel offers unique advantages. Many routes are not difficult, allowing children or physically challenged people to experience real wilderness. On some of the most isolated rivers, sandbars can be used as campsites with little or no impact. However, most rivers will attract enough visitors to require more formal arrangements. Even considering this, the development of a water route is likely to be inexpensive compared to a land route since the "trail" is already in place.

Recreation corridor concept

Many popular recreation sites already exist along rivers and lakes. Alberta TrailNet and Alberta Community Development wish to encourage the site managers to broaden the facilities available by creating both land and water trails extending from these locations. In other locations, some potentially navigable rivers are under-used because of a lack of access or facilities. The development of campsites and associated services will quickly increase the use of these ready-built trails. This is precisely the approach taken by the Upper Peace River Recreation Area. It has given the regional tourism industry a real focus, enabling more effective marketing.

Many river valleys, particularly in northern Alberta and the foothills, have excellent potential to become recreation corridors. With all types of linear recreation being staged from the same sites, a level of use will result that makes both the capital investment and maintenance practical. The periods of peak use by each user group will not coincide, tending to encourage a longer period of use. Private operators of recreation sites should be able to respond to this initiative quickly. In some cases, local clubs or associations can obtain grants to make the relatively modest improvements required.

Attributes of a successful water trail

- Lake or a river with an extended period of sufficient flow for navigation
- Natural or non-industrial scenery
- Vehicle access points (adequately signed), usually 20-200 km apart
- Approved campsites at put-in and take-out points, as well as at 30-40 km intervals. Sites include power boat (if use is appropriate) and canoe launch facilities, toilets, drinking water, campsites or designated areas, fireplaces or stoves, and food storage poles (if in bear country).
- Developed and signed portages around rapids. These may also include campsites.
- Guidebook describing the river, including map, safety precautions, local contact numbers
- A promotional program, if needed in addition to the guidebook above
- Signs marking critical river hazards, campsites, or access points, if they are not obvious
- An committed organization with resources to maintaining the facilities
- Desirable services include:
  - nearby sites promoting natural or cultural heritage
  - a method of returning to the start with baggage and boat
  - having personal guides and equipment available for hire
  - provision for search and rescue of users having difficulty

Routes with these features already exist on the Peace River from the BC boundary to the town of Peace River, and on the Bow River from Calgary to the Carseland weir.

Potential water trails

This list includes rivers and lakes with strong recreation potential that could be developed as water trails. In most cases, these would complement existing or planned land recreation. The list is not exhaustive, but illustrates the range of possibilities.

- Athabasca River—Athabasca to Fort McMurray, Fort McMurray to Fort Fitzgerald
- Clearwater River
- Peace River—BC boundary to town of Peace River
- Lakeland Provincial Park & Recreation Area
- North Saskatchewan River—Devon to Saskatchewan border
- North Saskatchewan River—upstream of Rocky Mountain House
- Red Deer River—Red Deer to Drumheller
- South Saskatchewan River—Medicine Hat to Empress
- Lesser Slave Lake (north shore)
- Foothills streams

Implementation

Alberta TrailNet encourages all organizations that manage outdoor recreation facilities to assess whether providing facilities for water-based recreation will benefit their site. Sometimes adding a simple launch site or mentioning the opportunity in a park brochure will result in more use.

Recreation groups and local agencies are encouraged to work together to develop multi-use facilities that meet community needs.

Notes:

214 Integration with other types of transportation

Trails provide transportation for people using a variety of modes of travel. We must realize that trails will only be part of the total transportation network. Trail planners must keep the connections in mind as much as the primary trail itself. Trail users should also make an effort to keep road planners thinking about the role of alternative transportation as well.

Links between transportation modes are essential to the entire system. Without them, the use will be greatly diminished. The cost of providing these is very small compared to the overall cost of the project. Just as important as building these facilities is telling people about them. All potential users must have confidence in the continuity of the trail system. Now, let's take a look at some of these specific requirements.

Bicycle to airplane

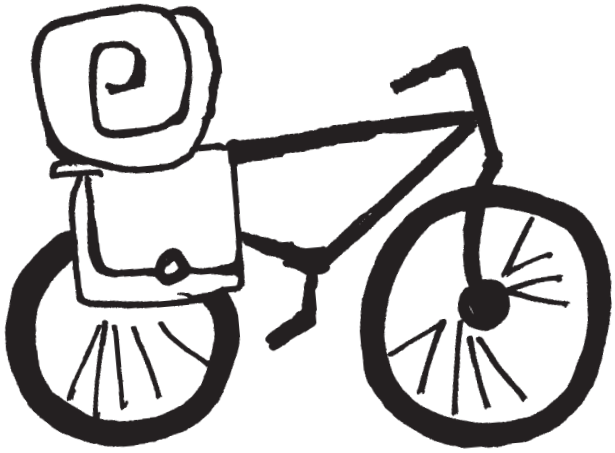
- continuous trail from network to air terminal
- area to assemble/disassemble bicycles, preferably with bike work stand and air supply
- source of containers to safely hold bicycles and backpacks for shipping
- lockers to hold bicycles until needed
- bike rack on airport shuttle buses
- map posted showing all bicycle and hiking trails in the region, perhaps with phone numbers of bike repair shops and hostels. (These businesses could sponsor the facility.) Similar set-ups are needed at major bus terminals, and perhaps railway stations in tourism areas

Bicycle to public transit

- bike lockers to hold bicycles until return trip
- permission to take bikes onto light-rail transit (at all times)
- bike racks on all buses (Experience in many cities indicates that they will pay for themselves with new customers well before the buses do.)
- prominent advertising telling all transit users about these options
- bike lockers at major places of employment, and secure bike racks at all locations where car parking is allowed

Automobile to various trail uses

- adequate parking for anticipated use, located to give good visibility from the road
- pull-through arrangement for horse and recreation vehicle trailers
- map indicating all trails in the area (A brochure would be good if the trails are complex.)
- traffic signs indicating safe access and exit for the parking lot
- posts to tether horses (about 10 m apart)
- secure bicycle racks
- toilet facilities suitable for the volume of use and general level of development
- general trailhead facilities including trail regulations, specific hazards, and garbage containers



Notes:

215 Route selection

Having waded through the administrative and public input process, you are now ready to start choosing the actual route. This is the fun part!

Trail designers take on the dual roles of a landscape architect and travel guide as they create an experience for the recreationists who follow. Ideally, it becomes a part of the landscape. The users, rather than wearing it out, should wear it in. The track should gradually settle into, and become part of, the natural features. At the same time, the designer must remember that trail use goes beyond function to embrace the travelling itself. Trail builders have a responsibility to produce positive and even exciting experiences.

Trail building as art

In some ways, this process can be compared to sculpture. The land parcels form the "stone," which will become the final product. The designated end points begin to define the route. Sites where the route is restricted, such as mountain passes and river crossings, further limit the route. As the work of art takes shape, the nuances of the stone begin to influence the final result. The flow of the land across valleys and ridges, along fields and behind hills, will suggest an attitude that will gradually become the personality of the trail.

This sounds pretty New Age, doesn't it? How can a beginner actually achieve this? Keep walking the route, but try to view it as if it is your first visit. Where do you tend to walk? Where are the views? Can you add drama by putting a corner just in front of the view, so it comes as a surprise?

Use of space

The manipulation of space along a trail influences the user's experience. Variations of space can set different moods and feelings. Changing spaces entice the trail user to explore further, whereas a visually uniform trail over a long distance can become stagnant. Consider using combinations for both subtle and abrupt changes. The main tool is the amount of enclosure experienced by the trail user.

The main spacial arrangements are:

- Closed top and sides: trees arch overhead, and vegetation or landforms enclose the sides
- Closed top with open sides: trees overhead, but good views to the sides
- Closed sides: short vegetation or a water feature opens one or both sides
- Open: good view to the sides and above

These experiences can be developed to ensure a varied experience for the recreationists. For example, aspens can be allowed to grow right to the edge of a rail-trail in some areas, giving relief from the long straight views. In the grassland region, a few poplars planted next to the trail will provide welcome shade.

Viewpoints

Your earlier inventory should have identified the best viewpoints and located them on the strip map. Ensure the trail takes full advantage of them. In some cases, trees may need to be removed. In other places, a short side-trail can lead to the best vantage point. In high-use areas, building a small platform out over a cliff will give a spectacular view without having to remove much vegetation. Get an engineer's approval for the design and construction, though!

Trail routing as recreation management

Paying attention to the technical details of selecting a route can greatly reduce future management problems. In Alberta, this boils down to dealing with the two destructive elements: running water and roving feet. Trail routing focuses on getting water off the trail and keeping it off. Users, on the other hand, should be kept on the trail where their effect can be controlled. All too often, they exchange places when water drains into the shallow depression of the trail. The muddy route then drives the users onto the natural vegetation where the destruction begins immediately.

Drainage and water management are dealt with in Sections 412 and 413. At this time, let's discuss the situation from the perspective of average users. If the trail appears to be clear, dry, and direct, very few people will leave it. Only when users see a short-cut will they move off the trail. So keep any changes in direction very gradual and without short-cuts. Regular maintenance will also ensure that the trail stays more attractive than the adjacent areas. Restore any short-cuts by placing deadfall across them and planting new shrubs if required.

When an existing right-of-way such as a canal service road or abandoned rail line becomes a trail, the routing options are more limited. The trail's message is conveyed through the theme and is supported by the style of the furnishings, signs, and brochures. These can still have a powerful impact if they reinforce each other for a defined section of trail. A few well-chosen interpretive signs will explain the significance of the objects seen along the trail. The presentation of these signs in a creative manner with consistent style and colour, will transform a previously unremarkable trail into a memorable experience.

Put it together: The concept plan

Now that you have come this far, you'll be well supplied with information . How does it all fit into the original objectives of the trail? At this stage, you may want to re-evaluate some of your first ideas to keep the trail within budget or to include features you hadn't thought of.

All the research you've done will enable you to make sound decisions on where your trail should and shouldn't go. You'll know which areas to avoid and which areas to include.

Start drawing up a working design or a concept plan that includes route options. More than one concept plan may be developed. It should indicate approximately where the trail will be routed, noting the area's best features, and indicating points of interpretive or visual interest as well as any structures that will be required. It is not a final design and probably will be altered several times before you make a final decision. The concept plan will help the designer and your group evaluate and select the final route.

At this point, your trail-planning group will have selected a preferred route for your trail. The route selected will require review by various government agencies, as well as Alberta TrailNet if it is to be part of the Trans Canada Trail. These groups will have valuable comments which will help fine tune the proposal. After this, you can begin addressing more details with landholders and potential funders.

216 Route evaluation checklist

Date: _____ Route Location: _____

Assessor: _____ _____

Weather Conditions: _____ Approximate Length: _____

	OPPORTUNITY	CONSTRAINT	COMMENTS
Vegetation Variety Deciduous Evergreen Ground Cover			
Topography Culverts Drains Low Spots			
Natural Features Lakes Meadows Rocks Hills			
Built Features Bridge Tunnels Power Station Elevators			
Infrastructure Roads Gas Waterline Cable TV Phone Sewer			

Route evaluation checklist: page 2

	OPPORTUNITY	CONSTRAINT	COMMENTS
Wildlife Nesting Breeding Harmful Endangered			
Domestic Animal Crossing Location Frequency Smell			
Slopes Convex Flat Concave Terraced			
Views Safe Canopy Windows Out			
Intersections Roads Rail Driveways Other trails			
Access Points Entry locations Distance apart New required			

Rating Notes

217 Corridor assessment: level of difficulty

Six key design elements have been identified that will limit the trail's use:

- overall effort: distance to significant features and total elevation change
- grade: average, maximum, and the length of severe grade
- trail width: minimum and average
- cross slope: average and maximum
- surface obstructions: stones, roots, soft or wet areas, water bars, and steps
- surface type: soil, grass, soft granular (wood chips or sand), hard granular, paved

All trail users have different interests, abilities, skills, and expertise. What they do have in common is a need for accurate and objective description of the expected trail conditions, so they can make their own decision regarding the trail's suitability. Trails should be described in terms of the above limiting factors. The trail planner should ensure that the trail is consistent throughout its length and meets the needs of the intended users. Even a single lapse in standards can prevent use or endanger the recreationist.

The more diverse the expected clientele or the allowed activities, the more difficult the trail description becomes. It seems obvious that high-use trails would benefit most from providing all this information. However, urban trails, while heavily used by a diverse population, have the advantage of a stable market. Users can easily learn which routes suit their needs.

A more urgent need is for popular resorts or parks to assess their trails and post the information at the trailhead. In these tourist-oriented places, most people do not know the area and have only a limited time to learn about it. The lack of consistent information has led to overcrowding on a few, well-marked trails. Ideally, all staffed information kiosks would have a table of the assessments of the park's trails. This would give an inexperienced attendant some detailed information for the user.

As a starting point, trail managers are encouraged to indicate the length of trails to popular destinations, with the total elevation gain and an indication of any legally prohibited activities. More information, especially the average trail width, can be added as it is acquired.

Proposed trail condition ratings

Each user has individual needs, so a broad classification system will not identify the specific problems that may be relevant to that person. Any grading system will exclude some potential users needlessly (i.e., some athletic wheelchair-users can negotiate very steep trails). The Universal Trail Assessment Program, while giving detailed and consistent information, seems complex to understand and very time-consuming to implement. By contrast, the colour ski trail classification seems to be well-accepted and useful.

For discussion purposes, Alberta TrailNet is introducing a simplified approach to rating trail conditions. The following definitions recognize the limiting factors for various types of recreational travel while seeking factors of common interest.

Trails with several destinations would have a different symbol for each location (generally, these would go from easy to hard, as the trail gets smaller). The coloured shapes could be produced in quantity on adhesive stickers and added to existing signs. The symbols could be added to maps and brochures quite easily. (See following chart)

Universal Trail Assessment

A American Firm has developed a process to accurately describe the physical nature of trails in terms that are easily understood by various users. This process uses only simple equipment, and can be carried out by a team of two to four persons. It also distributes a system of symbols and trail signage layouts to visually convey the information. Courses are available to learn how to carry out the process, and specialized tool kits can be purchased. Several Albertans have taken this course, and can be contacted for more details:

Jeff Gruttz
City of Calgary,
Parks & Recreation Department
(403) 268-5221

Doug Frost
City of Edmonton,
Community Services Department
(780) 496-2980

Trail Condition Rating

Symbol	Definition	Comments
Black diamond	single track (<1 m wide)	too narrow for wheelchair or snowmobile any surface, length, slopedistance indicated; elevation gain optional
Blue square	wide track (>1 m wide)	theoretically accessible to wheelchairs and snowmobiles may have steps, steep slopes or natural obstacles distance and elevation gain to be indicated
Green circle	double track, firm surface, & moderate grade	distance to major destinations to be indicated little, if any, vegetation on trail

Beaver Flats
2 km

Pleasant Valley
7 km < 130 m

Pristine Lake
12 km < 345 m

Notes:

Section 300

Organizing Your Project

301 Trail planning workshop

Trail development projects get started in many ways. Sometimes the recreationists want more interesting places to go. Perhaps a tragic accident has brought the community to action. Or maybe the loss of a rail line has sparked an interest in the tourism potential of a recreation trail. Whatever the reason, there seems to be support for a trail, but nothing is happening.

Someone needs to take a **leadership** role, even if it is temporary. If you have found this manual, you are probably that person! Don't worry! While this role is challenging, it will be very rewarding as well. Just get started by filling in the blanks in the attached workbook.

When a specific route, such as an abandoned rail line, or undeveloped road allowances are being considered, the adjacent landowners should be contacted before any **public meeting** is held (see Section 209).

If you find that people express support when you mention the project, then a public meeting can bring the interested people together. Often, the municipal recreation, culture, or community services department has a mandate to set up this type of organizational meeting. Trained professionals from Alberta Community Development will often facilitate meetings free of charge. Contact Alberta TrailNet's office by telephoning 1-877-9 TRAILS (toll-free) to find out if a director could attend to give the provincial perspective.

Flip charts, markers, and maps of the area will be useful. Donuts and coffee will relax the participants. Advertising should be aimed at the prominent recreationists and other perceived stakeholders in the community. A few personal telephone calls will often do more than many newspaper ads.

These planning meetings usually have a similar format. After introductions, the ground rules are set: the initial **brainstorming** session is strictly positive. No negative comments on ideas are tolerated. To start, the facilitator has people identify the problems they see with the existing situation, without pointing fingers at the perceived causes. These may be grouped into more general categories if they are numerous. The participants are divided into groups and each group is asked to suggest solutions for one problem. These are then discussed with the larger group. Hopefully, a new trail is seen to be a part of the answer to the problems.

This group, with its assembled experience, should be able to quickly identify all existing trails. With a bit more time, it should suggest several potential routes and appropriate modes of transportation. It may be appropriate to have the group prioritize the options and suggest the most practical.

In the course of a full-day workshop, the group's mission can be developed. Likely, a leader or two will have emerged, as well. Hopefully, these people can be encouraged to carry on with the support of the others. This can be a good time for the leaders to extract commitments from the supporters.

Make sure all the participants have signed the registration sheet (see attached sample). These should be typed and sent to the participants with a copy of the notes from the meeting. The further action, including the date for the next meeting, should be definitely stated before the meeting breaks up.

Public Meeting Sign-In Sheet

Please indicate with a check mark if you would like to receive a copy of the results.

Name/Organization	Mailing Address/Postal Code	Phone/Fax	✔
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			

302 Outline of introduction

Provincial organizations and the Trans Canada Trail

Welcoming Statements

First, about the trail:
Second, about the organizations required to build the trail:

- National
- Regional
- Local

National Level Organization

Functions:
Contacts:

- National
- Provincial representative to TCTF

Provincial Level Organization

Functions:
Contacts:

Regional Level Organization

Officers - list all
Meeting schedules:

- Executive
- General membership
- Committees

Working relationships:

- Between local management group and Regional level
- Between regional level and Provincial level

Formation of local management group

Decision related to status as subcommittee or, stand-alone society

- Implications of both choices

Route through Region

Overall description, by section if appropriate

Responsibility for trail, by geographic section

List of all local management groups, by section, with contact names/numbers

Guiding principles

Enclose provincial and/or regional policies re: trail, its use and management

Liability and Insurance

Describe provincial legislation related to liability —(eg. *Alberta's Occupier's Liability Act*)
Describe insurance coverage provided for volunteers of local group and the affected landowners in their area.

Sign standards

Include whatever is available

Design guideline libraries

Describe how to get design information

Pavilions

Describe policies and/or options for local pavilion, formal TCTF ones, plus local-only ones

"Your" section of Trans Canada Trail

Detailed information on local section of trail, customized for each management group

- Refer to attachments:
- Maps of local area
- Lists of affected landowners with legal descriptions of properties
- Landowner survey

Landowner relations

- Discussion of attitudes and methods

Short-term goals

- Suggest highest priority immediate goals

Long-term goals

- Suggest all known long-term goals

Attachments could include:

- Maps
- Problems & solutions sheet
- Lists of landowners in each section
- Press clippings
- Land owner survey
- Land use agreement & instructions
- Guiding principles/policies sheet
- *Occupiers Liability Act, Provincial Trails Act* or equivalent

Notes:

303 Drawing people together

Forming a trail group

Your project will need a sponsoring group to get things rolling. The planning and building of a trail are big tasks and you will need help to get them done. To start with, this can be an informal committee. At some time, however, it should be incorporated to facilitate applying for grants and signing legal documents such as leases. Of course, incorporation also gives legal protection against lawsuits to the directors of the group if something goes wrong.

In addition, other benefits will become apparent:

- motivation: other colleagues will make the project more fun
- credibility: more members will demonstrate more support
- resources: each person brings knowledge, contacts, and skills to the project

If the idea of setting up a society seems too forbidding, don't worry. Alberta Government Services has a package designed for groups just like yours! [Use the government RITE line to call the Corporate Registry office, (780) 427-2311. Forms are also accessible through the website.] It will take you through the process, step by step. It even includes a sample constitution. Pay particular attention to the objective, because these define what your group intends to achieve. If the key members are not in agreement, you should describe the project in more detail until everyone has the same picture. All other aspects of the incorporation are quite simple and you should not spend a lot of time on them. Keep it simple!

Another step in becoming organized is the basic bank account. Without this, how can you expect to receive any money? A mailing list of your supporters and contacts should grow weekly. A sub-set of this list should be the media contacts in your region, with the key persons listed. Keep your entire mailing list informed regularly. Do you have a permanent mailing address, not to mention fax and e-mail? You will be more credible if you do.

At a certain point, the total organization makes the project almost inevitable! Engineers are the masters of this approach, with concepts leading to feasibility studies, which in turn move on to preliminary plans. By the time the environmental impact study is underway, the public is so familiar with the project that it is considered a "done deal".

So, if planning is simply a case of deciding what you want to do, and then doing it, why do people have such a problem with it? Partly, it has to do with the nature of trails. They connect communities and neighbourhoods, but they also bring together different kinds of recreationists, urban and rural residents, and all levels of government. In short, most segments of your community will be involved. Each group has its own objectives and brings its own baggage. Sorting this out will take time. In fact, the planning traditionally takes about ten times as long as the construction period. Don't rush it! Everybody needs to be heard, and their concerns and wishes must become part of the project.

So how will all this work help the trail get built? First, all the partners will have a common view of both the eventual goal and the present status. Second, the structure is in place to use resources efficiently and to quickly absorb new partners or resources.

Building your coalition

Your area may have only a few dedicated people to join the trail committee. Don't worry! Many others support your efforts because trails are among the most popular recreation facilities that can be built. Part of your committee's challenge is to demonstrate to decision-makers that this support actually exists.

Where should you look for trail supporters?

- Recreation organizations: snowmobile, equestrian, ATV, cycling, walking, or ski clubs; youth or seniors groups; naturalist groups
- Social organizations: service clubs, agricultural societies, 4-H clubs, schools, museums and historical societies
- Businesses that stand to profit from trails: sporting goods stores, road construction or resource companies, Chambers of Commerce, tourism agencies, bed & breakfasts
- Individual trail users or potential users

A member of your group will need to speak to each group, describing the project and how it will fit into the provincial Wild Rose Trail System, as well as the benefits it will bring to the community. After a bit of practice, this presentation will roll off your tongue. The first few times, though, you will want some detailed notes and perhaps a friend for support. The text for a sample presentation used by Alberta TrailNet is available by calling the Edmonton office at 1-877-987-2457.

The key messages of the presentation at this step are:

- trails bring benefits to your community
- the trail committee is open and responsive to your ideas and concerns
- your group is competent to manage the project
- the leaders are responsible and trustworthy

Keep the content general; the details will come later as the project grows. This may be a good time to remind the audience of important endorsements the project has received. The final point in your presentation should be a request for the group to give a resolution of support, similar to that enclosed in this publication. Many organizations will want to send a letter on their own letterhead. This is even better. The main point is to show others that the particular organization supports your trail.

Sometimes, you will contact a group so excited about the trail that they want to become a sponsor. This is not the time for your group to be possessive. Having an existing organization take the lead can bring many benefits. It will likely have approval from Revenue Canada to issue tax receipts for donations. The group will certainly have a bank account and treasurer, allowing you to focus your energy on the trail instead of organizing. If this seems to be a possibility, ensure that all the duties and benefits of the arrangement are written down, and agreed to by all parties. Everyone will be clear as to what they should be doing, and what recognition will be received.

With such a positive project to promote, you and your group will soon become opinion leaders within the community. Remember that others have dreams and you can help them. Build partnerships where you share endorsements, volunteers, and ideas. Adapt the trail design or route to accommodate different users. For example, the section near the Senior Citizens Lodge should be wheelchair accessible. Taking the trail past the high school will bring support and use from the physical education classes.

As you promote your trail project, keep in mind that trails connect many parts of your community. Many people and organizations will find good reasons to join this venture.

304 Community involvement

Your challenge is to show how the trail will benefit every person in the community. Surveys have shown that the large majority of Albertans participate in trail-related activities like walking or cycling. Those who don't will benefit indirectly by having a healthier community. Now, how can you show this?

Displays

In some ways, the general public is a harder group to contact than trail enthusiasts because it does not gather at regular meetings. However, large numbers of people pass through certain locations, and a simple display will explain what the project involves. Your local museum or photo finishing store can give advice on how to produce a simple and attractive display. Installing this display in a new location every two or three weeks can be a well-defined volunteer project. Key locations include: Town Hall, schools, recreation centres, ice rink lobby, county hall, library, museum, shopping malls. See how the list grows. After the exhibit spends two weeks in each of these locations, the entire community will know about it.

An expanded exhibit can be taken to large gatherings such as fairs, parades, and festivals. By adding actual recreational equipment such as a bicycle and snowmobile to your display, it becomes even more impressive. Giving free rides on a dog sled or horse-drawn wagon will bring crowds to your area, too.

Using existing events

Many communities already have walkathons, fun runs, and loppets that can promote the trail project. Existing events may be associated with local festivals or be part of a broader event, such as National Trails Day on June 5. Involve the organizers so they are aware of the new trail. Often, they will prefer the new venue for their event. For example, a safer route for the Terry Fox Run was a key factor in one village's decision to build a trail. Take the local naturalist group for a discovery walk along the proposed route and make notes on what they find!

Increasing awareness of the project is the first step in building support. Having these people demonstrate their support forms an essential second step. This could take the form of a letter to an agency or elected representative. Petitions are effective in smaller communities where the municipal officials recognize many of the names.

A key method of demonstrating support involves donating to the project. The value of the donation is almost secondary; the act of donating sends a strong message to the decision-makers that the community is supportive. Of course, the money can generally be used to get matching grants. This will double or even triple the initial value. Everyone likes to be on a bandwagon, so, when the project is clearly popular, many others will flock to join in.

Notes:

Alberta TRAILNET

11759 Groat Road
Edmonton, AB T5M 3K6
Tel: 780-422-7150
Fax: 780-422-2663

Alberta TrailNet Support Resolution for Recreational Trail development

A Resolution endorsing the concept of the Trans Canada Trail and other linked recreational corridors in Alberta.

Whereas walking, hiking, bicycling, horseback riding, cross-country skiing, and snowmobiling are popular, healthy, and enjoyable recreational activities which require linear facilities, and

Whereas these activities can often make use of the same corridor and other related facilities, and

Whereas these activities often generate economic benefits to the community, and

Whereas Alberta TrailNet, a charitable, not-for-profit society made up of individuals, trail user groups, municipalities, and other agencies, is dedicated to the development of a network of linked recreational corridors and greenways throughout Alberta, and

Whereas the Trans Canada Trail Foundation is an independent, registered, charitable organization committed to creating a continuous multi-use recreational trail from the Atlantic to the Pacific Ocean, and North to the Arctic Ocean, and

Whereas Alberta TrailNet is the agency responsible for planning and implementing the Trans Canada Trail in Alberta, and

Whereas this resolution does not imply

Therefore be it resolved that:
endorses the concept of recreational trail development, and supports
in principle recreational trails through our community which could become a part of the Trans Canada Trail.

Signed: Organization:

Address:

Date:

SAMPLE

TRANS CANADA TRAIL
SENTIER TRANSCANADIEN
TM/MD

305 Working with the business community

Your committee wants three things from business people.

These can be summarized as:

- moral support
- donations in kind
- cash donations

In exchange, be ready to prominently acknowledge these partnerships. Remember that these companies are counting on your positive image!

Business people are opinion leaders in every community. Find out which people are especially influential and talk to them informally. Ask them which of their friends would be receptive, and perhaps ask them to introduce you.

Look for ways that the company can support your project without spending much money. This will get them involved and may lead to bigger things as you get to know each other. Some examples that spring to mind include putting a display in the front window and advertising the trail as part of the business's regular advertising. This relationship might lead to a forum for your ideas, such as an invitation to a Chamber of Commerce meeting, or space in a company newsletter.

Many companies do not have a budget for donations, but are willing to provide services or materials free or at reduced cost. This often occurs during slow seasons or between big jobs. Some industries have regularly scheduled slow periods when the workers or equipment will be available. Ask around and be ready to adapt your schedule.

Some businesses will want to be associated with your project, but do not have any relevant skills or materials to donate. In this case, there is nothing wrong with sending cash! Retail stores and professional offices could well be in this situation. Have a summary of the budget with you and know where the money and materials are coming from.

Acknowledgement of partnerships

Most businesses will request acknowledgement for their contributions beyond a simple letter of thanks. Do what you can to accommodate them. Professional fundraisers set up a scale, indicating the recognition to be received for each level of donation. Test this with a few friendly managers, then stick to it. Any exceptions can cause ill feeling within the community.

The easiest way to help the donors is to give them a tax receipt. To do this, though, your group must become a registered charity, a process which can take several years. Municipalities, service clubs, and Alberta TrailNet may be able to write receipts on your behalf. This is covered in more detail in a sample agreement included on the following page. Donations given through the Trans Canada Trail Foundation are acknowledged in the Trail Pavilions. A similar arrangement can be made for local trails. Often, the project will place an advertisement thanking all sponsors at one time. A variation on this is a special advertisement which the newspaper can put together. Contractors who worked on the project take out ads in which they congratulate the organization on setting up such a fine trail. This can be especially effective if there are a number of contractors involved.

305.1 Agent's agreement

SAMPLE

AGREEMENT BETWEEN ALBERTA TRAILNET SOCIETY

AND _____

DATE:

By way of this agreement, Alberta TrailNet appoints_____ as its agent to help promote a local trail network. This project falls under the mandate of Alberta TrailNet which is to support local groups in their trail-building activities and is subject to approval of the TrailNet Board of Directors and the Trail Development Committee.

Under this agreement,_____ may conduct fundraising activities as an agent of Alberta TrailNet to build a trail system. TrailNet support of this project will be indicated in a conspicuous manner on promotional and donor request documents. Donations will be made payable to Alberta TrailNet Society. Alberta TrailNet agrees to maintain direction, control, and supervision over the application of its funds to ensure that funds remain separate so Alberta TrailNet's role will be identifiable.

_____ will provide budget information for the project consistent with TrailNet's Three Year Plan. TrailNet will open a bank account and establish signing authorities specifically for this project. _____will arrange bookkeeping, submit financial statements, and reconcile bank statements on a monthly basis including a detailed breakdown of revenues (funds raised) and expenditures. TrailNet will keep adequate accounting records to show the relationship between the two organizations. These accounting statements will adhere to policies and procedures set out by the TrailNet Board of Directors and Financial Planning Committee and the requirements of Revenue Canada, Charities Division.

This agreement may be changed by written agreement of both parties. The agreement may be terminated by either party serving 30 days written notice and with due consideration given to handling of the funds deposited in TrailNet's bank account within existing legislation and regulations.

The agreement will be effective _____ and will remain in effect for a period of one year at which time performance will be reviewed and a new term established. Signing authorities for this agreement will be two representatives of each organization who have authority from the governing body of the respective organization.

Acceptance of the terms and conditions of the agreement is acknowledged by the signatures hereunder.

Signature Name, Address Date

306 Publicity

A Hollywood manager once said that no publicity is bad. Perhaps, but for trail proponents, this is not quite the case. Bad publicity occurs before key stakeholders are informed of the project and have had time to understand and support it. Be open and honest in all communications.

To avoid untimely publicity, keep initial project discussions with other proponents or stakeholders until the concept is refined and acceptable to interested parties. These include major resource industries, any landowners whose property will be needed, senior staff or politicians with the rural municipality, and the local MLA. While absolute secrecy is not needed, it is not recommended that your half-developed proposal grace the front page of the local paper.

You need to build trust and garner support with stakeholders. This should be developed as part of an overall communication strategy. The timely distribution of information in materials is important. Identify key stakeholders, media, government representatives, and other potential audiences.

Any communication effort requires your group to identify the specific persons or groups that should receive your messages. Make sure the method of communicating is suitable for the intended receiver. For example, if the target is the county council, don't put an ad in the weekly newspaper. A personal letter to the individual councilors will be more effective. Some specific **target audiences**, in the approximate order in which they should be contacted, include:

Key decision-makers

(POLITICIANS, GOVERNMENT STAFF, PRESIDENTS OF SERVICE CLUBS)

- Use personal communication: letter, telephone, personal visit, lunch

Landowners

(ADJACENT FARMERS, ACREAGE OWNERS, MUNICIPALITIES)

- Use personal contact with follow up letter

Potential donors

(LOCAL BUSINESS LEADERS, ADMINISTRATORS OF FOUNDATIONS)

- Targeted form letter, followed with a personal contact

Potential volunteers

(RECREATION GROUPS, RECREATION PROFESSIONALS, SERVICE CLUBS)

- Notice in club newsletters, personal presentation at their meetings, poster in outdoor stores

Potential trail users (ACTIVE GENERAL PUBLIC)

- Detailed feature stories in the newspaper or magazines; be a guest on a phone-in radio show.
- Temporary displays in library, high schools, recreation centres

Project supporters (ALL THE CITIZENS OF THE AREA)

- "Soft" news stories on radio and television; photos in newspaper.
- Posters, leaflets, mall display

It is important to periodically review your strategy. Ask yourself why you are contacting these people? You must want them to do something to help move the trail project ahead. Have you clearly stated what you want them to do? Review all public statements from your group with this immediate objective in mind. Every public awareness piece should have this "call to action."

Now is the time to initiate your media relations. Present the elements that have general support, while you continue developing the other aspects. Positive media coverage encourages the support that allows your organization to grow. Your communication strategy also involves your whole image, not just the stories carried by the news media. Let this aspect of your project grow gradually; a sudden increase in your public awareness will draw in more resources than the other volunteers can accommodate.

Throughout this entire program, your group must display a consistent and professional image. This starts with getting letterhead, and an answering machine on your group's own phone number. (Check for messages daily and answer them!) All letters should be typed; only in very exceptional cases do handwritten letters have greater impact. Using a computer will allow easier editing and the ability to personalize form letters. Printed return address labels or a rubber stamp can give your envelopes a neat appearance at little cost. At the risk of being repetitive, record keeping is important! Make a list of what groups are contacted and the result. This avoids repeat visits, which can be embarrassing, and gives any person doing follow-up an idea of what has happened already. Start a set of files, even if it is just a drawer in someone's office.

Working with the media

Reporters respond to the same personable approach you use with your volunteers. Find out and use their name, give

them a clear idea of what is happening and what you want them to do, and give them enough time to fit it into their schedule. The key when approaching them is to relate to their mandate for NEWS. Planning a trail is not news because it happens over a long time. Holding a meeting where a decision was made is news. Word every request for coverage in terms of a specific event or happening. The news that you generate keeps them in business, so they are willing to help out.

Writing a news release

Each news release has a few key parts. (This term is more acceptable to the electronic media than "press release.") Remember that the purpose is to convey the essence of the announcement as briefly as possible. This is your chance to distribute key information quickly and easily to all news media in a fair manner. Each release should have a lead with the basic information, and a hook to catch the reader's attention.

How to write a dynamic news release:

- Use the organization's letterhead paper, with name, address, telephone, and FAX numbers
- Start with a descriptive title and the date of release
- Lead off with your name (Acme Trail Club announces that on ...)
- Have a brief (five line) description of the event, including who is doing it, where it is happening, when it happens, and what people should do
- Follow with a paragraph explaining why this is important
- Include a direct quotation from the most newsworthy person involved with the event. (Mayor Monica Dickson stated, "This trail will be even better than sliced bread; it won't go stale.") If you know the person well, you can write the quotation, then check that they will "say" this for you. This ensures that the quote fits into the overall release
- Conclude with a background paragraph describing the mission of the organization. This can, and perhaps should, be the same for all releases
- A contact person for further information or clarification should be given, with telephone and fax number, and e-mail if possible. This may be different from the person listed in the body of the release for the general public to contact. Make sure the person will be available and knows about the event!

To denote the end of your news release, put "30" centered below the body of the release. The release should be one page in length, or two pages in exceptional cases. Attach any supporting letters, speeches, or advertising, but make sure they are relevant to the news. Everything important should be in the body of the release. Many programmers find it very effective to follow up with a telephone call a couple of days before the event, to jog the reporter's memory or help set up a photo opportunity.

Notes:

307 Working with elected representatives

When developing a public project such as trails, garnering support of elected representatives will be critical. The thoughtful presentation of your ideas could lead to their support in the long run.

There are three levels of elected officials. They include Members of Parliament at the federal level, Members of the Legislative Assembly at the provincial level, and City Councillors or Reeves at the municipal level. It is helpful to keep elected officials updated and even offer personal tours. When communicating with them, keep the trail issue non-partisan and focus on the benefits of trails.

Members of Parliament are responsible for very large constituencies. The majority of trail issues do not fall under federal jurisdictions. For these reasons, MPs may be more patrons than active supporters. However, you may wish to keep them informed and invite them to any events that you have.

Provincial representatives are important to the success of the trail. Trail issues including recreation, health, and land use are provincial jurisdiction. It may be beneficial to promote the benefits of trails, the importance of direct investment in trails and mentioning the relatively low cost. (For example, at a cost of $3,000 to $7,000 per kilometre, over 1000 km of trails can be built for the cost of a single highway overpass.)

Municipal representatives are close to the action and may be the first to feel the variety of reactions within the community and may act cautiously. A slow and methodical approach is best. Municipalities are responsible for roads and parks, and often have equipment and expertise for the project that can be valuable non-monetary contributions.

Write a letter

How many times have you been asked to write a letter for some good cause? Maybe there is something to it. Letters can have a profound effect, especially where there is no policy. For full effect, state your personal opinion since this can not be disputed. Ask what is being done to address the particular issue. Identify that you are sending a copy to your government representatives and any opposition members responsible for that issue.

Although opinion is the prime ingredient, background information is also useful. Talk to employees whose responsibilities are related to your situation. They can explain why the situation is the way it is.

If necessary, contact the organizations or offices of elected officials or for the correct spelling and address of the person to whom you are writing. Talk to office staff and gauge the interest of the executive assistant.

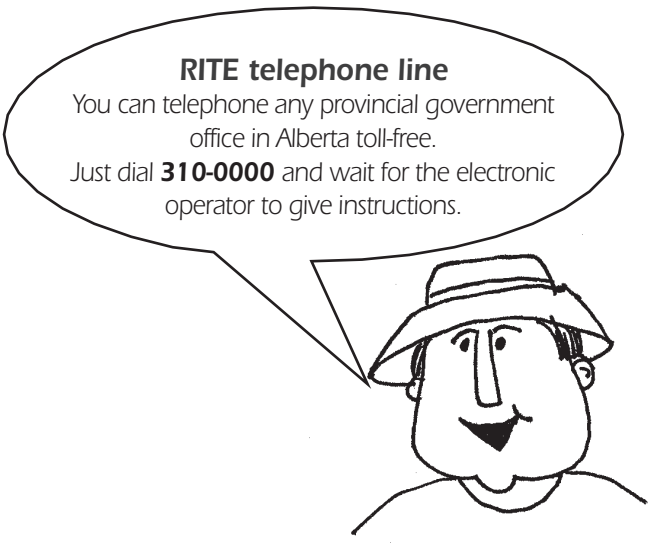
Briefing session

Choose a quiet time in the political calendar to give your elected representative a briefing on the trail. This could be tied in with a milestone or a news item, but does not have to be. It is a time to get to know each other and start to develop a relationship. A simple outline of the project scope, benefits, and the process for development will be sufficient. You can conclude by asking their advice on how best to proceed and what further information they want.

Don't be intimidated about asking for an appointment. Elected officials want to understand and stay in touch with the perspectives of their constituents.

Continuing contact

Having introduced yourself, you have to maintain the relationship. A follow-up letter of thanks, with a bit of additional information you may have promised is a good idea. Send them copies of letters of endorsement from other local groups, and any news releases you produce.



Notes:

308 Financial matters

Project budget

A trail project will require outlays of engineering, design, land, permitting, material, labour, and equipment. Some or part of these items could be donated or accomplished by volunteers while the balance will require funding to cover the cost. A budget should be drafted to account for all of the outlays and their corresponding source. The budget should be realistic and all items identified. It will be the key element of the plan against which the project scope, cost, and schedule can be measured and controlled. The budget will also be necessary to support applications for monetary and in-kind donations.

Project accounting

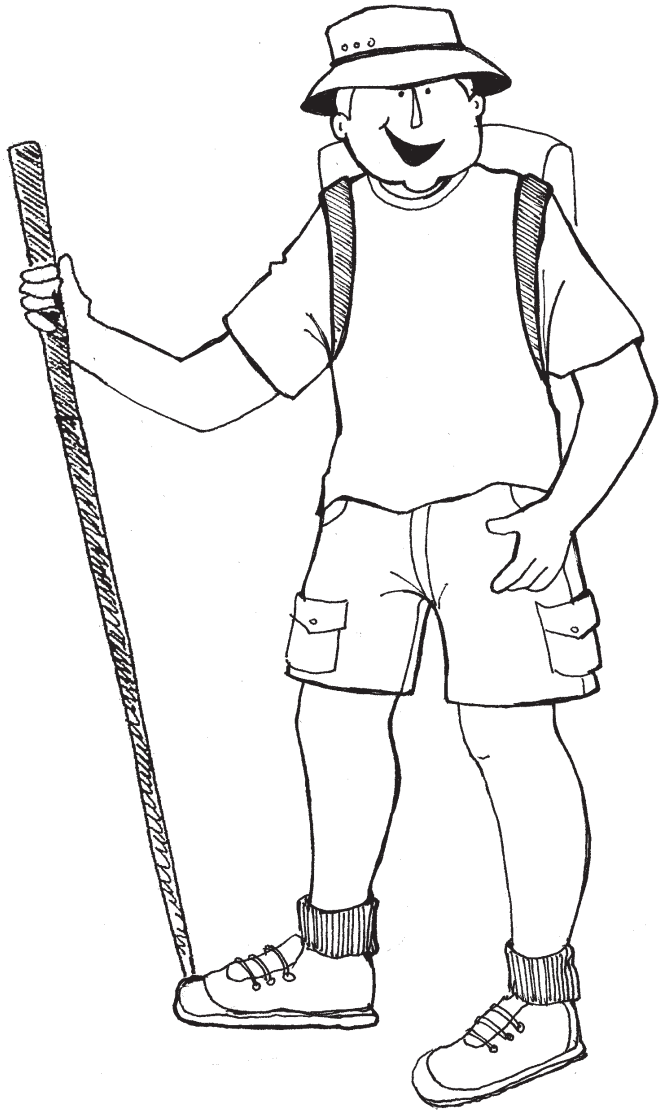
The trail sponsor should set up a bank account for the project to handle revenues and expenditures. The sponsor should appoint a treasurer or financial person to manage the bank account. The treasurer should account for all revenues and expenditures and keep a running balance that can be reconciled with the bank statement periodically. The treasurer should be part of the approval process for work orders for all project outlays to ensure adequate funds are available. When invoices are submitted for work on the trail, it is good practice to first have these approved by the person authorizing the work, then pay with a cheque that requires two signatures. The treasurer should submit an accounting statement, comparing actual transactions with the budget, to the trail sponsor committee on a regular basis. This report will allow the directors to understand the financial health of the project and will allow informed participation in any decisions to control and prioritize spending.

Arranging funding

This section deals with the role that Alberta TrailNet can take in acknowledging local donations and administering funds requested from the Trans Canada Trail Foundation. Fundraising sources and techniques are discussed in Section 309.

Obtaining donations for trail projects may be facilitated if the support provided, whether the support is monetary or in-kind services, is acknowledged with a receipt for the purposes of obtaining an income tax credit. If the trail sponsor is a registered charity, it should familiarize itself with the proper Revenue Canada procedures for handling income tax receipts. If it is not a registered charity, an arrangement may be made with Alberta TrailNet Society whereby it administers the activities of the sponsor as an appointed agent or representative. Such an arrangement would be established under a formal agreement. A typical agreement is included in Section 305.1.

If the trail project is to be dedicated as part of the Trans Canada Trail, partial funding may be provided upon application to, and approval by, Alberta TrailNet. These funds originate from Albertans who support the TCT through its metre sales promotion or matching provincial lottery dollars. The trail sponsor would submit its proposal to Alberta TrailNet as outlined in Section 103. In order to ensure a fair distribution of available funds to all TCT projects throughout Alberta, a guideline has been developed that would allocate these based on construction complexity. This guideline is outlined in Section 308.1.



308.1 Trans Canada Trail funding guideline

Objectives of the guideline

- To provide an equitable distribution of TCTF funding to all Trans Canada Trail land trail projects in Alberta.
- To establish a maximum level of funding appropriate to construction complexity and within the limits of expected contributions to the TCTF

Estimated funds available

The amount of available funding is estimated by extrapolating the current contributions to the end of the year 2000. A trend factor would be applied to future estimates to reflect any changes observed in current contributions over those of prior years. Funds available will be adjusted quarterly, based on TCTF updates on donations and provincial lottery dollars. The total will be calculated by subtracting TCTF administrative costs, to-date project expenditures, and trail registration advances from contributions.

Trail categories

Four categories of trail are used to reflect construction complexity and cost. These are existing but unregistered trails, and three types of new trails reflecting easy, medium, and difficult construction requirements. The amounts being recommended as of April 2000 are included in Section 106.

Process

A funding factor would be calculated by dividing the projected available funds by total length of trail, each segment of which would be weighted according to its construction complexity.

When a trail proposal is presented for approval to the Trail Development Committee, it would be evaluated and categorized. Maximum allowable funding would be calculated by multiplying the length of trail by its category weighting.

Guideline merits

- Each project will receive a share of the total revenue. The "early bird getting the worm" scenario is reduced, and later applications will be assured of receiving some funding.
- The amount received will be proportional to the project's complexity.
- The funding factor may be easily adjusted in the event available fund estimates or category weightings change or another weighting factor is introduced.
- The process is self-correcting, gradually leading to a closing of the account as the trail is completed

Submitted by Trail Development Committee and Resolved by the Alberta TrailNet Board of Directors September 12, 1998

309 Fundraising

The trail will require resources for both **construction and operation**. The word "resources" is used intentionally because donations of materials, equipment, time, and labour can all have a significant impact on your budget. In fact, many projects proceed with just donations "in-kind."

Some of this must be found before construction begins, although phasing will allow the project to begin before all the resources are in place. Construction money will be the easiest to find because everyone likes to attend openings and have their photo taken with the dignitaries. The ongoing expenses of running a trail are less glamourous, and will be harder to acquire. Go to dependable organizations for this, such as service clubs and municipalities. Even large corporations will change policies from time to time, and your trail may get dropped.

When looking for support, you have several resources of your own which will make the job easier.

- provincial and national commitments which give your project some context and credibility
- letters of endorsement from local groups and individuals
- well thought out plan outlining the project (whatever stage it is at)
- detailed list of materials and services which you require

Knowing exactly what you need and how it will be used is the first requirement, but there is more. Any potential donor needs to be assured that your project will make them look good. Demonstrate credibility any way you can. This is through professional brochures, endorsements from prominent citizens, and showing how other important donors have already joined the project.

If your project will be part of the Trans Canada Trail, this is easier. With national sponsors such as Chrysler Canada, Canada Trust, TSN, and *Macleans,* it has become a recognized organization. Show how your trail will connect to the TCT.

Approaching a potential supporter

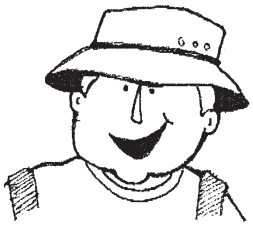
When approaching a company, try to show how the trail fits into their corporate goals or image. This will be easy with recreation or construction companies. Other businesses may prove more difficult, so be ready with your ideas for recognizing their contributions. Warm, fuzzy feelings don't go far these days; companies want to see newspaper articles, television stories, and prominent, permanent signs. At the same time, keep the size of the donation in perspective. You need the money for construction, not just recognition.

If you focus on local companies, you will find many important contacts within your committee. Ask committee members to approach friends of friends, and you will be well on your way.

Establish relationships with the various levels of government departments whose mandates touch on your interests. Your project can help to move forward some of their interests such as promoting healthy and active living, to increasing access to recreational trails.

Agricultural societies provide recreation in rural areas. This usually means fairs and curling rinks, but could be extended to local trails. The tourism industry, in particular the restaurant and hotel segment, benefits from facilities managed by not-for-profit societies. Trails are included in the "attractions" which tourists visit. To date, these companies have not contributed to the costs of supplying these attractions. Talk to them, and perhaps the local tourist association or Chamber of Commerce will sponsor the trail.

Often, your project can be tied in with existing agency projects, and both groups can gain. Highway renovation contracts can be extended to include a nearby pathway, and the highway will become safer, too. Alberta TrailNet believes that new highway bridges should provide for pedestrian and bicycle traffic both next to the roadway and under both ends of the bridge. Often the municipal planners can alert you to upcoming projects, so your plans can be ready.



Word of the day

In-kind Donatons

Providing materials and/or services instead of money.

eg. use of equipment;
equipment operators time

General fundraising has some special values beyond the actual dollar value:

- enables people to personally "buy into" the project
- can be leveraged by matching it with other grants
- gives increased independence from a major sponsor's pressure
- demonstrates the broad public support

Funding organizations

The Business Information Guide is a full listing of all organizations that provide funding and grants. The information is presented in electronic format, and may be available through some municipal community services departments or at major libraries.

Each donor has a specific mandate. Read their brochures and emphasize the aspects of your project that match them. Follow the application form directions! Each organization is used to a particular format. However, all of them share some characteristics. They like to see that other groups are involved, so show which organizations are being asked to contribute. (List them as "applied for" in the proposal, then up-date to "committed" when they approve the request.) They prefer projects rather than on going expenses, but they are often receptive to contributing to each of several well-defined phases. They have grown accustomed to receiving poor recognition and final reports. Give them a pleasant surprise and they may well remember your project when Phase II comes along.

Funding organization suggestions:

- Action 21
- Local Lottery Boards
- Local community foundations
- Alberta Sport, Recreation, Parks and Wildlife Foundation
- Wild Rose Foundation
- Trans Canada Trail Foundation
- Canada Trust Friends of the Environment
- Shell Environmental Fund
- Eco Trust
- Federal and provincial employment programs

Notes:

Section 400

Trail Design

401 Types of trails

Every trail is unique. Yes, but that definition may not help you identify the local opportunities, or point you toward similar projects for examples or advice. This section contains a wide variety of descriptors to give you an idea of what others have created. Let these be a stimulus for your own imagination.

Points in common:

- linear
- generally intended for recreational transportation, although they can be used for commuting
- physically separate from car and truck traffic
- created, built, or designated by some organization (not accidental)
- available for use by the general public

Types of transport:

- pedestrian
- bicycle
- equestrian
- nordic ski
- snowshoe
- canoe
- snowmobile
- all-terrain vehicle
- wheel chair
- in-line skating
- dog sled

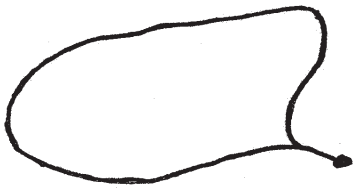
Purpose:

- recreation
- exercise
- utilitarian transportation
- connecting recreation and residential areas
- commuting
- interpretation

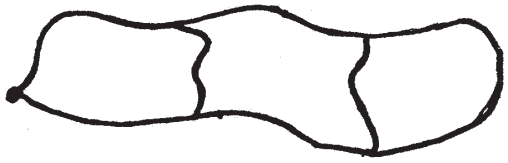
Shape:

- linear (may have branches)

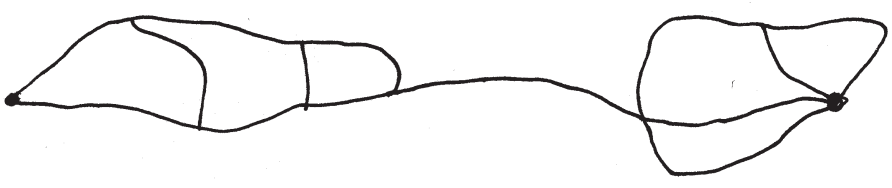
- loop



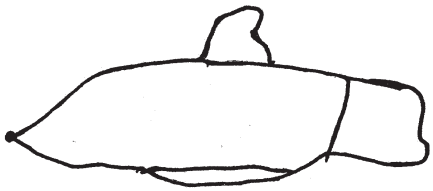
- stacked loops



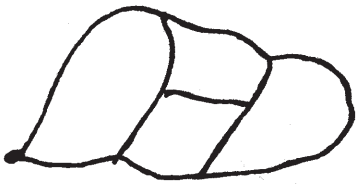
- nodes with connectors



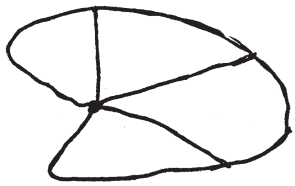
- satellite loop



- maze



- spoked loop



Source: City of Edmonton

Types of bikeways
(as defined by the City of Edmonton)

Class I	Path with its own right-of-way, specifically designed for cyclists and pedestrians.
Class II	Physically delineated (by paint or physical barrier) portion of an existing roadway, designed for the exclusive or preferential use of bicycles.
Class III	Signed cycling routes utilizing existing roadways, where cyclists share the roadway with other types of traffic.

Types of materials

- asphalt
- concrete
- shale
- crusher fines
- earth
- earth with stabilizing chemical
- wood chips
- snow
- corduroy
- boardwalk or planks
- asphalt millings
- water
- gravel
- parallel soft and hard surface trails

Level of Difficulty

- Sidewalk
- Urban pathway
- Rural trail (along existing road or former rail line)
- Natural park trail
- Backcountry trail
- Wilderness route

Other possibilities

(no known local examples)

- Skating trails on frozen waterways, popular on the Rideau Canal in Ottawa, and in Holland
- Temporary trails, similar to car rallies or orienteering courses

Notes:

Source: City of Edmonton

402 Shared-use trail

Most trails began as "shared-use," and only with higher use have been designated as "single-use." This, often arbitrary, decision has left some user groups feeling alienated, making compliance hard to achieve. The trail community has become fragmented just when a unified voice is required to protect recreation areas. Formal surveys of existing use will enable the planner to provide more suitable facilities.

Several different types of transportation will be used on any given trail, whether it is intended or not. The informal nature and, often, remote location make enforcement of any regulations difficult. The prudent trail planner will design the trail with this in mind.

It is hoped that trail sponsors will go well beyond that, because shared-use trails bring many **benefits** to the local recreation community. Most obvious is the economy achieved when several types of users share facilities. In remote areas, the combined use of all recreationists will be needed to keep the trail clear of encroaching vegetation. At the same time, the increased traffic will provide informal patrolling and improved safety for users. The casual interaction between users will gradually lead to increased understanding for the different types of recreational travel. This should be consciously promoted where possible.

With these benefits come some **disadvantages**, which become more apparent as the intensity of use increases. These can be grouped under two headings: safety and aesthetic. High-speed vehicles can be a danger, especially for pedestrians who are not expecting them. Horses can be spooked by pedestrians or dogs, putting their riders at risk. Some self-propelled users resent the noise and speed which come with powered vehicles. Even within a single discipline, there can be disagreement. For example, bird watchers and joggers do not always get along.

Education

Education can go a long way to reducing these problems. All recreationists should be reminded that they are seeking basically the same thing - relaxation in a natural environment. While their approaches may vary, they have a right to be there. Bjorkman (1996) presents the results of an in-depth study that clarifies the differing attitudes of pedestrians and cyclists toward shared-use trails, and offers solutions to some problems.

Summary of trail specifications

This table indicates the optimum dimensions for various types of trails. Where several modes of travel are encouraged, the larger of the dimensions should be used. Remember that these are not "minimum" sizes; an increased width beyond the recommended figure, for instance, may well result in a decrease in experience. More is not better.

Trail type	Tread width	Clearing width	Clearing height	Max. slope	Optimum surface
Backcountry hiking	0.5 m	1.5 m	2.4 m	15%	natural
Frontcountry hiking	0.6-0.9 m	2.1-2.7 m	2.4 m	15%	natural or granular
Urban walking	1.2-1.8 m	1.8-3.0 m	3.0 m	5%	granular
Urban cycling	2.4-3.0 m	2.8-3.8 m	2.4-3.0 m	7%	asphalt or concrete
Mountain biking	1.5 m	2.0-3.0 m	2.4-3.0 m	7%	natural
Equestrian	4.0 m	3.6-4.9 m	3.0-3.6 m	10%	natural or fine granular
Snowmobile	3-5 m	5-7 m	3.5 m	20%	grass muskeg OK
Cross-country skiing	n/a	2.2 m	2.5 m	20%	grass / natural
All-terrain vehicle	2.0 m	5-7 m	2.5 m	20%	grass

Source: Alberta TrailNet Society

Shared-use trails should always be identified as such, with the approved types of travel listed. These signs should also indicate the preferred action when meeting others on the trail. If some modes are not allowed, the locations of suitable nearby trails should be shown. A positive name should stress the multi-use aspect, i.e., pathway not bikeway.

Trail design can really reduce problems. People using faster modes of travel prefer straighter trails, with fewer hills and smoother tread. At the same time, these conditions encourage speed, with the resulting hazard for fellow recreationists. Where possible, use broad curves to keep the speed down. Try reducing the clearing width before a curve to slow the vehicles, while increasing the clearing in the curve to improve the sight lines. Traffic signs will be needed if vehicles are allowed.

Many new designs look good on paper, but don't work quite the way the planner expected. Consider installing a temporary version, perhaps using just signs and movable barriers, before committing to a full installation.

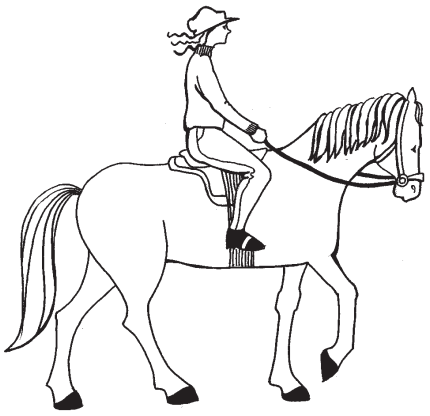
Have destinations or rest areas along the trail located within an easy distance of each other, so fast travel will not be needed. Loops should not be longer than a relaxed day's travel.

Where certain modes of travel are not allowed, ensure that portions of the trail cannot physically allow them. Frequent stairs will limit traffic to pedestrians, narrow winding trails will not allow powered recreation vehicles, and long straight trails with no services will discourage pedestrians.

Areas with low recreational use will have few problems. The users are glad to see someone else on the trail. On the other hand, areas of high use will generally have single-use trails for each user group. It is mainly the areas with intermediate levels of use that encounter problems. Trails may be widened to meet increased demand while not significantly increasing the maintenance costs. Separate trails should be considered when wide trails will not provide the desired experience, or when incompatible uses occur frequently.

Even within congested sites, the difficulties may well be concentrated near the trailhead where the slower users are more likely to be. Where this occurs, the trail manager is encouraged to develop shorter loops intended for pedestrians, cross-country skiers, and perhaps mountain bikers. These should connect to the longer trail about 5-10 km from the trailhead, giving the stronger hikers and skiers access to the full network.

Notes:



403 Pedestrian

Footpaths have led travellers around the world for thousands of years. They imply a level of social structure, which involves repeated journeys between the same places. Whether developed for trade, seasonal movements, or other purposes, every culture has used footpaths. They connect destinations and are not created by random wandering.

Pedestrians have rather modest requirements. The right-of-way can be as narrow as one or two metres, although six to ten metres is more common. The slope can be substantial, even involving stairs. The construction standard tends to be fairly basic. For example, bridges can be as simple as stepping stones or logs with flattened tops. This down-to-earth process puts the trail in close harmony with the earth and the user in touch with the environment, as perhaps no other mode of travel can.

Trail-building as stewardship

One definitive work on the hand-building of trails has been written by the Student Conservation Association. This book, titled *Lightly on the Land*, brings together the collective experience of dozens of trail builders working in all terrains found in the United States. It discusses every aspect of construction and maintenance, from how to lift a rock, to the finer points of sharpening tools. Every serious trail person will want a copy, and will find themselves browsing through it regularly.

Pervading this book is a sense that building trails is part of stewardship. More than allowing access, it controls access. It determines where the visitor will go, how far they will go, and indeed, which visitors will have any access at all. Beyond the trail itself is the surrounding landscape, and this book reminds the workers of their responsibility to go beyond the right-of-way to remedy nearby problems. This is not presented as a mandate to "tame the wilderness." Rather, it encourages a restoration of natural conditions where they have been disrupted.

The narrow tread required for foot traffic allows the route to wind between trees and other possible obstructions. For much of the distance, the only work required is to clear deadfall and smooth the tread.

Markers

Because of their relatively small "footprint," walking paths often need markers to confirm the route. Official markers can be attached to metal or fibreglass posts every kilometre or so. If metal or plastic tags are attached to trees, screws should be used rather than nails. **Never hack a blaze into a tree with an axe!** This has not been acceptable practice for many years.

The Appalachian Trail has developed a time-tested method that has been adopted by the Bruce Trail in Ontario. White bars, or blazes, are painted on tree trunks or other features at regular intervals. These are vertical rectangles, 5 cm wide and 20 cm high. A template can be used to ensure the size stays consistent. Care must be taken to have them visible when using the trail in either direction. Two blazes, one above the other, indicates a sharp change in direction. The next blaze must be visible from that point. The marks must be touched up every year or two as trees fall down and bark flakes off. Alternate routes and side trails use the same system, but with light blue paint. This method is both efficient and inexpensive. If the route moves, cover the marks with bark-coloured paint.

Tiptoe through the tulips, but stride through the canola

Many European footpaths continue right through the cultivated fields. The right-of-way, whether determined through long tradition or by agreement with the farmer, is re-established each spring. The farmer plants the entire field as usual.

Shortly after the crop has germinated, a narrow strip is cultivated, leading to the trail heads on each side of the field. All summer, hikers pass through a growing green tunnel. In the fall, the crop is harvested as usual. This non-traditional trail offers opportunities for agricultural interpretation, as well as cooperation between recreationists and farmers.

Keep this option in mind when speaking with farmers. It could be used, for example, where a public road allowance or abandoned rail right-of-way is already being farmed. This style of trail would allow the farmer to continue to use the right-of-way, while allowing recreationists access as well.

A variation of this became popular as farmers cut mazes into their fields of maize. The admission that they charge people exceeds the return from the crop itself.

Notes:

404 Cross-country ski trails

Cross-country skiing, or nordic skiing, first came to the attention of Alberta's outdoors crowd in the late sixties. The steady rhythm, albeit with rather heart-pounding exercise, and non-commercial atmosphere was welcomed by many Albertans. Over the next 30 years, the numbers have grown dramatically with a corresponding broadening of the participants' interests. Once, a simple track through the forest, slightly drifted over, was all anyone could wish for. Now, nordic ski centres provide daily track-setting as well as the broader "skating" tracks. Those skiers still sporting three-pin bindings are paternalistically known as "granolas."

Planning

Touring skiers are probably as numerous as they ever have been, but they can be overshadowed by people with racing skis. So, this brings up the first questions to ask when planning ski trails. Which style (or combination) would be most appropriate for your site, and which would the clients want to use most?

Natural areas, with few nearby residents, would find the traditional nordic trail with only a minimum of track-setting to be suitable. This is in keeping with the restricted operations budget for most Alberta parks. Resort managers, who need to attract more affluent customers, may choose more intensive track-setting and the skating mode. On the other hand, some winter resorts have lengthened their season by catering to mountain bikers in the summer.

Those trail groups which hope to attract cross-country ski races are advised to seek professional designers. The ski racing associations specify the distance, grade, and total change in elevation that can be allowed. Skating tracks will be essential and viewing areas will be recommended.

Less formal trails can easily be developed by local people. In many cases, existing trails can be adapted to ski-use simply by putting up trail markers and setting a track. In general, abandoned roads will have suitable grades and turn radius for skiers, but may lack interest. Single-track trails used by intermediate cyclists may also be suitable, but remember that bicycles have brakes. Even a modest slope can be terrifying if it is too long.

Ski centres traditionally have trail layouts based on the "stacked loop" geometry (Section 401). In some areas, the ski centres are becoming close enough to develop a "node and connector" approach. The installation of a small connector gives the stronger skiers access to a much wider range of trails with only a small investment. Thoughtful design of the trailhead will ensure that the majority of users will travel in the same direction, reducing the chance of collision. Preferably, the steeper downhills will occur where the trail is widest.

Regardless of the style of skiing, the increased number of participants means the facilities must be more professional. Parking lots, toilets, and warm-up areas should be considered essential. Access to electricity will be a real asset. Maps and brochures will be needed for all but the simplest of trail systems.

Development

The type and intensity of development will depend on the proposed clientele. "Skaters" need significantly wider tracks, while telemark skiers enjoy long, open, and steep slopes. Snowmaking is used in some resorts, and snow can even be imported and spread on isolated bare spots. Banking turns can improve safety. Vegetation management plays a critical role in areas with marginal snowfall. Refer to Section 508 for details.

Install trail markers as high as possible to improve their visibility when snow "raises" the ground, and to reduce vandalism. If markers will be left out year-round, attach them to trees with screws, not nails. Every year or two, loosen the screws a bit to allow the tree room to grow. (Aside from helping the tree, this prevents the markers from being crushed by the tree.)

Keep in mind the possibility of future expansion. A larger parking lot may be needed in a few years. The opportunity to eventually connect with other ski areas is also a good option.

Maintenance

- Pre-season grooming, with removal of fallen trees and any exposed stumps.
- Mowing the track will enable earlier skiing, and may be essential in areas with marginal snow cover.
- Track-setting: Generally, it will be best to have someone familiar with snowmobiles do the track-setting. It is easier and safer to teach a snowmobile rider what skiers want to use than it is to teach a skier how to control a machine that they don't enjoy.
- For intensive ski areas, night grooming gives better results because the snow has a chance to bond in the new position, and few skiers will be encountered by the grooming machine. Smaller centres, where the use is focused on the weekends, do not need to worry about this. Even so, they may wish to formally close each trail as it is being groomed.
- Some means of receiving feedback from users is essential to enable quick response to trail problems. A fallen tree is just a nuisance to a hiker, but can be a life-threatening problem for a skier. Ensure that all staff and volunteers can access the maintenance crew quickly. If this is not possible, they should have the authority to close the trail until the problem is resolved.

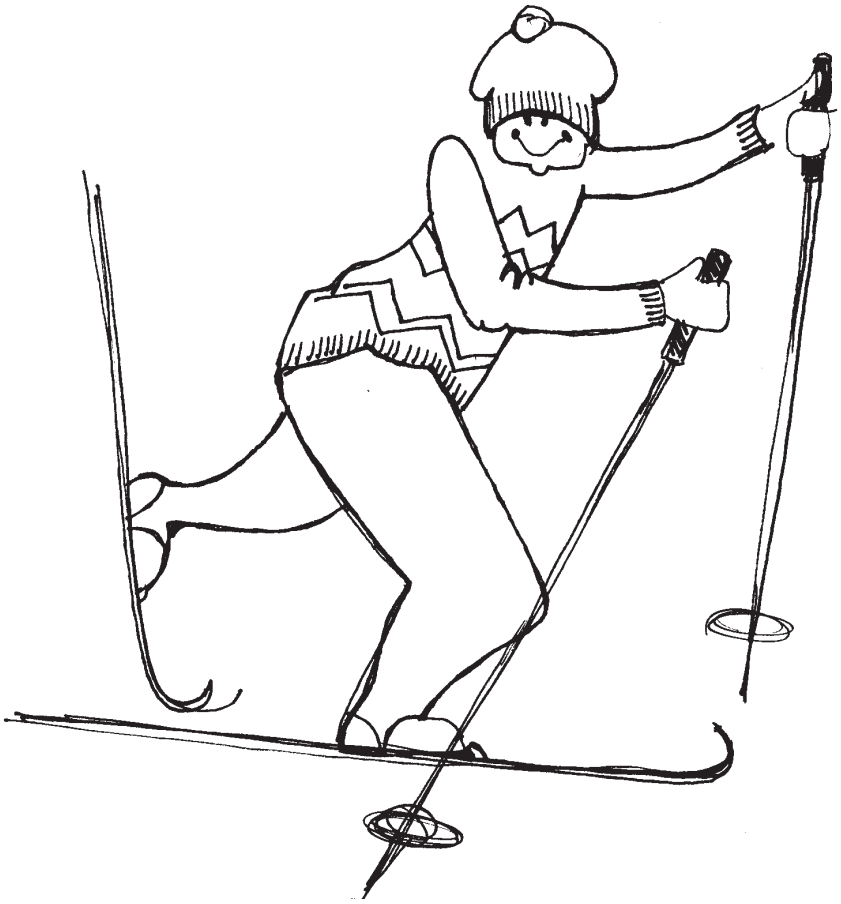
Operation

Cross-country skiing seems to be a particularly social activity. Skiers constantly compare waxes, equipment, and the latest information on the trails. Warm-up huts and apres-ski lounges are very popular. In keeping with these activities, many ski areas find social gatherings are very rewarding to arrange. Loppets are fun "races" based on participation, not competition. They can tie in with existing winter carnivals or can help fill an otherwise empty weekend. The most famous loppet in western Canada, the Birkebeiner, draws thousands of participants to the Cooking Lake-Blackfoot Recreation Area east of Edmonton.

Busier ski areas have instituted a nordic ski patrol. Volunteers certified as proficient both in skiing and first aid are present to respond to emergencies.

Biathlon

This Olympic sport involves skiing certain distances, then shooting targets with a rifle. Sites that can accommodate this sport are few in number, although the increasing profile of the sport has developed a significant demand. Communities able to provide adjacent ski trails and shooting range will have a good chance of hosting provincial competitions, as well as giving their own athletes an edge. The exact layout is very specific, so contact people operating similar facilities before constructing your own.



Notes:

405 Snowmobile trails

New snowmobiles are more reliable than the older models. Riders are taking advantage of this by going on longer excursions. Day trips of 100-200 km are common, and multi-day trips are rapidly growing in popularity. To meet this demand, northern Alberta clubs are developing an interconnected network of trails between most major communities.

The **Alberta Snowmobile Association** is the major player in this program, and should be consulted if you are considering this type of trail. This organization has published a manual dealing specifically with snowmobile trails, and you are encouraged to study this as well.

The large number of cutlines makes it possible to travel almost anywhere in northern Alberta during the winter. Why would anyone bother with organized trails?

Good reasons for snowmobilers to use trails:

- safety: other users can lend assistance; trails avoid fences and water crossings
- socializing: interaction with others is an important part of this sport
- comfort: grooming makes a better trail
- long distance experience: clearing, signs, and grooming make touring possible
- reduced impact on wildlife, compared to random travel

Perhaps more than other types of trails, the snowmobile trail depends on the level of **maintenance** available. The club can put a lot of work into clearing, stump removal, and signing, but if the trail is not groomed regularly, the riders will head off the trail into the forest. Grooming equipment must be large to deal with the distances and rough work involved in keeping the track smooth. The capital investment needed for this machine is comparable to that of the trail construction. In some ways, the grooming is actually creating the trail, just as putting down shale creates a bicycle trail.

The endless cutlines provide a base for a trail system, but these need careful consideration before being designated. These often pass over muskeg or water bodies, which are impassable in the summer. Alberta TrailNet encourages snowmobile clubs to involve other recreationists in the trail development, so as to build a year-round facility. A little planning can often allow all-terrain vehicles, horseback riders, and hikers to enjoy the route as well. Make your trails a real community project.

Key points to remember:

- the parking lot at staging area should use a pull-through parking arrangement and have room for expansion
- have winterized toilet facilities at trailhead, as well as along the route
- designate a nearby open area of about 100-160 acres for random "playing"
- have a short warm-up trail of about 5 km to test the machines. Medium length trails (15-50 km) will be welcomed by some users
- put bridges over streams to allow a longer season, as well as summer use
- choose the route to give a variety of experiences: don't use the shortest line
- design trails to encourage one-way traffic, but do not post this requirement. Riders should be alert for machines coming the other way
- keep trails wide enough for two-way traffic (>5 m), especially near the tops of hills
- groups with sites in low-snow areas must take particular care in removing stumps and stones. Summer-only roads may be especially useful in these areas
- check the trail for deadfall or other problems in late summer, well before snowfall
- avoid intersections with roads. Where these are necessary, ensure that they meet at 90 degrees, visibility is good for both riders and motorists, and the intersection is well signed

Ensure that the cleared portion of the right-of-way is easily distinguished from the adjacent tree-less but stumpy land. You may need to flag some places until the winter trail is worn in. In a few years, saplings will have grown up next to the trail, and it will be obvious.

Right now, the growth of touring as a viable activity is limited by access to food and lodging when travelling with a snowmobile. Many towns prohibit snow machine use within the urban area, so the riders cannot reach the facilities. Whitecourt has designated corridors to allow touring riders to reach the services, and business is booming!

Notes:

406 Equestrian trails

Trails intended for equestrian use must have certain facilities or they will not be used. The following features have been recommended by the Alberta Equestrian Federation (see reference list). People interested in developing equestrian trails or shared-use trails welcoming horse use, are encouraged to visit Little Elbow District of Kananaskis Country, which presents an excellent example of coordinated equestrian facilities. When your project is complete, be sure to register it with the Federation. This will ensure your trail gets well advertised.

Trail:

- Horses can travel 20-50 km per day, so allow plenty of distance. Overnight riders should be encouraged to head directly to the backcountry where they will not encounter many hikers or cyclists. The shorter day-use trails will be used more intensively, making single-use more practical.
- The surface should be regular, without holes. Pavement is dangerously slippery for horses. Short grass and dirt are ideal materials. Long grass can hide holes or irregularities. Wood chips are nice, but difficult to maintain as they blow away.
- Clearing width should be 2.5 m, with a tread of 0.5-1.0 m. Branches should be cleared to a height of 3.0 m.
- The grade should be up to 10%. Maximum sustained grade is 15% with short pitches of up to 20%.
- Snowmobile trails have similar lengths and clearing widths. Talk with your local snowmobile club to see if their trails can be adapted for summer use. Perhaps rerouting around some muskeg or a small lake will make it horse-friendly.

Trailhead:

- Parking lot large enough to turn a truck and horse trailer (or a pull-through arrangement).
- Several tie rails at least 10 metres apart
- Separate waste receptacles for horse manure, or a sign asking riders to remove it.
- If the trail has shared-use, a sign indicating how cyclists and pedestrians should behave near horses.
- Loading ramps are optional; most horses are used to doing without.
- Agricultural grounds often make excellent trailheads, especially when they already have a developed campsite.

Water:

- Should be located every 15-20 km (not necessarily right at the trailhead).
- Public troughs are not good. All riders should water their horses from their own pail.

Food:

- Horses on trail rides are usually fed at the campsite. Grazing is not needed, either along the trail or at the campsite, if riders are required to pack in all their own food. Compressed cubes of hay are widely available, and should be purchased prior to a trip.
- Many organizations managing equestrian trails through natural landscapes are requiring certified weed-free fodder be used throughout the trip, and for 36 hours before beginning.

Accommodation:

- Campsite similar to that used by hikers and cyclists.
- Shelter for horses: windbreak, trees, valley.
- Several tie rails, separated by 10 m and located 50 m downwind from people camping spaces.
- Compost bins near tie rails, with fork and rake for clean-up.

Information:

- Map of trails
- General management practices on the trail (Code of Conduct).
- Details about any nearby "Bales and Breakfast" opportunities.
- Location and phone number of nearest farrier and veterinarian.
- Recommended equipment specific to location (horse boots, fly spray, etc.).
- Address of Alberta Equestrian Federation to get more general backcountry tips.

Sharing the trail:

Trail riders almost always use their own horses and can control them. The horse's behaviour can be predicted, so they can share the trails with other users if a few simple points are kept in mind. All users must be respectful of each other. This includes explaining what behaviour is appropriate when dealing with horses. Respect also means cleaning up after your animal around the

campsite. Yes, that pile is organic, but it is offensive to many other recreationists.

Managers can help people get along by planning for shared-use. First, tell people right at the trailhead what uses are appropriate. Problems are reduced when each user is expecting the other. You might as well explain how to react to each other, too. In particular, hikers do not realize that they should speak to horses (or their riders). Perhaps a publicity campaign based on the theme, "Say Howdy!" would be both helpful and friendly.

Well-designed campsites will reduce problems. They must be located in durable locations and checked periodically. Of course, if the equestrian club joins in with trail maintenance days, they will build rapport with the other users. Offering free rides for kids once or twice during the summer will also show the benefits of travelling with a furry friend.

Horses are a traditional means of travel throughout Alberta. With consideration and planning, trails will allow riders to get along well with other users and and all Albertans will benefit by mingling.

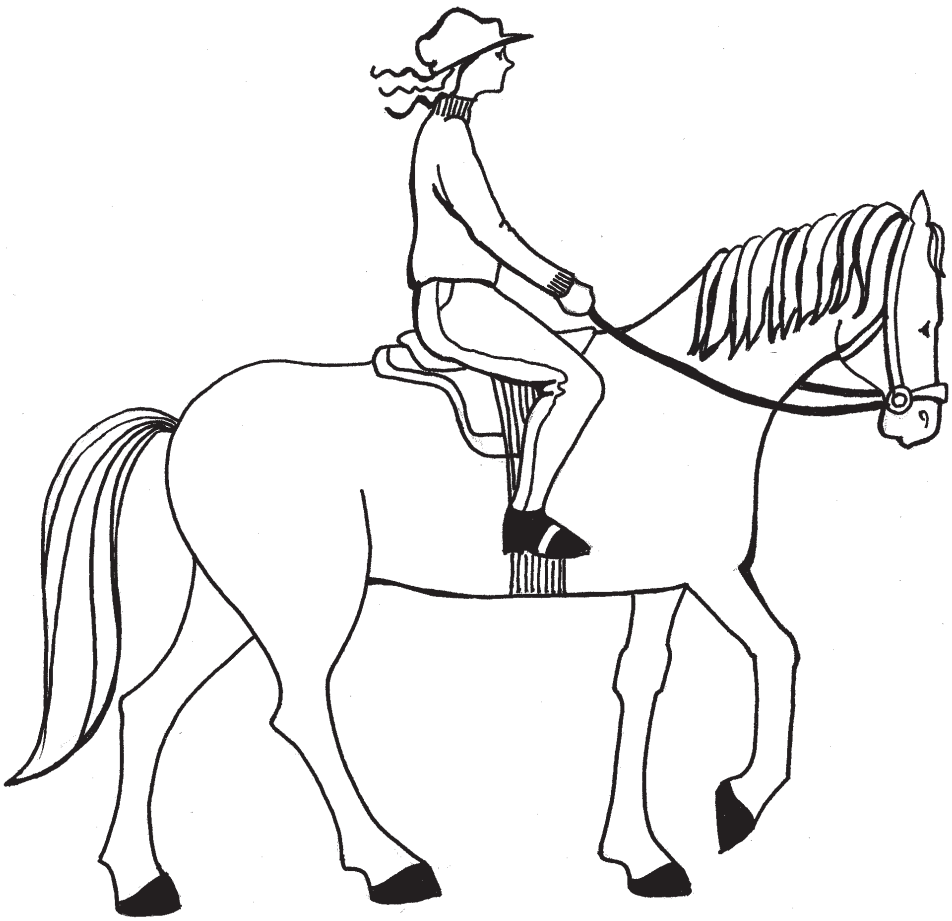
Horse-drawn wagons

Wagon driving offers the same companionship with the horses, with less strain on the driver. Consequently, wagon driving is growing in popularity. Group wagon drives occur in several parts of the province, and clubs are springing up as well. Groups setting up equestrian trails are encouraged to consider including wagons in their plans.

Most equestrian facilities will be suitable for horse-drawn wagons. They move slower, so the distance between campsites will be on the shorter side of the range. The major difference will be the width of the tread itself. Obviously, the horses need at least two metres of clear walking. Abandoned logging roads and railway lines are ideal.

Llama riding

Llamas are well-known as pack animals in the Seattle area, but have not yet become popular here. Their soft feet do not damage the trail and they can browse on any green plants (including conifers), so fodder does not have to be packed. While not traditional in Alberta, they can be a fun addition to your trail.



407 Bicycle trails

Recreational cycling covers a wide range of interests, from long-distance road riding to what appears to be rock climbing on wheels. This manual deals with the less technical types of off-road cycling. Within this field, two general types of trails are recognized: double track and single track. These terms can be used to describe the trails and will help prevent inappropriate use.

Double-track routes consist mainly of abandoned roads, and have gentle grades, good visibility, and a wide tread. Rail trails, although somewhat narrower, are generally in this category. These provide interesting opportunities for novices, with the main challenge being the distance involved. On the other hand, single-track bike routes generally resemble hiking trails and can present substantial challenges for the cyclist. Even what appears to a pedestrian to be relatively minor rutting can cause pedals to catch with awkward results.

The principles that guide the development of bicycle trails are the same as for other trails, but the particular characteristics of bicycles require special considerations. Broad and straight trails that might be boring for pedestrians are often suitable for cyclists interested in touring. This brings an appropriate use for informal roads that are no longer needed, and may significantly reduce the reclamation costs for the resource company. The bicycle's longer range gives it access to more distant locations, enabling cyclists to access developed hostel or B&B networks.

A growing number of cyclists are interested in the excitement of **single-track** riding. These riders enjoy more rugged trails, which can put them in competition with hikers. At low frequency, the two types of users co-exist well, especially if signs at the trailhead mention that both groups are welcome. At higher levels of use, the hikers will be displaced from the trail, perhaps leading to hard feelings. Managers should monitor the level of use by each type of user, and be ready to implement positive changes before problems become serious.

Recent studies on heavily used multi-use trails (Bjorkman, 1996) show that both hikers and cyclists prefer parallel, single-use trails. Of course, this assumes that the habitat can absorb the cumulative damage caused by two trails. Ideally, these would be laid out in concentric loops, with shorter, mainly pedestrian trails in the centre, then beginner cycle trails, which would also have relatively gentle grades to reduce skidding. On the outside would be the longer, more advanced cycle routes. All heavily used routes will experience reduced congestion if travel in a single direction is encouraged (not required).

Bjorkman (1996) studied trail **creation and degradation** processes on routes with over 1,000 users per day. With this extreme traffic, he was able to document both the cause of erosion and some possible solutions. In particular, he suggested matching the difficulty of the terrain with the length of the trail. A large amount of the damage is produced by riders on trails beyond their skill level.

Difficulties on bicycling trails can generally be attributed to excess speed. Obviously, speed will increase the chances of injury due to a collision. A more subtle problem occurs when a fast trail suddenly turns or becomes rough. Riders brake suddenly, and the resulting skid can initiate serious erosion. The quality of the tread should be consistent rather than patchy. Narrow trails should have frequent dips, turns, and bumps, with similar sight distance throughout. In this way, riders will maintain a speed suitable for the overall terrain. Similarly, managers of shared-use trails (not used for commuting) may prefer a granular surface because it will reduce the speed of cyclists.

Trails being promoted for bicycles must ensure that water bars across the trail are suitable for bike traffic. The preferable solution is to place a broader drainage dip in the trail. Some managers embed boards in the trail with a flexible rubber "bar" or water deflector projecting above the trail surface.

Urban riding

Bicycles make use of both the road and trail systems, giving them great flexibility and surprising speed in an urban environment. Experience in bicycle-friendly cities like Davis, CA, and Eugene, OR, has shown that, with proper encouragement and facilities, up to 10% of all trips will be done with bicycles. Hope and Yachuk (1990) present a comprehensive survey of all bicycle-oriented infrastructure, specifications, and programs suitable for use in Canada. This includes bike trails as well as various ways that bikes can be integrated into the vehicle traffic. They stress the need for a total program before cycling will become a significant transportation mode in our cities. The components include:

- **Engineering:** The planning, design, installation, and maintenance of suitable facilities. Use existing standards for both on-street and off-street bicycle routes.
- **Education:** Ensure that cyclists are aware of how to use facilities safely, and motorists are aware of how to deal with cyclists.
- **Enforcement:** Providing realistic legislation and fair enforcement to promote safe cycling.
- **Encouragement:** This goes beyond the awareness function to include positive motivation for cycling. Recognition, preferential treatment, and even monetary compensation have all been used.

Specialized facilities for bicycles

Drainage away from the trail is particularly important on asphalt trails, where melting snow can refreeze into treacherous black ice.

Urban bicycle trails should have suitable bike racks at trailheads, as well as other nodes along the route. A good bike rack will support the frame of the bike in two places, be strong but thin enough for a U-lock to fit around both the rack and the bike, and be located out of the main traffic flow. (Wheel racks frequently result in bent rims.)

Keep benches, garbage cans, and other furniture well back from the edge of the trail. Avoid using posts at the start of trails. These become serious obstacles for bicycles, especially those pulling child trailers. If considered essential to keep vehicles out, put a post on each side about 1.8 m apart. Ensure that one of these can be removed for maintenance and emergency vehicle access.

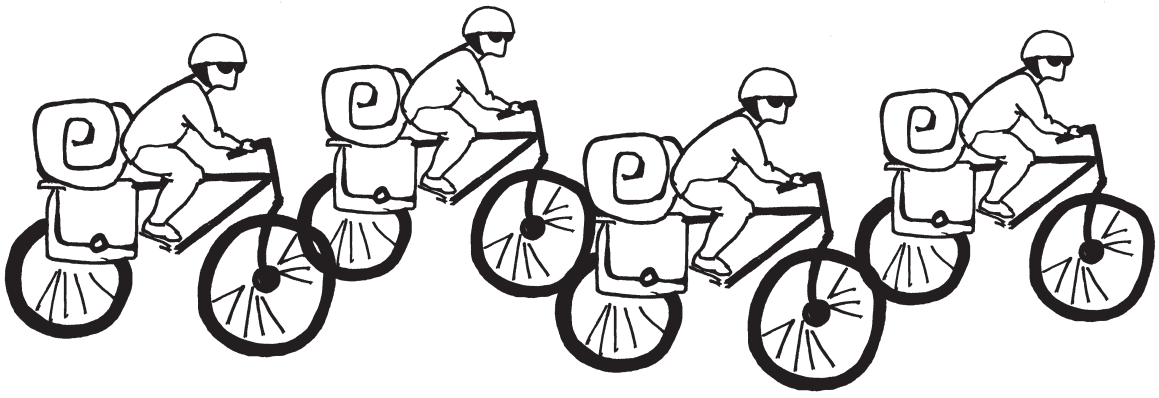
When a trail, particularly a commuting route, is disrupted by construction, a detour must be arranged and well signed. A road would never be torn up without providing alternatives for the travellers. Why would bicycle trails be any different?

A difficulty rating system is more important for bike trails than for pedestrian routes because the novice can get into trouble faster. Bicycles are more susceptible to road hazards than cars and warning signs should be installed where these problems occur (i.e., railway tracks, sewer grates, road construction). If a trail is very difficult, a warning sign advising "Not recommended for bicycles" can effectively reduce bicycle traffic without the negative feelings of a total ban, especially if alternate routes are mentioned.

The intersection of roads and bike routes should have good visibility and the bike's speed should be reduced through design. Bicycles should cross where pedestrians are already crossing.

Bicycle routes don't ask for much maintenance, but they should receive regular sweeping to remove grit, leaves, and snow.

Notes:



408 Ensuring landowner privacy

Trails enable more people to access our landscape. Recreationists feel that walking or riding along a trail are innocuous activities, but these simple actions can result in a significant lifestyle change for nearby rural residents. For example, farmers are very sensitive to vehicle traffic announcing visitors. A stranger appearing at the door without any preceding vehicle noise can give anyone quite a start. You should acknowledge the various privacy issues and consider ways to address them.

Mitigation strategies

Reducing the loss of privacy requires action in three areas:

- providing users with the required facilities on the trail
- educating users
- providing physical barriers between the trail and residences

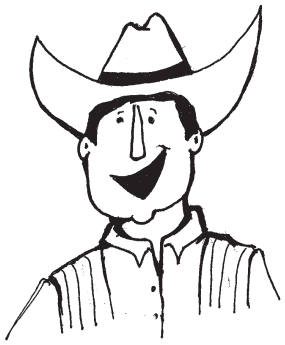
Public facilities should be installed to ensure that activities take place in appropriate places, away from farmland (unless, of course, there is a private facility designed for such purposes). Infrastructure, which should be installed as a matter of course, includes toilet, parking area, source of water, rest area or campsite, map of the area, and route markers. In particular, the importance of trail markers is often underestimated. Without the usual roads and villages to navigate by, inexperienced travellers can become disoriented. The intent is to reduce the possible reasons for users to approach the local residents. When the trail is operating, monitor comments from residents to determine if additional facilities are needed.

Education has several components. This begins at home, when the user should receive a good idea of the conditions to be expected on the trail and the skills required for a successful outing. The standard of behaviour should be clearly stated at the trailhead and on brochures. (Consider adopting the Use Respect! code included in this manual.) Written material should include what constitutes an emergency, i.e., actual physical injury.

Signage

Signs can be used to protect both farmers and trail users. Signs must be installed to reduce uncertainty while conveying the essential information. At the same time, they must not litter the landscape or people will "tune them out." Refer to Section 606 for suggestions regarding construction and locating, especially those for trail safety. Signs relating to adjacent landowners can include the following messages:

- highlight the types of operations they may encounter
- warn of livestock-at-large, and describe suitable behaviour
- remind users that livestock is private property and represent the farmer's livelihood
- identify opportunities for agri-tourism (eg., farm tours) where appropriate
- make users aware of weeds and how to prevent their spread



- delimit private property boundaries, including "No Trespassing" warnings if requested
- warn users about potential hazards found off the trail (i.e., operating farm machinery)
- remind owners to keep dogs under control
- remind users not to litter and to use designated sanitary facilities (or to pack it in and pack it out)
- identify the location and distance to next staging and public facilities areas

Physical buffers

In some cases, adjacent agricultural operations may require physical separation from the trail. Depending on the nature of the situation, a buffer may be:

- open ground/fire break
- ditch
- berm
- thorny and/or tall vegetation
- fencing
- river/watercourse
- road
- topographic features (steep slope)

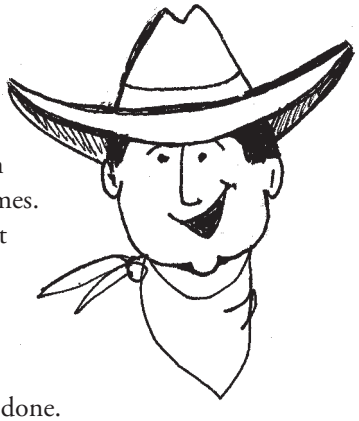
Refer to Section 508 to review the use of vegetation in providing privacy. A few well-placed shrubs can deflect the user's attention away from a site. On the other hand, if the farmer does not want to see the trail users, work with him or her to modify the landscaping to obscure the view of the trail. A fence, trellis, or hedge can do the job quickly.

A shallow, water-filled ditch effectively confines people to the trail. Generally, standing water is not good for a trails sub-base so use this only when necessary.

Site-specific trail relocation

Trail relocation can be used as a last resort and will be undertaken only when a problem cannot be mitigated using other strategies. This is particularly relevant where the trail is primarily to be located on an abandoned rail right-of-way. The relocated alignment should have the same construction standards and land tenure as the remainder of the trail. This will generally mean a formal land exchange with the titles being transferred. While obviously a lot of work, this can satisfy certain owners. The diversion might even be a welcome change from a long stretch of straight trail.

Summary



Privacy remains the most difficult aspect of trail management. The target is elusive because it means something different to each person, and even to the same person at different times. To achieve privacy requires honest and open communication between the trail planner and the landowners. Persevere until all parties are satisfied that everything possible has been done.

Notes:

409 Natural surface

A trail is simply a designated route. Nothing requires the installation of special surface material. In fact, well-constructed "natural" trails over suitable soils can accommodate substantial numbers of users without problems.

The design and construction of the tread itself is covered in the following pages, particularly Sections 412 Steep Slopes and 413 Drainage Solutions.

Soils

All dirt is not created equal! If you pay attention as you explore trails, you will notice a tremendous variation between the soils in different areas. The soil most people are familiar with, and that which most farmers use, is a mixture of sand, finer particles, and organic matter. As it happens, this combination makes for good trails, too. The sand allows drainage, while the finer clays help hold the tread together. As the composition moves to the extreme in either of these three directions, the trail develops problems and remedial work may be needed.

Soils with very high organic content are common in alpine areas as well as the northern forests. In both cases, traffic will break up the vegetation and encourage it to rot. A trench will quickly form and runoff will flow in. On the other hand, very sandy soil will blow away after the vegetation is worn off. The stony areas of the mountainous high country and the clay-rich badlands of the prairies both have obvious shortcomings, and require extensive work.

So, how good is your soil? First, is it spongy to walk on? This is a sign of too much organic matter. Avoid muskeg by routing the trail along nearby pine ridges. In alpine areas, try to stay on the edge of the meadow, where the talus meets the organic soil. In less extreme areas, you are still advised to dig a hole 30-50 cm deep to see exactly what the soil looks like. Squeeze a handful; it should stay as a ball after you release it. It should feel gritty between your fingers while still having plenty of finer material.

Number of users

Let's follow the development of a new trail across natural vegetation as the level of use increases. A few people can walk along a track, and the plants will recover. At low levels of use such as this, the trail sponsor is more concerned with keeping the vegetation from obscuring the trail. As use increases, the vegetation gets trampled faster than it can grow. The increased exposure of the soil to the elements, coupled with the compaction of the soil, creates a hard surface which further restricts plant regrowth. In this way, as few as a couple of hundred passes during a season can create a distinct path. It should be mentioned that pedestrians and cyclists seem to have the same impact, and horses are only slightly more damaging.

Luckily, if the soil is moderate and drainage issues have been dealt with, the hard-packed trail will be able to handle many more users with no additional damage. Only when the use reaches extreme numbers, perhaps hundreds of users per day, will the trail broaden and become braided. This level of use is found only in urban areas, at viewpoints, and at campsites.

Considerations

Natural trails are easy and cheap to develop because little material needs to be moved. Construction and maintenance can often be done by volunteers with hand tools. The surface is always somewhat uneven, which can cause problems for people with poor mobility.

Trail construction assumes that enough people will use the route to create a path themselves. Since the vegetation will be destroyed anyway, the builder begins by grubbing out all the plants, including roots, to allow proper grading of the tread. Stones and stumps are removed and the remaining soil is raked to remove depressions. The waste material should be scattered in the vicinity, but out of sight of people on the trail.

Over time, grass and other plants may encroach on the tread but the smooth and firm surface still remains. This is a natural adjustment, and spraying with a herbicide or regrubbing the tread is not needed.

Soil cement

This process stabilizes the natural soil by adding ordinary cement. It is suitable for moderate use trails, and can accommodate in-line skating. The colour matches the natural soil, but the surface is very strong. It can be subject to frost heaving so it should be used only in well-drained (sandy) soils. No trails of this material are known in Alberta, but they seem to offer an economical alternative to asphalt for longer distances in rural areas.

To install this, first loosen the soil on the route to a depth of 10-15 cm with a mechanical cultivator. Spread cement across the trail to a depth of 1 cm (to give a final composition of 10%). Use a rototiller to mix in the cement to the full depth. Continue to mix the material as water is spread on top. When the entire mixture is wet, compact it thoroughly. Ensure the trail has a slight crown.

The proportion of cement seems to be flexible. Even a small amount is reported to give significant resistance to erosion. This process seems to be worth investigating.

Notes:

410 Granular surface

Granular materials provide greater durability than most natural soils, so are suitable for trails with higher anticipated traffic. The cohesive qualities of the materials enable them to be shaped and compacted. The resulting trail is suitable for most users, including wheelchairs, baby strollers, and horses. It provides excellent durability at moderate cost.

The common materials are gravel, crusher fines, and red shale. Less common is compacted ballast on railtrails. This can be effective if the ballast has a good amount of finer material. Better ballast, which is coarser, must be partially removed and the remainder supplemented with finer material.

Most types of granular material are less expensive than asphalt and can be installed similarly. The materials blend in with the environment, and can be repaired easily with hand tools. Crusher dust, crushed limestone, and shale all weather into a firm, almost concrete-like surface.

Some of the problems identified by trail managers result from expecting too much from these materials. Vegetation will creep into them, but this is not necessarily bad. Use will keep the plants down. If it doesn't, the trail was overbuilt in the first place. Generally, granular paths should be narrower than asphalt paths. Rather than the traditional 1.8-2.0 m trail, try using only 1.0 m. It will give a clear and easily followed route, with solid footing in all weather. And it will allow you to build much more trail for the same budget.

A narrower tread allows a more interesting route, as well as reducing the runoff from the trail. This can become a significant benefit during a thunderstorm when heavy runoff can strip off the shale in a few minutes. With this in mind, don't use granular materials on steep slopes. Instead, use a short stretch of asphalt or soil cement before returning to granular on the flat areas.

Construction

Remove the surface vegetation, then the soil, until mineral soil is reached. Compact the sub-base, then spread and compact at least 9 cm of coarse gravel. Add 5 cm of crushed gravel, shale, or crushed limestone to the surface, and compact. Ideally, the area excavated will be the same width as the finished trail. In this way, the restoration work will be minimized.

If the available equipment requires a wider excavation to accommodate the equipment, backfill the side of the trail with the same material which was removed. Seeds and roots already in the soil should naturally regenerate the vegetation within a year or two.

In grassland, just the very top vegetated layer (about 10 cm deep) can be graded to the side. After the trail material is installed, the surface will be raised about the surrounding terrain. Just backfill the soil against the trail. The roots should start growing after the next rain and the trail will drain well.

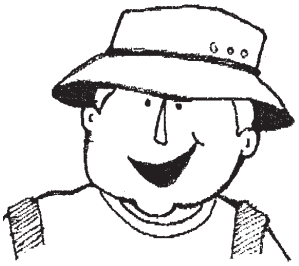
The soil below the trail can be sterilized to prevent plants from sprouting. Most herbicides will only kill living plants, not prevent new ones from growing. Instead, spread calcium chloride over the soil. This is very similar to road salt, and is often used as a dust-suppressant on gravel roads because it absorbs moisture. It will prevent plants from growing through the trail. Soil sterilants can also be used, with caution, to avoid leaching into adjacent vegetation.

Wood chips

Wood Chips are often suggested for trails because they can be acquired at little cost and are easily spread. Poles along the side of the trail may attempt to keep them confined, but in Alberta, the wood chips quickly blow away. They do not compact, leaving the trail very loose. This material is only appropriate where cyclists and wheelchairs are being intentionally excluded, such as on single-use bridle paths. Even in these situations, an unpleasant and mucky surface soon results as the decaying wood absorbs water.

Asphalt millings

Some cities grind asphalt from the road while preparing a smooth surface for the new pavement. This material can be put back into the asphalt plant, but often it isn't. It can be used in place of the crushed gravel surface layer in a granular trail. If a layer of chip seal oil is spread over it, the resulting trail is even smoother than pavement, and at substantially lower cost. This is not widely used simply because it does not stand the weight of heavy vehicles. Root penetration may be greater, too, but the repair is very easy.



Word of the day

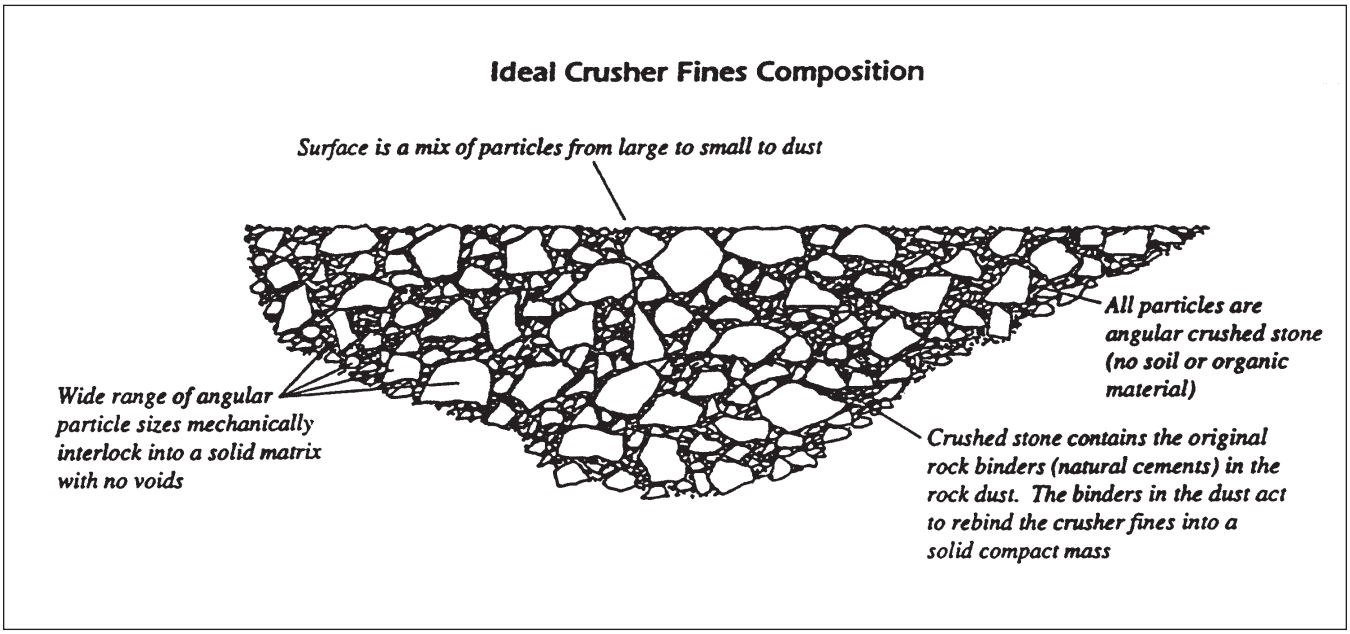
Lift (n.)

A layer of asphalt is called a "lift." Contractors use this term, so be ready. The road is "lifted" up about 5 cm with each pass of the paving machine. Most roads have two lifts, but one is fine for trails if you have a good base.

Crusher fines

Gravel companies often sell material known as "fines." These are the small particles remaining after the gravel is removed. As the diagram shows, the ideal material has many sharp edges which will bind together over time. If the fines are simply separated from coarser material by sifting, the grains will be quite rounded and poor for trails. If the gravel has been crushed before the fines are separated, the material will be suitable.

At least one of the larger gravel companies will prepare a special "trail mix," which consists of "10 mil crush with sand fill." A minimum order of 500 tonnes may be needed.



Source: Trail Designs and Management Planning Handbook

Notes:

411 Asphalt surface

Asphalt makes a hard and smooth surface suitable for a wide range of urban activities. These include cycling and in-line skating, as well as using wheelchairs and baby strollers. It resists erosion, making it popular with managers of steep trails that would otherwise be prone to washout. If use is high, as it is in many cities, then asphalt's higher cost can be justified.

The dark colour causes snow to melt relatively quickly, making it a poor base for a ski trail. On the other hand, this snow-resistant quality can allow year-round jogging and cycling when supported by a modest plowing program.

The seasonal maintenance is easy: a periodic sweeping keeps the trail free of grit and leaves, which can cause skids. However, plant roots can produce dangerous lumps in the pavement. These can be reduced by simply rolling the asphalt flat again on a hot summer day. (Maybe help this along with a propane tiger torch first, to make the material more flexible.) Full repair can be quite expensive because it requires heavy equipment and skilled workers. Removal of offending plant species, especially poplars, Canada thistles, and roses, or using root barriers (see Section 418) will help prevent problems.

Your municipality's Public Works or Roads department is familiar with pavement and the contractors who install it. They will be able to advise you on the best way to do the job. Realize that the equipment cannot make a trail narrower than 2 m and it cannot make sharp turns.

Steep slopes also create problems for the installation crew. Too bad, since erosion resistance is one of the main benefits of asphalt. What happens is this: The paver tends to slide forward faster than it can push the material into place. This shows up as stretch marks or cracks across the trail, which will soak up rainwater and enlarge quite quickly. Talk to your contractor before accepting his bid and insist that cracks are not acceptable and will result in replacing the section. Some contractors have reduced this problem by supporting the paver with a cable from above to keep it moving slowly. Prompt and thorough compaction with a vibrating roller can also reduce the problem. A sealant should be applied each spring to all cracks to keep water out.

Installation of pavement requires the removal of topsoil, then the compaction of coarse gravel as a sub-base. Finer gravel is often packed on top, before finally adding the asphalt. This is a large task and will require major support from the community. How much does it cost? Prices are quickly out of date, but you can count on at least $50,000 per km. This can be reduced by donations of materials and labour, of course, and the low maintenance costs should be remembered.

Larger cities could consider using granular materials for the recreational trails because of the more aesthetic appearance and because bicycles will travel more slowly. Save the asphalt for high speed commuter bicycle routes, perhaps in conjunction with roads. This approach reduces problems between walkers and fast bicycles.

In other situations, a gravel trail can be installed and used for several years. If the use increases and money can be raised, then a layer of asphalt can be put over it.

Pavement goes to the mountains

While asphalt is generally considered a "city" thing, it can be valuable in certain natural trail situations. Cold Mix is a special type of asphalt that can be carried in small quantities (5 gal. buckets), stored, and then applied with hand tools. This has been used effectively at campsites, viewpoints, or on short but very steep sections of natural surface trails. The asphalt is spread across the surface, often between protruding boulders, and then packed into place with a hand tamper.

Concrete

Concrete provides a harder and more durable surface than asphalt. It resists penetration of roots, although it can still be heaved by large tree roots. Of course, it is even more expensive than asphalt. However, concrete's widespread use for sidewalks demonstrates that it will withstand the elements without adverse effects.

Several new processes allow concrete to be placed cheaper than previously. First, a stiffer mix can be poured directly onto the base, much like asphalt, without the expense of installing forms. Expansion gaps, which can be annoying for bicyclists, are not made with the usual inserts of fibreboard. Instead, they are cut with a diamond saw directly into the continuous concrete strip. Wheels pass over the cuts without any bumping. This process is worth looking into.

Notes:

412 Steep slopes

Steep trails develop erosion problems for two reasons. First, any water channeled into the trail will gain speed at an alarming rate, with even a small volume causing damage far beyond what might be expected. Second, tires, hoofs, and feet tend to skid on steep slopes, loosening the soil and preparing it for erosion.

Informal trails are subject to this problem because most people will head straight up a steep incline. The resulting gully will focus the water and the soil is soon gone. This process has led to the most popular mountain trails becoming informal staircases, with roots and rocks providing the steps. It must be emphasized that this problem is not just for trails with a natural surface; asphalt trails are subject to erosion and eventual undercutting along their edges where the water tends to channel. Now, what can be done about it?

The solution has two aspects: reducing the slope and removing the water. A longer but gentler trail will have fewer problems. Route it in wide sweeping curves, keeping in mind that if the users can see the trail too far ahead, they will short-cut. These climbing curves are good until the slope reaches 15%, then switchbacks are needed. Avoid long and steady inclines; periodic dips will force the water off the trail. Using frequent water bars is another way to encourage this. Well-defined stream crossings will not allow the water from flowing onto the trail.

If the trail is strictly for pedestrian use, consider using a flight of steps to reduce the grade of the remaining distance. A flight of ten steps, each 30 cm high, will reduce the grade of 60 m of trail from a strenuous 10% to an easy 4%.

When to use switchbacks

Switchbacks are the traditional method of gaining elevation in areas where space is restricted. However, they are unpopular with most trail users. Switchbacks are virtually impassable for nordic skiers and cause problems for cyclists. They are relentlessly abused by casual hikers, and the resulting damage presents severe restoration difficulties.

Few areas outside the Rockies have enough elevation gain to require switchbacks, and few areas inside the mountains need new trails. Certainly, some overused trails would benefit from a rerouting. So, if you really feel that your trail needs switchbacks, here are some pointers:

- keep each leg as long as possible
- anchor each turn with a large feature, such as a viewpoint, boulder, or small cliff
- try to reduce the visibility of lower sections from above
- ensure that all the rainwater is directed off the trail at every turn
- watch where this water goes; don't just dump it onto a lower section of trail. This can mean putting the turns near a small creek to receive the water, or making the legs longer as you go up

Side hills

Traversing steep slopes also calls for some special consideration. First, consider what may fall from above. Rocks fall with surprising frequency from high cliffs, so keep trails away when possible. Avalanches can also cause problems - not just for skiers, but can reduce the season for summer recreationists as well.

Second, the vegetation can play an important role in keeping the trail in good repair. However, the relationship is a bit complex. Where you put the trail will depend on the season and type of use. The general rules are that a dry trail and a well vegetated trail will both be stable. A south facing slope generally has fewer trees, and so will lose its snow early and be dry for spring hiking. However, it will be exposed to the full impact of thunderstorms. On the other hand, a shady forest may not be dry until well into summer, but will have excellent protection from both rain and sun. Consider what use can be expected in each season and the interaction of weather and vegetation.

Finally, consider the stability of the trail itself. Narrow the tread as much as possible while still accommodating the required traffic. Pass on the uphill side of natural features like trees and boulders so they can support the trail. Beyond this, a combination of excavation on the uphill side and filling on the downhill side will give a stable tread. Compact the material right away to prevent erosion before the vegetation stabilizes it. When hand-building footpaths, attention to detail will pay off. Make sure each stone is stable then packed with finer material.

Stream-side trails

Avoid having a trail continue close to a stream. Aside from the problem of floods, watercourses generally contain very sensitive wildlife habitat. Many species are confined to a very narrow space and could be significantly affected. Bears are one of those species who prefer the cool vegetation along creeks. The babbling brook can hide the noise of approaching people, causing the bear to be surprised.

Stream crossings are great but make sure the approaches have good visibility. Gravel-bottomed creeks can be forded, especially in wilderness areas. Cut back the bank to allow bicycle and snowmobile traffic. Then, have the trail head back into the forest.

Notes:

413 Drainage solutions

Water and trails should not mix. Water softens the tread until the users sink into a brown soup. In larger quantities, the water will erode the surface of granular trails or even undercut asphalt surfaces. Make every effort to maintain the stable existing drainage pattern. This means keeping water from collecting and helping it on its way to the ocean. Of course, trail routing is made more difficult by the intense desire of most recreationists to pass near lakes, rivers, and streams.

Minimize problems

Proper planning will minimize the problems encountered. Route the trail away from moist areas and exposed slopes with light soils. In some areas, seasonal closures will avoid the wettest time of year without undo hardship to the users. When designing the trail, keep both the tread and clearing width as narrow as possible to reduce the surface area which will accumulate water. Natural vegetation will both absorb the rain and stabilize the trail with roots. Only use drains and culverts when essential because they need frequent cleaning. Instead, ensure that the trail has frequent dips, which will shed the water, and that the tread has a 2% slope to the downhill side. Switchbacks attract problems because the water from one section often flows directly downhill onto the next section. An unorthodox approach involves routing the trail straight up the ridgeline where little water can accumulate. And, as in so many aspects of life, do it right the first time. Time and energy spent building carefully will be repaid in savings and enjoyment over many years of use.

Crossing wet areas

Where the trail must cross boggy terrain, do not try to drain the area as this will likely cause severe disruption to the vegetation far beyond the trail. Instead, lift the trail up out of the water. Where there is soil, such as in moist meadows, dig small ditches and pile the soil on the tread (called a turnpike). Periodic drainage pipes under the trail will allow the water levels on both sides to equalize. In forested areas, build a corduroy surface by placing a layer of short, evenly-sized logs across the tread. Ideally, these will be covered with soil. If air is kept away from the wood, it will not rot! Duckboard, simply planks supported by periodic sleepers, can give secure footing at an economical cost. For shorter distances or in very intensively used sites, you can construct a full boardwalk.

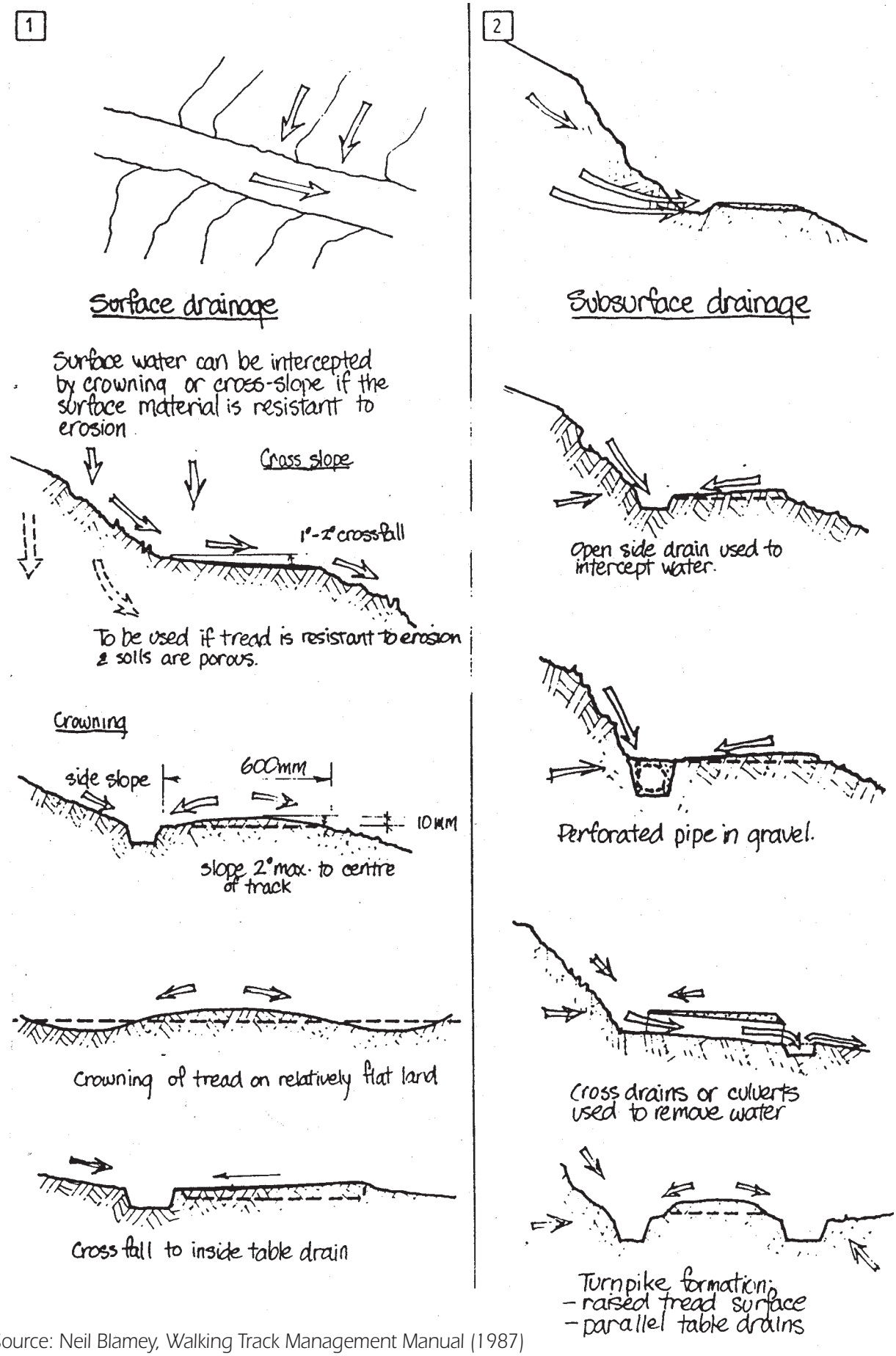
Water flowing across the trail causes more difficult problems, which quickly get out of hand if neglected. Take the time to put a cross slope to the trail - just enough to be visible. Don't let any depressions remain on the uphill side of the trail. Check after a rain to see where the water is accumulating and rework the surface to eliminate it. However, in some very moist regions, just the water flowing across the trail can cause problems. It must be collected in a ditch on the uphill side, then transferred over the trail with a water bar or other depression. In flat terrain, put a slight crown in the centre.

When crossing a water course, expect the worst. Even though it may be dry now, it will eventually fill. Right after a torrential downpour is a good time to check to see how high the water can rise. The overall objective is to avoid blocking the natural drainage while still providing secure footing for the recreationists.

To cross a seasonally wet channel, consider armouring part of the channel with flat stones or asphalt in more urban areas. Stream crossings may be fine with stepping stones. Where bicycles are expected or if the stream is deeper than a few centimetres, take the time to build a real bridge.

In areas guaranteed free of beaver, such as above the tree line, culverts can be a useful way of crossing tiny creeks. Install them with a slope of at least 10%, to allow gravel to wash through. Even with this precaution, avoid culverts less than 300 mm in diameter, as they will clog too easily. Armour both sides of the trail around the culvert to prevent erosion in case the water flows over top.

Drainage: surface and subsurface water management



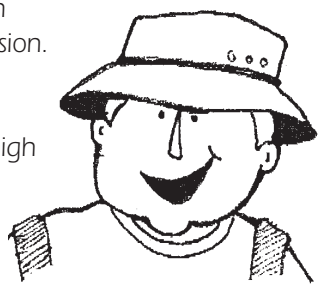
Source: Neil Blamey, Walking Track Management Manual (1987)

414 Water bar

Water bars are either raised barriers or depressions constructed at an angle across sloping trails to divert water off the trail. They should be used as a last resort; drainage dips or increased cross-slope provide better erosion control without creating hazards for cyclists.

Purpose:

Water bars deflect water off the trail before it can gain enough speed or volume to cause erosion. They allow unconsolidated material to be used for the tread in locations where the high rainfall and/or slope would otherwise require more expensive and intrusive materials.



Location:

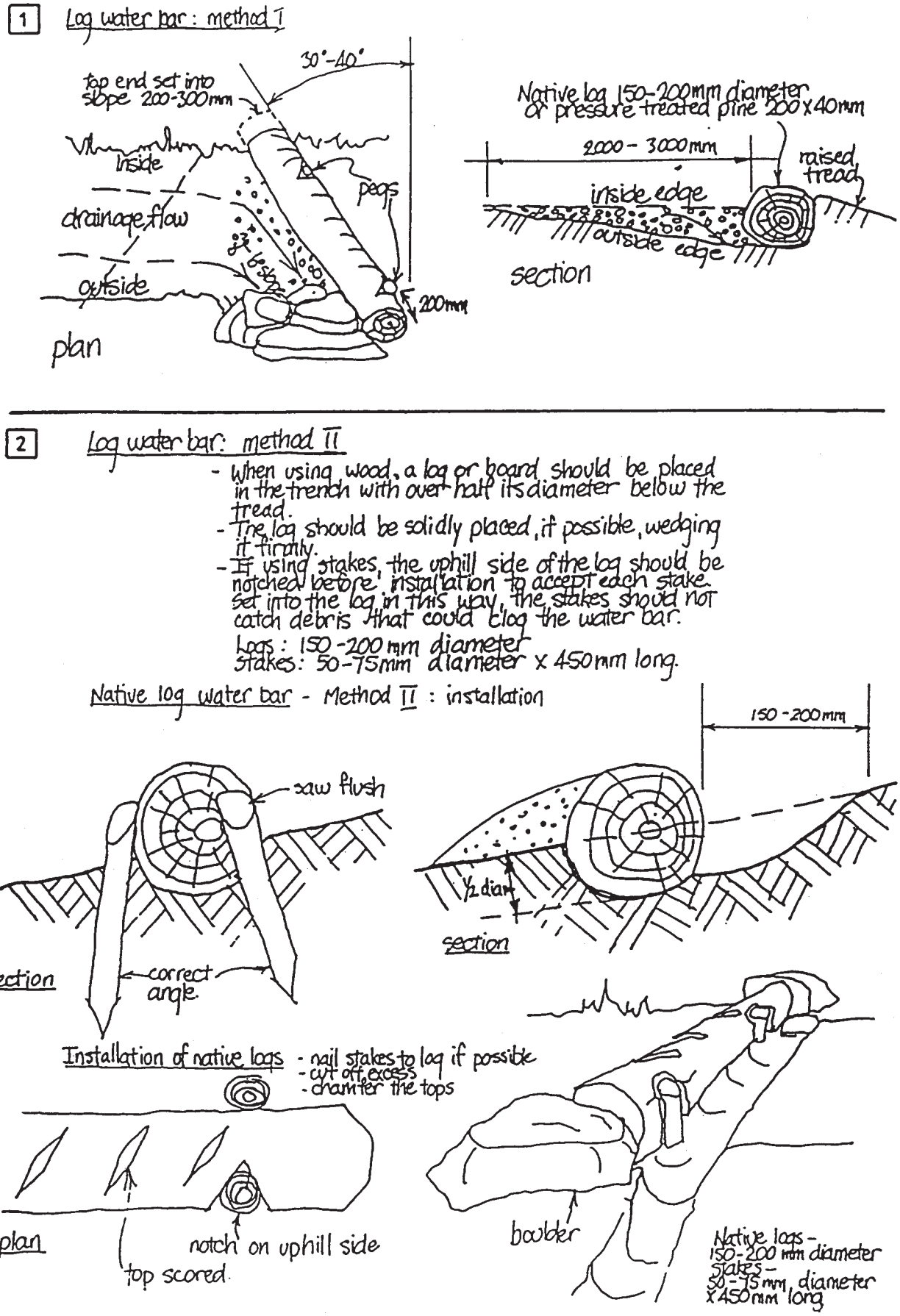
- Existing erosion is the best indication of the need for them
- Place where a minor drainage basin crosses the trail to catch water before it reaches the sloping segment of trail
- Install just above the angle of a switchback. Ensure that the outflow does not look like a track or walkers will be tempted to take short cuts
- Put one where small gullies are forming in the trail, then install one or more higher on the trail as well.

Design considerations:

- May be made of log, board, stones, or an earth ridge
- The same effect can be achieved by digging a diagonal trench or drain
- Needed even in dry climates if heavy thunderstorms are possible
- Should be high enough to deflect water, but not so high as to hinder trail use
- Frequent, small water bars keep the runoff from causing erosion problems and reduce the height required for each one
- Keep the bar at about 30 to 40 degrees from the perpendicular. This allows self-cleaning action while still slowing the water's flow
- Keep the bars visible from uphill, especially if the trail is used by cyclists. Warning signs may be needed. (Even so, they are safer than unpredictable gullies.) Generally, they should be inconspicuous from downhill
- Extend the bar at least 200 mm on either side of the trail, to discourage walkers from going around. Anchor the end with a large stone, or an existing stump, root, or tree
- If natural logs are used, peel the bark off first. This will reduce rotting. Score the top of the log with an axe or chainsaw to give better footing
- Logs and stones should be set into the ground one-half of their thickness, with soil packed around their downhill side. Stakes may be useful to hold the logs or boards in place, but those on the uphill side should be recessed into the log
- If boards are used, hold them in place with stakes: 50 x 50 mm wood or angle iron
- Asphalt trails may also use gentle depressions or swales to direct runoff away from the trail. These are used to keep water in trailhead parking lots from continuing down the trail.

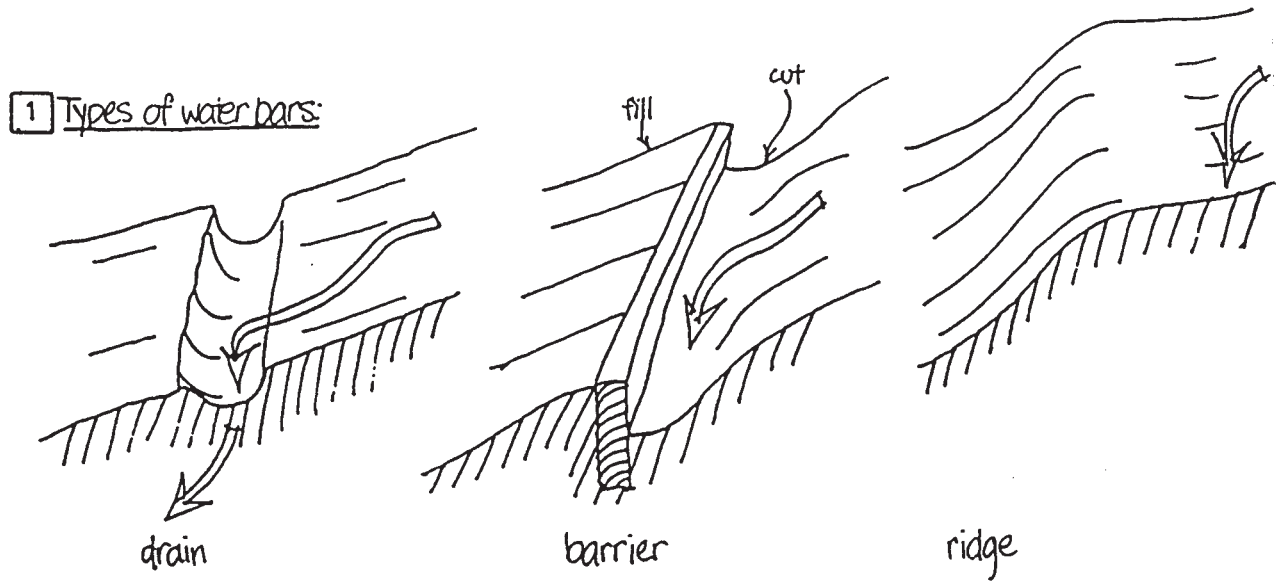
Source: Neil Blamey (1987) Walking Track Management Manual ; Department of Lands, Parks and Wildlife, 134 Macquarie Street, Hobart, Tasmania 7000.

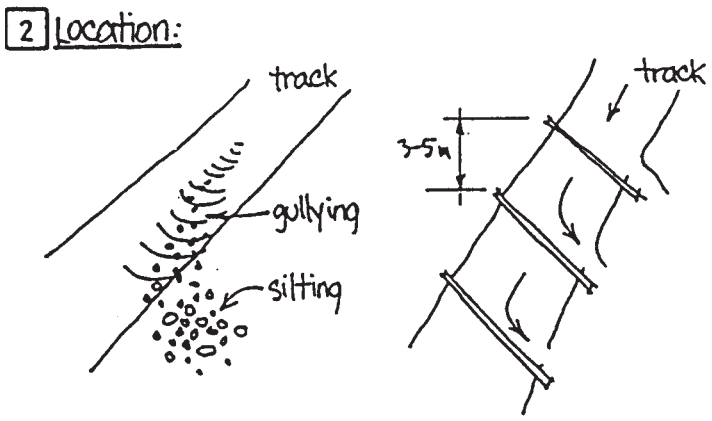
Drainage: water bars



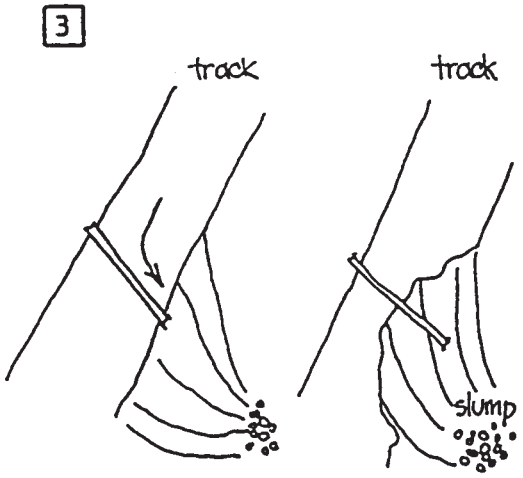
Source: Neil Blamey, Walking Track Management Manual (1987)

Drainage: water bars

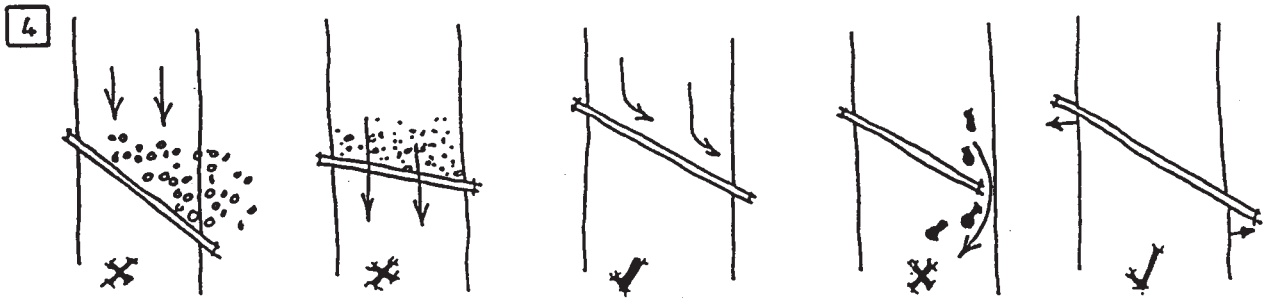




Locate water bars from existing run-off point to start of gullying at 3 to 5 metre intervals.



Beware of directing water off a steep edge of unconsolidated material.



Angle of water bar too steep – causes scouring.

Angle too slight: Silt blocks drain

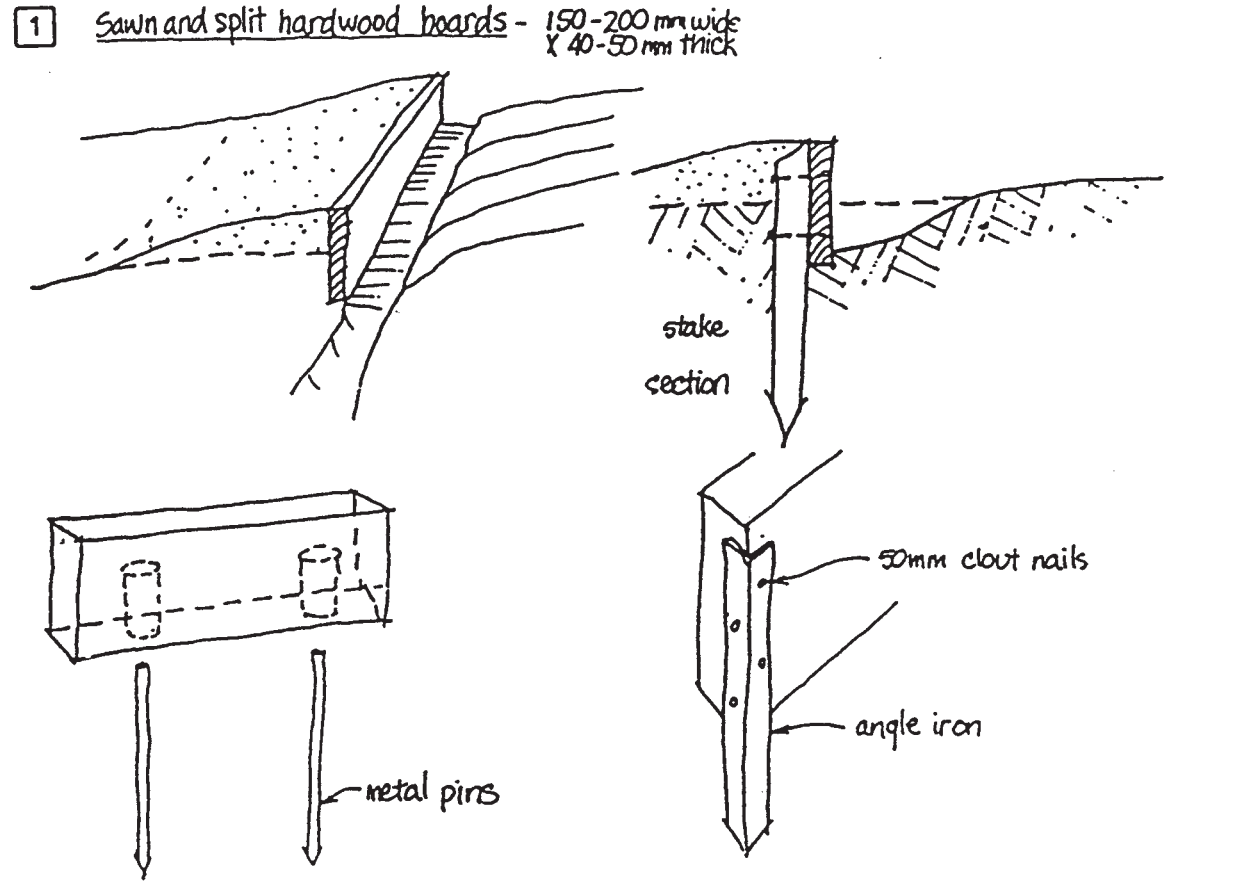
Correct. 30° to 40°, as determined by soil & slope.

Water bar too short – people & water divert around.

Project bar 200 mm beyond tread.

Source: Neil Blamey, *Walking Track Management Manual* (1987)

Drainage: water bars



Water bars: To build either a rock or log water bar, a trench should be dug across the track at 30°-40° angle. The trench should be free of rocks & roots.

Source: Neil Blamey, Walking Track Management Manual (1987)

415 Boardwalk and other wooden structures

Wood offers many **advantages** as a trail construction material. It is easily worked with common tools and with relatively little specialized knowledge. It is widely available at a reasonable cost, and can often be acquired on-site by cutting down a tree. The soft and natural appearance allows it to blend in with the natural environment.

Its main **drawback** relates to durability. Being softer, it is subject to vandalism including carving and burning. It will also rot over the course of 10 to 25 years. This inevitable problem has been alleviated to a great extent by the pressure-treating process. However, remember that the chemical used in this process contains arsenic. This can be a significant contaminant and the hazard may outweigh its fungicidal properties, particularly in the drier parts of our province. For example, it should not be used where the wood will come in direct contact with the user's skin, i.e., picnic table, bench, handrail. Where the chemical could leach into streams, the amount of pressure-treated timber should be restricted. You might consider using it for a bridge's structural components, but not for the decking which can be easily replaced.

When pressure-treated wood is cut, the untreated ends are exposed to the elements. Unless these ends are treated by painting on a similar fungicide, the value of the pressure treating will be negated. The chemical soaks into the end-grain quite well, providing effective protection. All the same, try to arrange for the cut ends to be in dry locations. For example, put the cut end of the post in the air and the treated end in the ground.

Boardwalks

Boardwalks bring excitement and variety to a trail, and are especially popular with the younger (under 12) set. Boardwalks also enable visitors to experience a habitat which is difficult to see any other way. Although marshes are the usual location, other sensitive and soft sites can also benefit from this style of trail.

Remember that the boards will get slippery in wet or frosty conditions so avoid having steep downward approaches. Boardwalks should be used with caution along large lakes, as major ice pans drifting about during breakup can easily shear off posts of any size.

Many different plans, ranging from casual to magnificent, can be found for boardwalk construction. Keep in mind the essential components and adjust the dimensions to fit the number of users and the budget.

Posts:

- rot-resistant or pressure-treated wood
- trimmed off at the highest anticipated water level
- pounded well (at least 1 m) into the mud (they will stabilize with time)
- consider installing them through the ice during winter
- set them in pairs, slightly closer than the width of the boardwalk
- each pair generally just less than 8' apart

Stringers connect the posts:

- minimum 50x200 mm (2x8")
- attached with lag bolts

Planks are placed across the stringers:

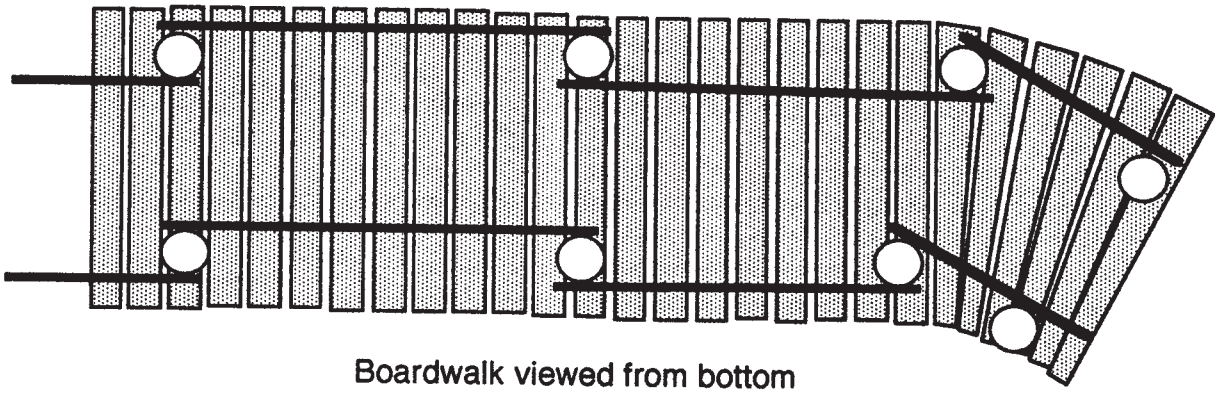
- attached with galvanized screws
- minimum dimensions should be 50x150 mm (2x6")
- should extend only a short distance (about 150 mm) outside of the stringers
- space planks no more than 10 mm to allow drying but not enough to catch shoes
- taper the planks with a table saw to go around gentle curves
- galvanized chicken wire can be stapled across the finished deck to prevent slipping (especially if the boardwalk slopes, such as at a floating dock)

Install handrails:

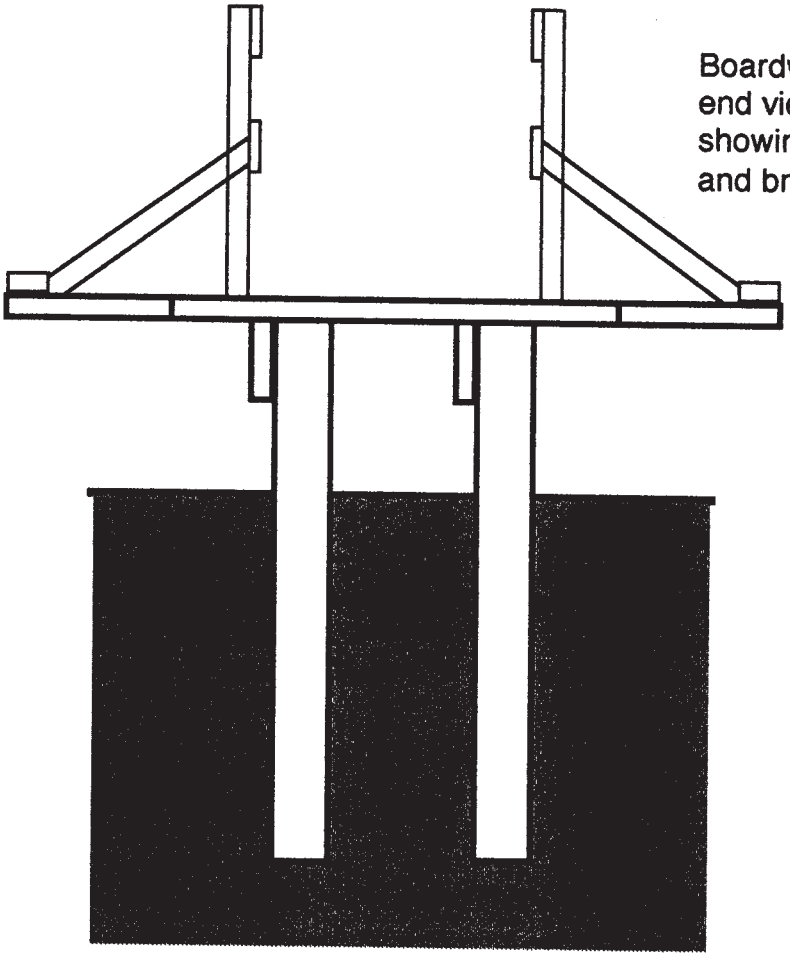
(If the deck is over open water or more than 600 mm from the surface)

- brace the posts by having every tenth deck plank extend out 200 mm farther
- place the handrail flat against the inside of the posts
- adjust the height to suit the audience: unfortunately, the best height for bikes is eye-level for wheelchair users.

Boardwalk



Boardwalk viewed from bottom



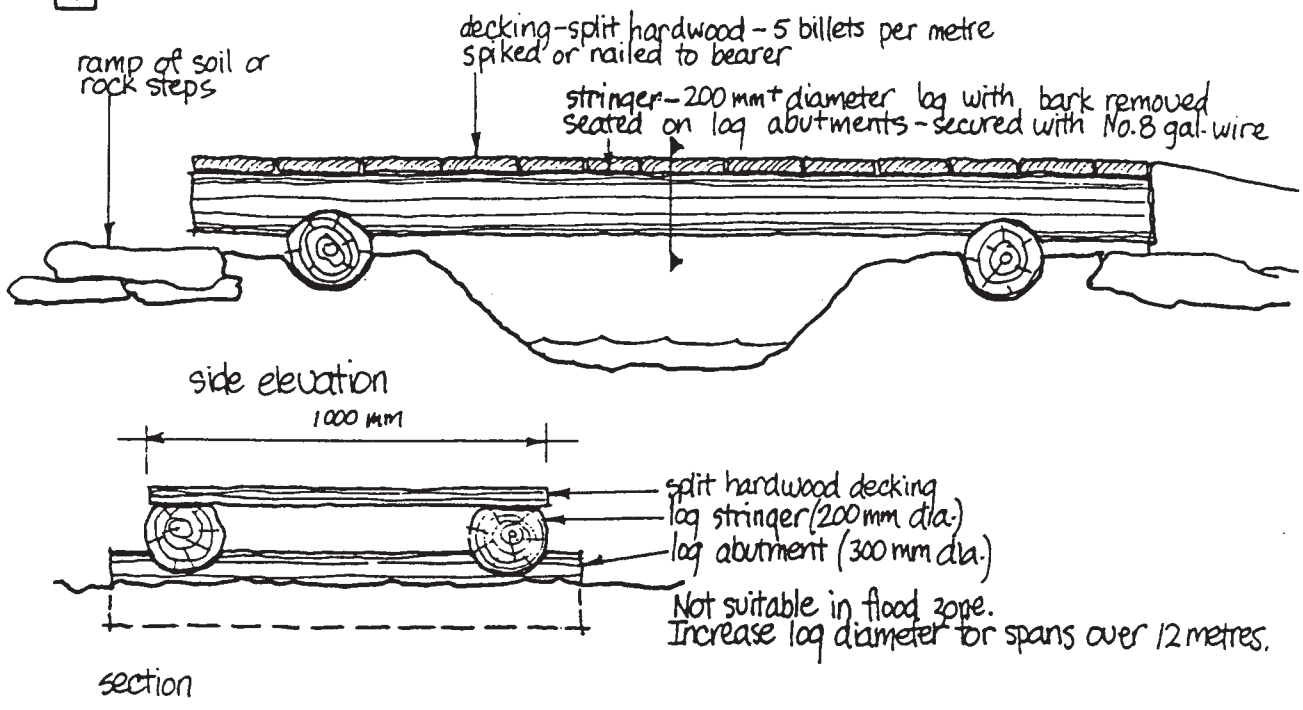
Boardwalk
end view
showing hand rail
and braces

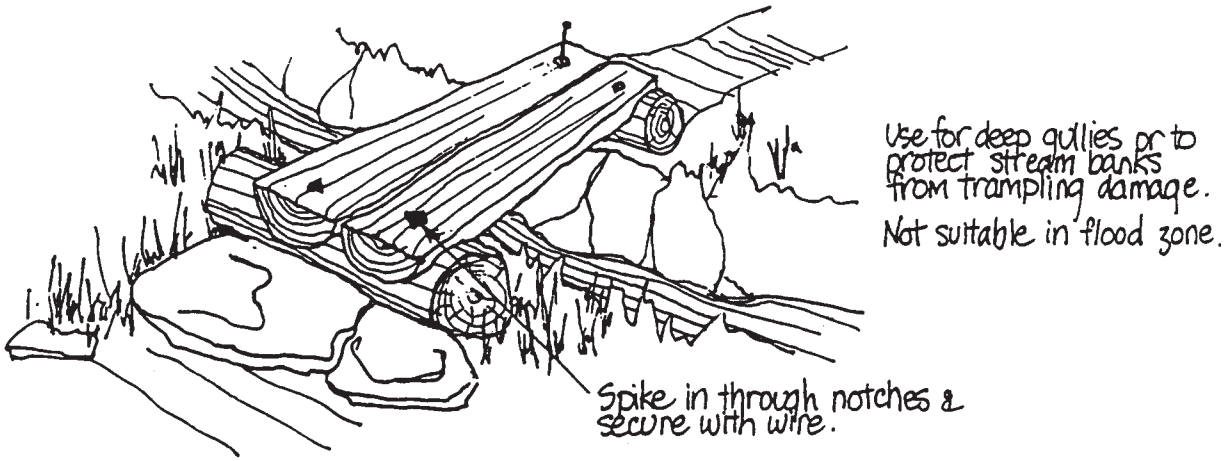
Source: *Alberta TrailNet Society*

416 Small bridge

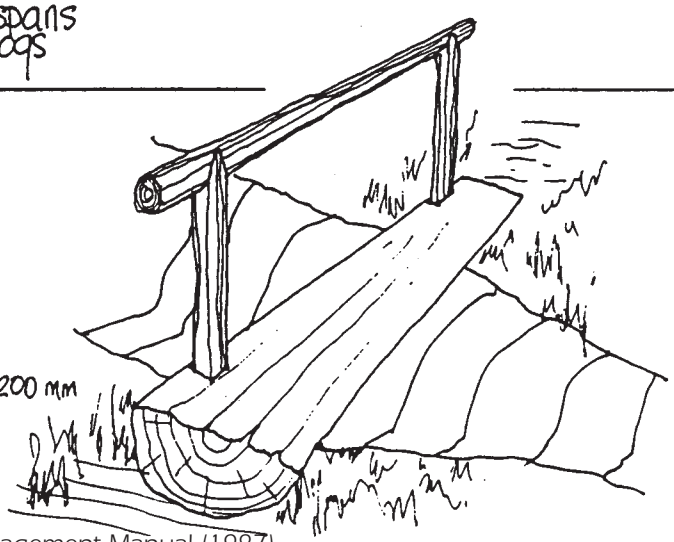
Bridge over small creek

1





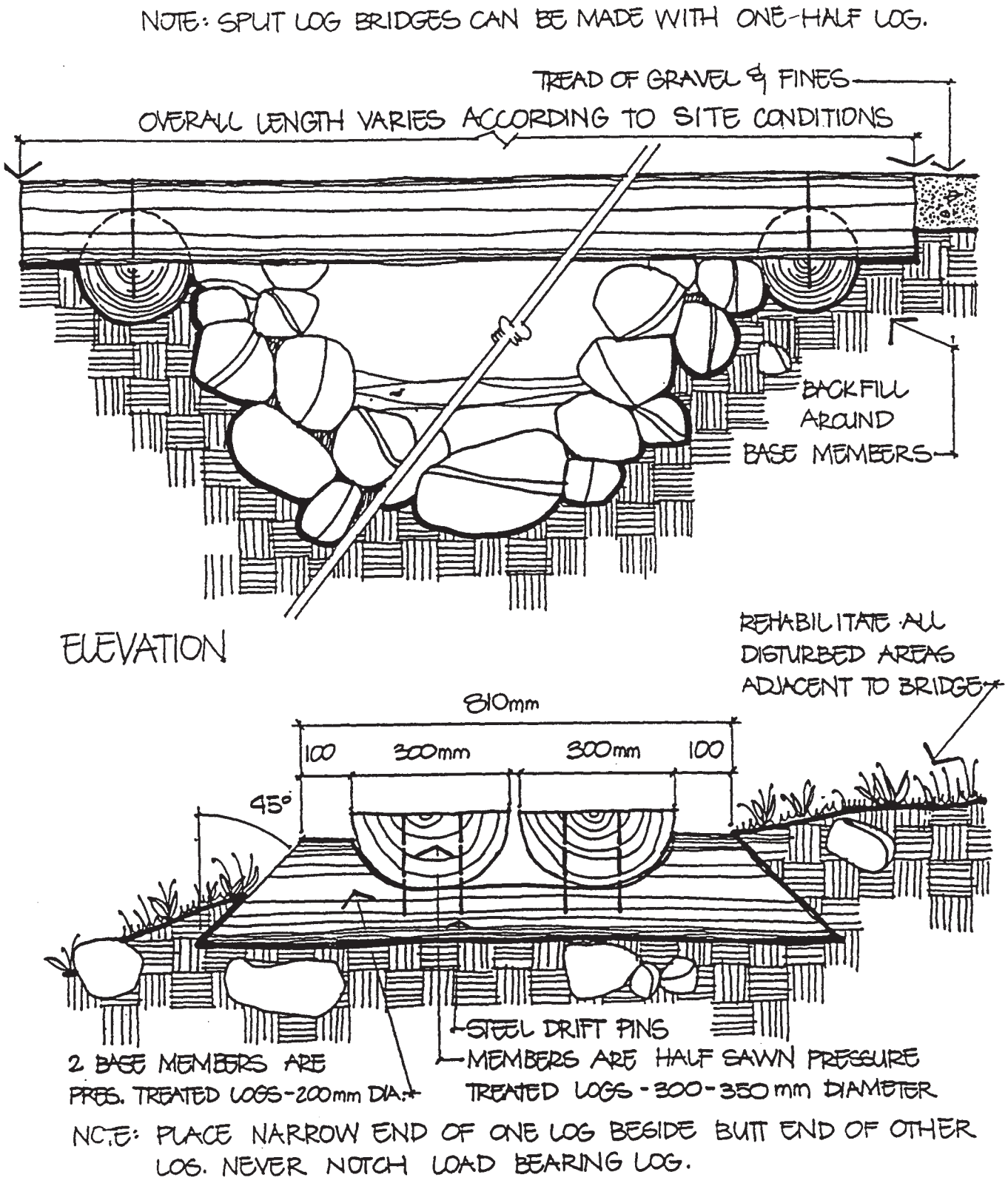
2 method of bridging short spans with single or double split logs



3 single split log with handrail
- fasten hand rail with 12 x 200 mm coach screw (galvanised)

Source: Neil Blamey, Walking Track Management Manual (1987)

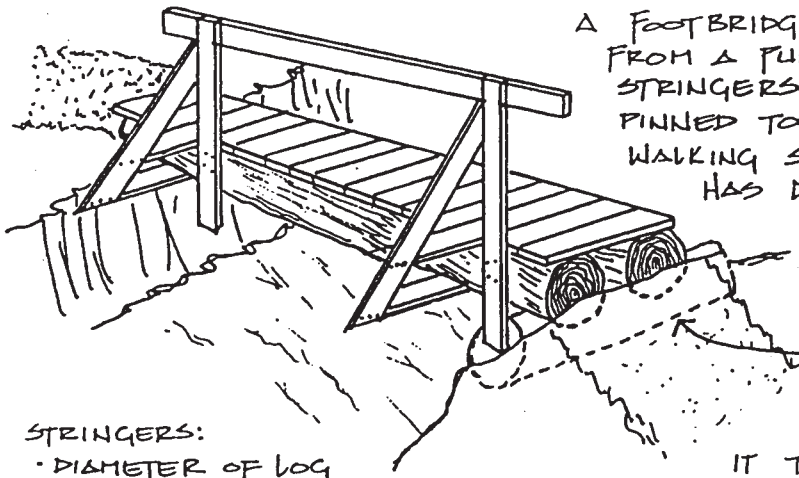
Split log bridge



Source: Environment Canada

417 Large bridge

Single log bridge with handrail



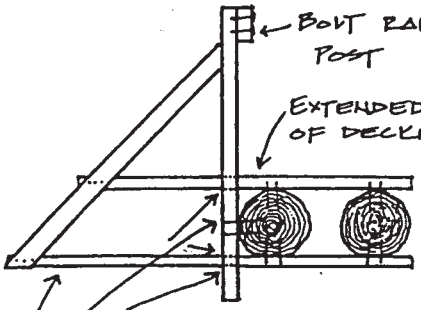
A FOOTBRIDGE IS A STANDARD UP FROM A PUNCHEON BRIDGE. THE STRINGERS ON A PUNCHEON ARE PINNED TOGETHER FOR THE WALKING SURFACE. A FOOTBRIDGE HAS DECKING & THE STRINGERS ARE APART FOR A GREATER WIDTH.

SLEEPER/SILL AT BOTH ENDS OR A CRIB. BUILD TRAIL TREAD OVER IT TO LEVEL (OR ALMOST) WITH THE BRIDGE.

STRINGERS:
- DIAMETER OF LOG INCREASES AS BRIDGE SPAN LENGTHENS.
- SPACED UP TO 120 CM
- TOPS MAY NEED FLATTENED TO RECEIVE DECK

DECKING:
- NAIL 5 CM TIMBER BOARDS PERPENDICULAR TO STRINGER.
- LEAVE 1 CM TO 2 CM GAPS TO ALLOW SURFACE WATER THROUGH
- BOARDS ARE EXTENDED AT INTERVALS FOR RAILING POST.

RAILING:
- FOR BRIDGES HIGHER THAN 1 M & LONGER THAN 3M.
- TIMBER OR SMALL DIAMETER LOGS, SMOOTH, FREE OF SPLINTERS



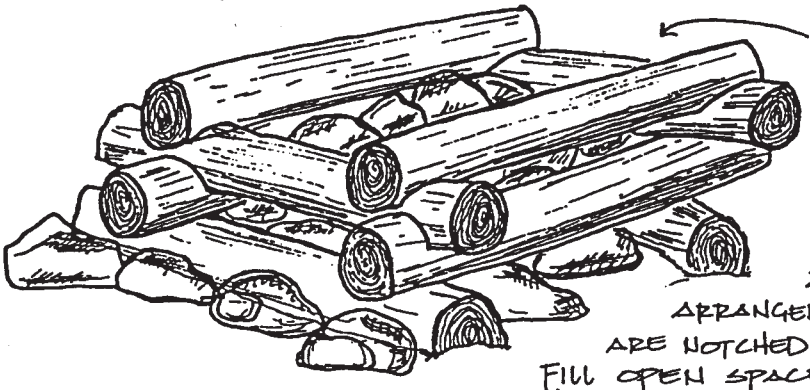
BOLT RAILING TO POST

EXTENDED PIECE OF DECKING

POST IS TO SIDE OF THE SUPPORT EXTENSIONS

PIN POST TO STRINGER & EXTENSIONS

BOTTOM EXTENSION IS AN OPTION; GIVES MORE STURDINESS

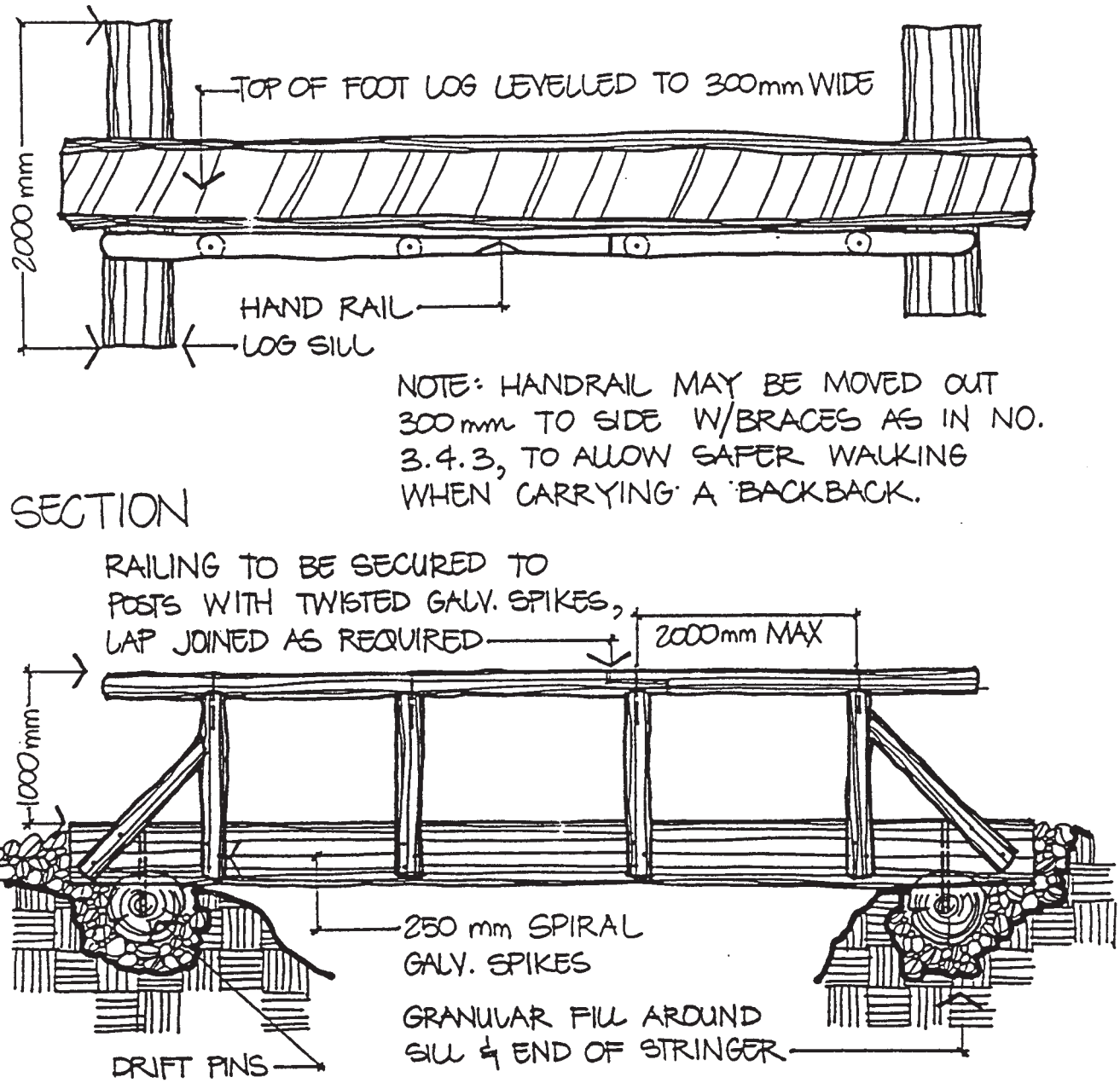


CRIBS ARE USED TO LEVEL UNEVEN BANKS & KEEP BRIDGE ABOVE FLOOD LEVEL. ONE OR TWO MAY BE NEEDED, PLACED AT ENDS OF BRIDGE SPAN.

20-25 CM DIA. LOGS ARE ARRANGED LIKE A BOX. BOTTOM LOGS ARE NOTCHED, ATTACHED WITH DRIFT PINS. FILL OPEN SPACE WITH BOULDERS (& OUTSIDE AROUND BASE), FASTEN STRINGER WITH STIKES TO TOP LOGS OF CRIB.

Source: Environment Canada

Single log bridge with handrail



NOTE: LOGS TO BE PEELED AND TRIMMED SMOOTH OF KNOTS AND ALL PROJECTIONS. HOLES FOR DRIFT PINS TO BE DRILLED 1mm SMALLER THAN PINS.

Source: Environment Canada

418 Trail liners (preventing root heaving)

Purpose

To prevent tree/shrub roots encroaching into asphalt trail pavement construction.

Materials

- 1/8" thick coroplast or similar approved material (eg. #2 Fillon)
- 3-1/2" common nails
- grass seed (Boulevard Mix)

Equipment

- Ditch digging machine or other similar approved machine
- 1/2 ton truck
- Hand tools
- Safety signs and equipment

Labour

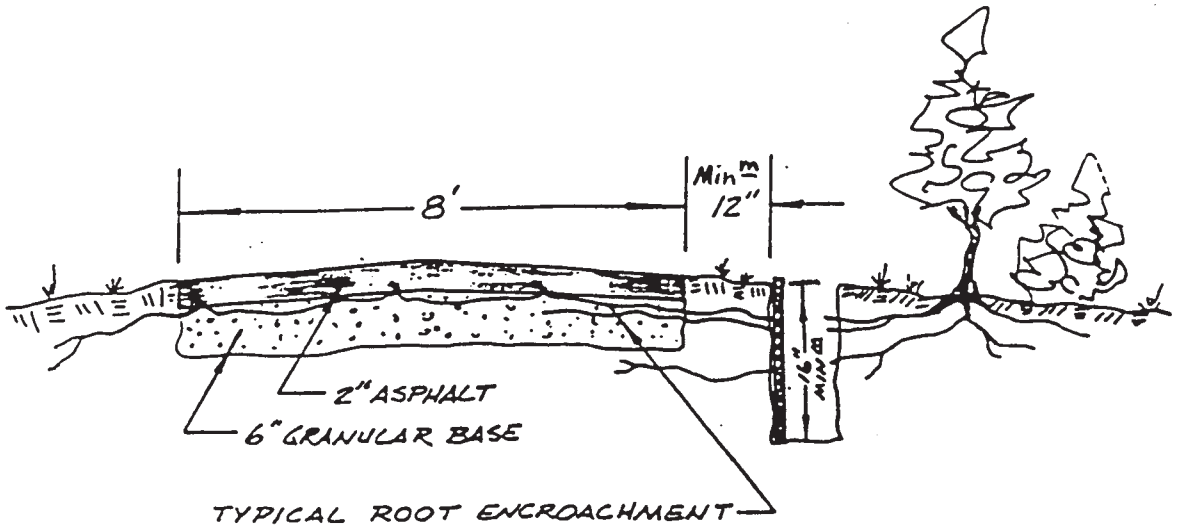
- 2 men (full-time)
- 1 man (half-time)

Procedure

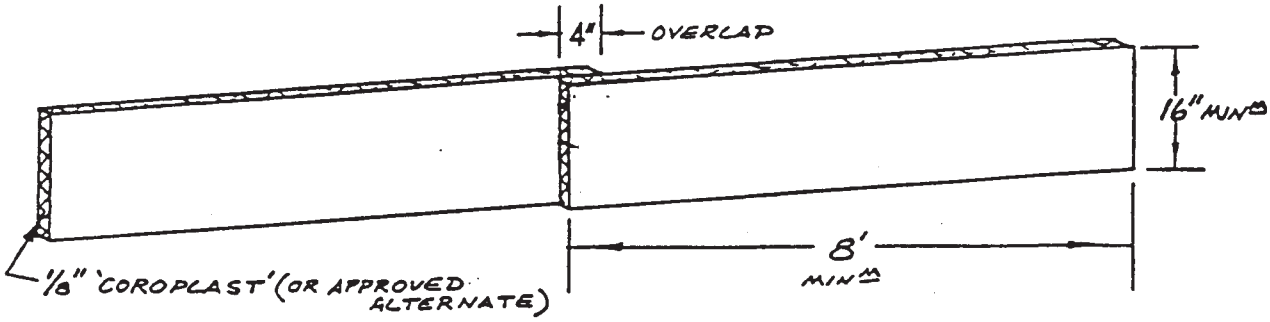
- A 17" deep trench shall be excavated with a "ditch witch" trenching machine, a minimum distance of 12" from the edge of the asphalt trail, to prevent ravelling or deterioration of the edge of the trail.
- A 16" deep strip of coroplast material shall be laid vertically in the trench and nailed to the side of the trench closest to the trail with 3-1/2" nails every 4 ft.
- All joints in the coroplast shall be overlapped 4" to prevent roots entering the trail construction.
- The trench shall be backfilled and compacted to 97% dry density.
- Existing topsoil on site shall be spread and grass seed sown.
- The site shall be left in a clean, safe manner at all times.

Source: Parks Red Deer

Trail liners (preventing root heaving)



TYPICAL CROSS-SECTION
OF ASPHALT TRAIL
(NOT TO SCALE)



DETAIL OF ROOT BARRIER
(NOT TO SCALE)

Source: Parks Red Deer

419 Gabions

These features, often called gabion baskets, are wire boxes filled with local stones. Some managers use them to help stabilize slopes and river banks. Gabions can be an economical retaining wall requiring relatively little skilled labour. They can work well in alpine or riverbank sites, especially where equipment cannot gain access. On the other hand, without careful mitigation they can look artificial and intrusive in a natural setting. High-use trails with severe erosion may warrant building a long series of gabions as a base for the trail.

The overall approach is to build boxes of wire mesh, install them where the wall is to be, then fill them with stones from the local area. Try to incorporate large boulders or bedrock with the new wall.

More detailed instructions include:

1 Excavate material down to stable material and roughly level the surface. Ensure that the base is armoured so it will not erode.

2 Build baskets from wire, preferably galvanized or coated with plastic. Maximum recommended size for each basket is 500 x 500 x 2000 mm. These can be an irregular shape to fit the site.

3 Position the basket and fill with stones, taking some time to have the stones settled down. Secure the bracing wires when the baskets are one-third and two-thirds full.

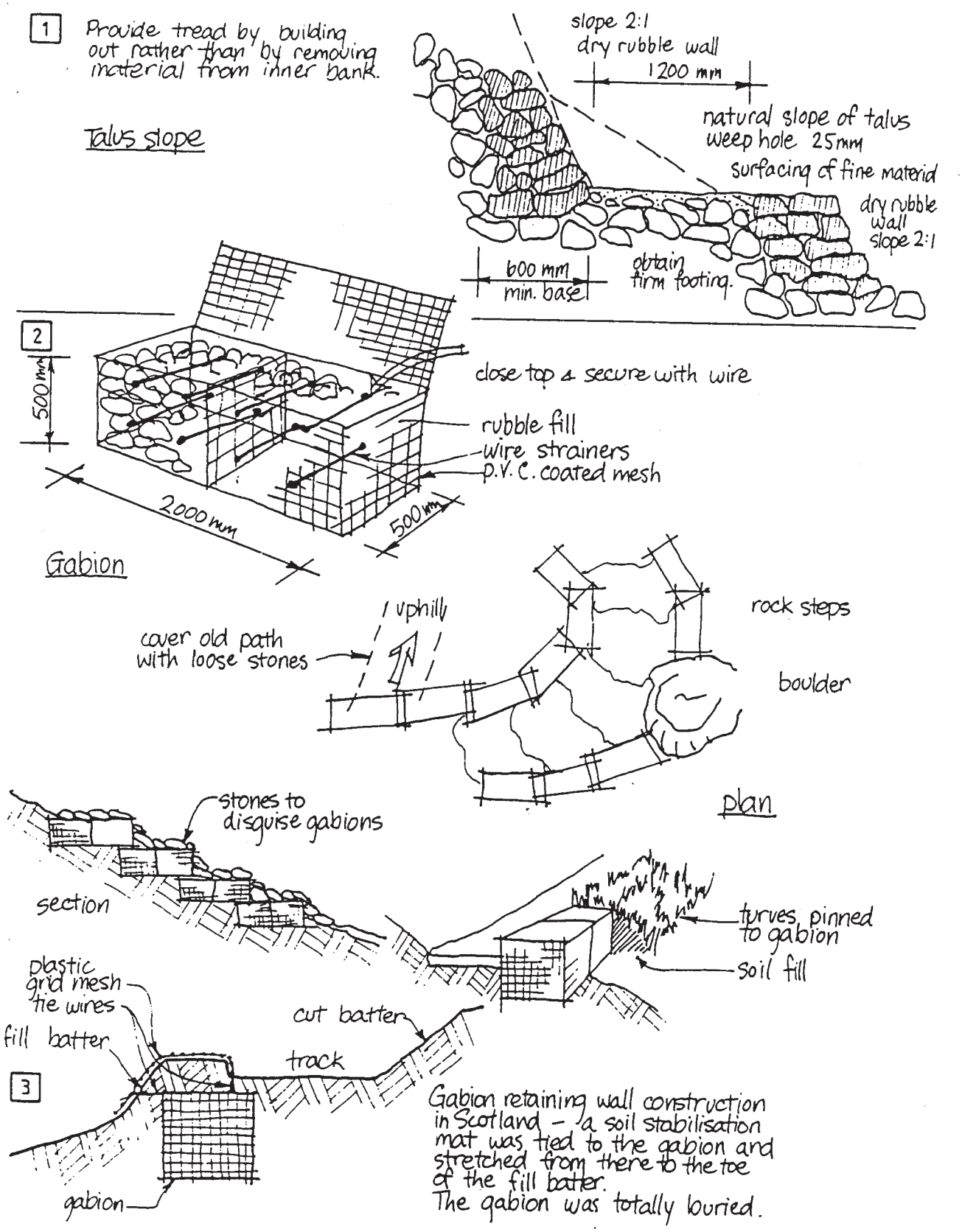
4 Tie the top shut with galvanized wire.

5 Offset each level of baskets and set them back slightly. Tilting them into the slope may be advantageous on steep hills.

6 Cover the gabions with loose stones or soil and vegetation to disguise the wire.

Notes:

Base Preparation: retaining wall



Source: Source: Neil Blamey, Walking Track Management Manual (1987)

420 Geotextile materials

"Geotextile" refers to the various types of synthetic cloth used to stabilize soil. The main attribute is the ability to restrict the movement of soil while allowing water to readily pass through. Beyond this, though, they have a wide range of characteristics, which enable them to be used in many different applications. The entire field is very young and new uses are being discovered frequently. A search on "geotextile" on the Internet gave a number of informative and imaginative sites, some of which were used to prepare this section.

Woven cloth generally provides considerable strength. Non-woven fabric may be felted or bonded through heat, chemical, or mechanical means. The strength can vary enormously. Other variables include pore size, thickness, and weight. Most styles have been treated to resist ultra-violet degradation but still must be covered to ensure optimum life.

Sample applications

Stabilize the surface of wet, high-traffic areas:

- Place fabric on top of unstable soil or muskeg, then cover with gravel or similar sub-base material. The water drains though the gravel and fabric quickly.
- The weight of the load is distributed evenly over a large area by the cloth, allowing a stable surface to be achieved with much less gravel than otherwise needed.
- Stream beds receiving traffic from ATVs or 4WDs (and the adjacent banks) can be armoured with this process. Ensure that the final grade is the same as the initial level. (Don't proceed with any stream bed modifications without explicit approval from the land manager.).

Stabilize bare soil during re-vegetation:

- Fabric with a very loose weave and intentional photo-degradation ability can prevent erosion while disappearing in a year or two. This material is more consistent than the more common organic mats often used, and has much higher erosion resistance than the hydro-mulch presently in use.

Retaining walls:

- Walls can be made by filling long "loops" of this cloth with soil, similar to giant sand bags but with greater stability. The high friction of the cloth keeps the "bags" from sliding out, allowing very steep walls to be built.
- Cloth with an extremely coarse weave, but using strong materials, can be used for a type of gabion basket. In this case, the bags are filled with relatively fine material (compared to a gabion basket) with the intention that vegetation will grow through the bag and help it blend in with the terrain.

Prevent penetration of plant material through the trail:

- Place a layer of this material under the sub-grade to reduce root heaving by roses, aspen, grass, or other vegetation.
- Put under boardwalks to prevent grass from growing up between the boards.

Suggested installation procedure

Proper installation of geotextile fabric with gravel, soil, or other earthen material as a topcoat is best accomplished when the soil at the site is dry. The following is a series of tips to ensure proper site preparation, geotextile fabric installation, and cover material application at the site. The first step, however, is to select the proper geotextile fabric for the application. (These directions are for industrial size applications. Smaller equipment may be more suitable for trail applications.)

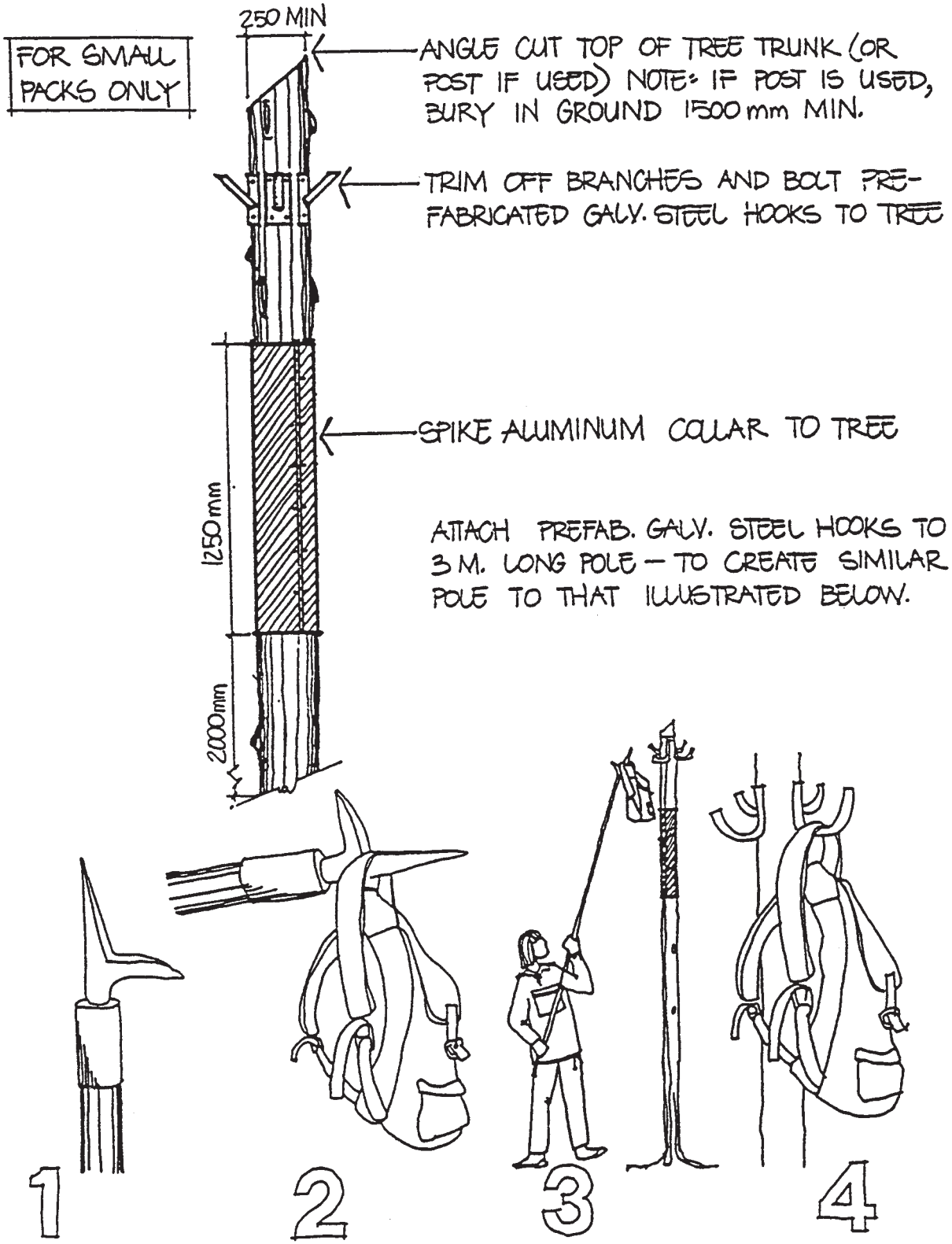
- Clear the area of any sharp objects, stumps, and debris.
- Grade the existing soil surface to provide adequate, but not excessive, surface drainage.
- Unroll the geotextile fabric over the application area. On a windy day, the fabric will need to be secured with pins, sod, stones, etc.
- Place the gravel on the fabric. It is best to back dump when unloading and spreading the gravel on the fabric with a truck. Then complete the final spreading and smoothing with earthmoving equipment like a bulldozer, front-end loader, skid loader, or scraper.
- Care should be taken when backfilling and compacting the gravel. Geotextile fabric is tough, so it can be driven on. However, truck tires may pull the fabric, causing it to wrinkle. This condition may affect the proper installation and performance of the system since less area may actually be covered by the fabric.
- If it is necessary to overlap the fabric in order to cover a larger area, a minimum of a one-foot overlap is required for proper use. In order to ensure a minimum of one foot of overlay after the placement of the gravel or other topcoat, it is recommended that the fabric be laid out with a two-foot overlap before placing the gravel on the fabric. Once placed, the gravel should be spread in the same direction as the geotextile fabric overlap to avoid separation between the two pieces of fabric. Staples are available to help hold the fabric in place.
- Compact the gravel using earthmoving equipment, a tractor, or farm trucks.

Maintenance

Since geotextile fabric provides separation between soil and gravel, or other earthen materials, the annual addition of gravel is usually not necessary as with conventional roads. The original depth of gravel should be maintained throughout the life of the system..

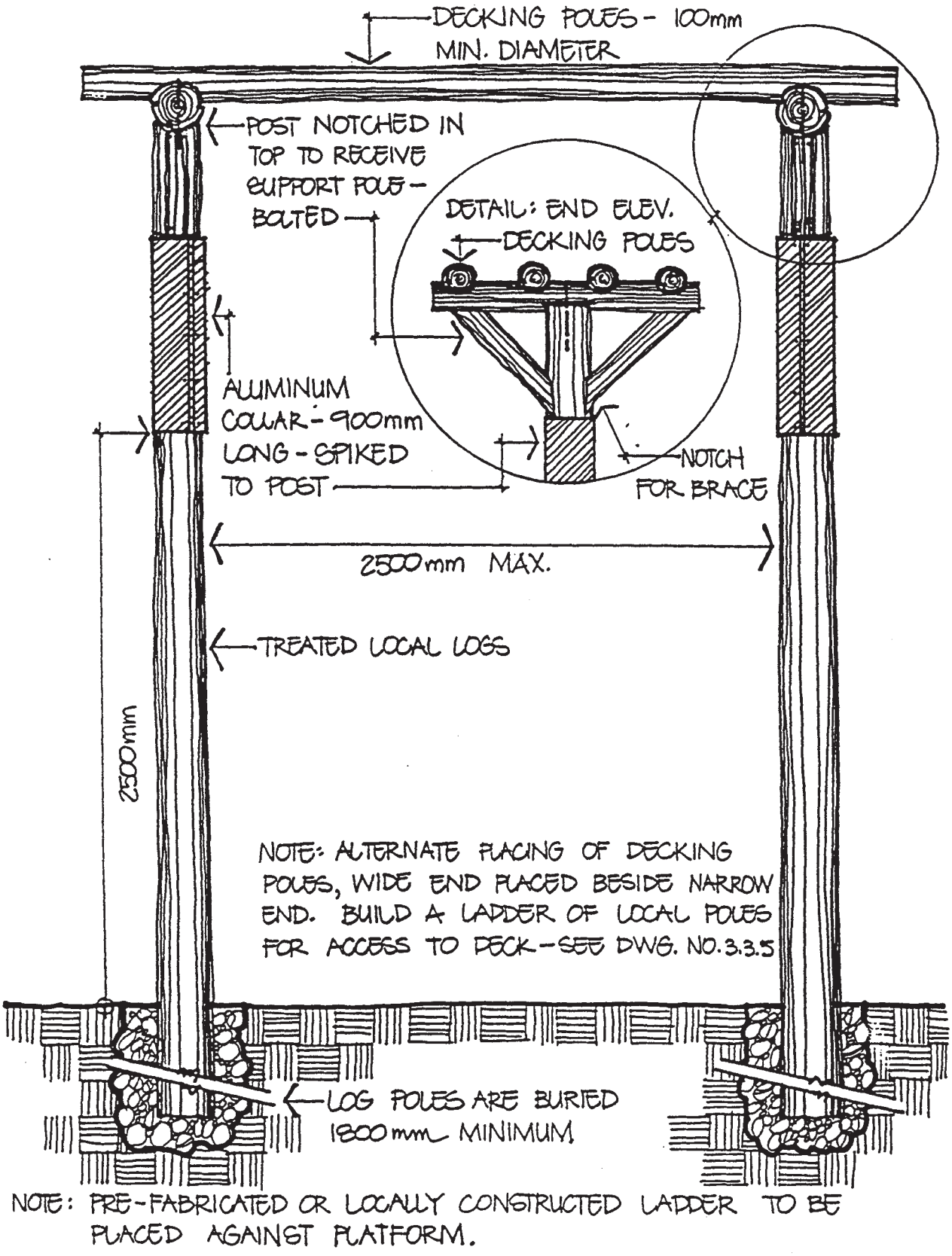
Notes:

421 Bear-resistant food storage



Source: Environment Canada

Food cache platform/log



Source: Environment Canada

422 The Wet Willy - a primitive toilet

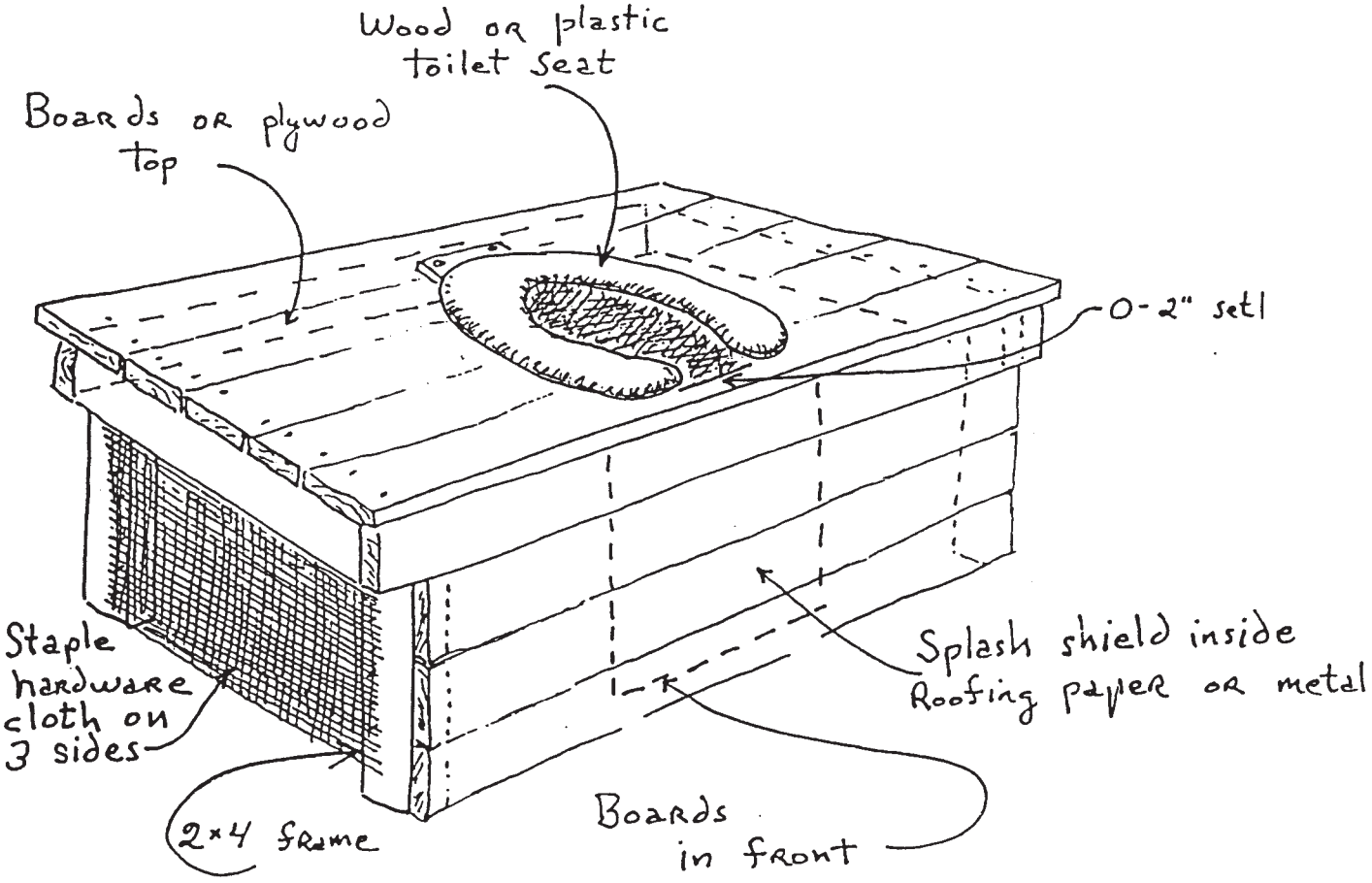
This simple outhouse will be suitable for many trails through the natural parts of Alberta. Use the Wet Willy when the trail receives enough use that the random use of bushes will result in unsightly and unsanitary conditions, but not so much use that a formal pit toilet will be needed. The northern regions and many canoe routes will be suitable sites. They should be installed at camping locations, not scattered "willy-nilly" along the trail.

The concept is based on keeping the waste at ground level, where it will decompose relatively quickly. The pit depth is critical: 6-8" (15-18 cm) maximum. Organic material buried below ground level does not receive enough oxygen to decompose properly and generates the familiar outhouse odour. Although the waste may pile up in a dry environment, it shouldn't smell (much).

Construction

Construction is simple and the measurements can be adapted to the available lumber. (Do not use any plywood, as it will quickly be devoured by porcupines.) The only critical measurements are: height should be 400 mm (16"), with the front of the seat set back no more than 50 mm (2") from the front of the box. A 50 x 100 mm (2 x 4") frame around the bottom will stabilize the screen, and keep the box together. If it is located behind bushes for privacy, be sure to indicate its position with signs as it can be easily missed.

Check the condition of the privy annually, preferably in the spring. Any material that has accumulated should be buried, and the toilet relocated.



Source: Getchell (1995)

Notes:

423 Development plan

Wow! What a lot of great ideas! Have they got you excited about building trails? Now, this section is where the Vibram hits the trail, and we get down to business.

The development plan lays out exactly what your committee will be building and what it will look like. Start by reviewing the first objective in the Workbook and making sure that it is still relevant. Are the proposed uses appropriate for the site and desired by the people you expect to use the trails?

This plan summarizes the decisions made by your trail committee, including the desired trail standards (i.e., the width and surface material) and types of support facilities. You should also have an idea of whether you will be using volunteers, contractors, or a combination. These are the main factors that will affect the price. Your fundraising people should be confident that the money will be available.

A trail project can be quite complex and perhaps a bit intimidating for inexperienced people. Where do we start? How much will it cost? How can we guess the price for something as uneven as a trail?

Trail log

Start by getting out your strip map and making sure all the information is on it. The construction manager should go through it from one end to the other, confirming that every construction item is listed and the location where the conditions change is marked. This will become the Trail Log and will be used for many years as the basis for the maintenance program. As a partial list of items to be included, consider these **features:**

- type of terrain
- intersection
- ground cover
- bridge
- % of side slope
- cairn
- track tread width
- water bar
- grade
- culvert
- surfacing and depth
- stream ford
- switchback
- shelter
- road and rail crossings
- retaining wall
- fence
- boardwalk
- sign
- drainage dip
- furniture
- rock section
- gate
- drainage ditch
- vista
- barricade
- stile
- sub-soil drain
- steps
- other special features

Now, just add up how much of each kind of construction is needed, like a giant shopping list. Leave space to include cost of materials, the time required (if using volunteers), or cost of paid labour. For example:

Clear to 2.5 m through aspen	750 m
Remove deadfall through spruce	550 m
Hand grub aspen stumps 1 m wide	750 m
Mow trail through pasture 1 m wide	950 m
Culvert, 500 mm diameter	4
Gate, steel	2
Park bench	5

Depending on the complexity of the project, you may want to have drawings or specifications done for each feature. This will ensure that the contractors understand what is expected and allow them to provide a more accurate estimate.

Now, the fundraising committee will take the proposal around to see what each part will cost and if anyone will provide it for free. Your group may have already asked for ballpark figures to help the budget process, but now they will ask for firm prices. These will help update the budget, and any special donations will be promoted by the public relations person. Decide how much of the budget is needed to get started. Generally, a project already underway is easier to get supported than a dream.

Phasing

Maybe you can't raise all the money that you need. Maybe you aren't sure of some important costs. Maybe you need to show some success before others will join your parade. These considerations lead to dividing the project into phases.

Phasing will avoid the frustration of a community group overextending its capabilities and resources. It will also establish an ongoing community commitment to the project from the beginning. Constructing the project over a number of years can actually be considered a benefit. It allows a more thorough evaluation of the planning and design for each phase of construction and avoids wasting money and material on equipment or features that do not satisfy the needs of the community.

A phased project is still the same, but it is separated into several smaller segments. Each phase must be able to stand alone until the next phase happens, but all must fit together to produce the original project.

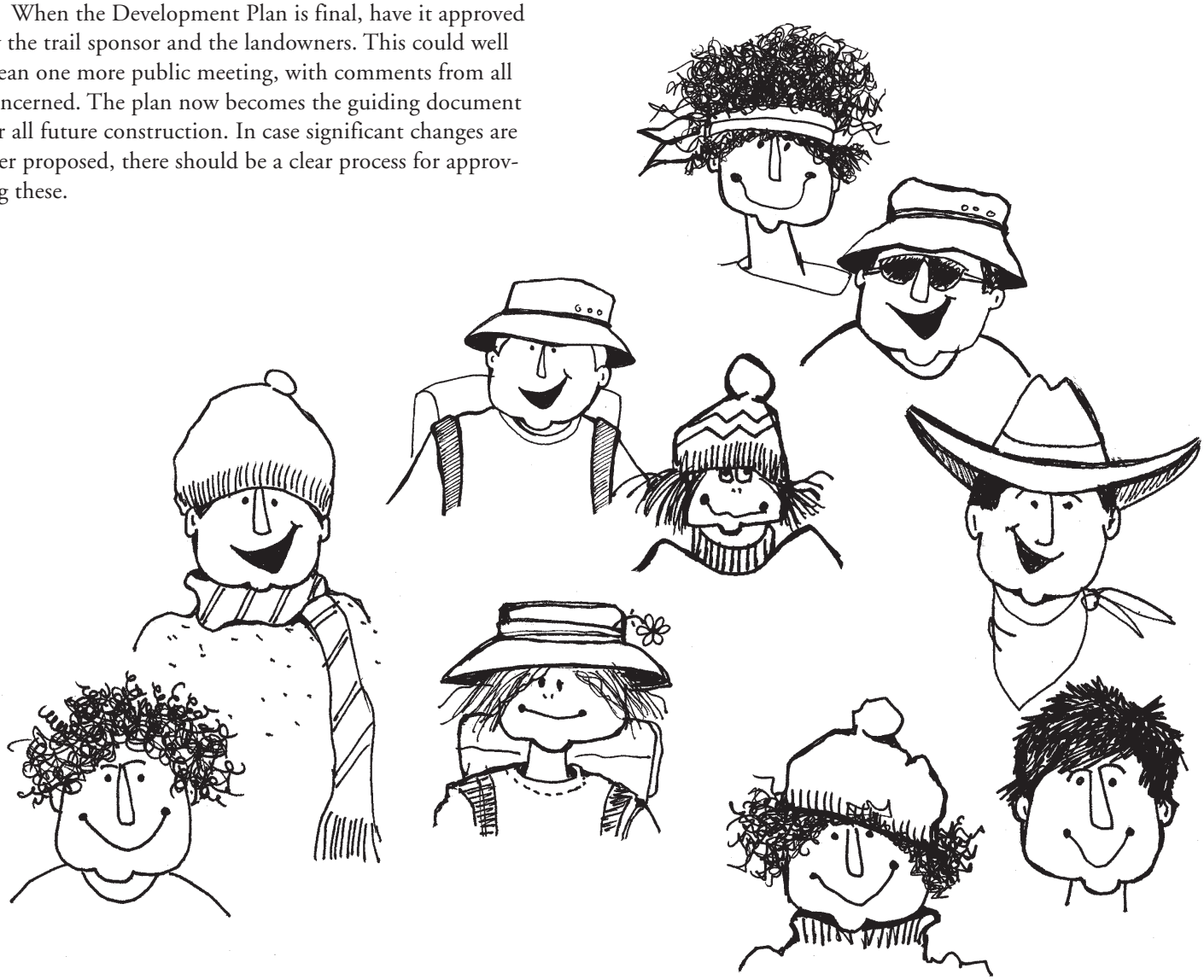
A few ways to divide a big project into smaller pieces:

- completely finish one section, then do the next
- clear the whole length for snowmobiles then add bridges for summer use
- proceed slowly with volunteers instead of contractors
- put a gravel trail in now then upgrade with asphalt on top later
- stop the trail wherever you run out of money (this must be a safe place. It puts pressure on everyone, especially the funding sources)

Whichever approach you choose, ensure that the sub-projects do not stand unfinished for extended periods. Unfinished equipment or facilities are frustrating to users and are prone to vandalism.

When the Development Plan is final, have it approved by the trail sponsor and the landowners. This could well mean one more public meeting, with comments from all concerned. The plan now becomes the guiding document for all future construction. In case significant changes are ever proposed, there should be a clear process for approving these.

Notes:



424 Trails and persons with disabilities

All recreationists should have access to our trail network to the maximum extent possible. Trail planners should make strong efforts to accommodate people with disabilities. In many cases, a little forethought can make the trail more accessible. On this page, you will find some suggestions specific to trail operation. The following page gives suggestions for including people with disabilities in the more general recreation community.

Use "inclusive" language in all promotions, signs, and brochures. Remember that your customers are people first, and may or may not be disabled. So, for example, say "person with a disability" instead of "disabled person." Simply use the name of the disease or condition, rather than a description which may be considered derogatory, i.e., say "person who has ..." rather than "person crippled by or afflicted with ..."

There should be no need to refer to disabilities; just describe the trail conditions and let people decide for themselves if it is suitable for their abilities. However, your maintenance should ensure that these standards are consistently met throughout the trail.

Many communities have "access committees" which provide advice on making facilities more accessible. A tour of your trail with these people might point out a few things which would increase the ease of use. Be sure to consider the entire experience, from parking lot to destination. Many wheelchair-accessible toilets have steps leading to them! Is the parking lot surrounded by a curb?

If your trail is particularly suitable for people with certain disabilities, contact social agencies to see if any recreation groups would like a guided tour. Often, these groups welcome such opportunities. Trails, more than most recreation facilities, can bring benefits to all people. Each person can go at their own pace and achieve their personal goals.

Many urban trails have cut-away curbs at intersections with roads. This helps cyclists, but can allow people with visual difficulty to get onto the road without realizing it. Prevent this by making the approach sloped, with a distinct texture on the surface.

Loose sand presents a serious barrier to many people with movement disabilities. To overcome this problem, lay a wooden snow fence across the beach, from the access path to the water and even farther if possible. The fence can be rolled up when the sand needs to be groomed.

Notes:

Canadians with a disability

Did you know that almost one in five Canadians - almost 3.5 million people – has a disability that restricts their activity or functioning in some way. Surprisingly, there are different rates of disability in various provinces ranging from 8.9 percent in Quebec and Newfoundland, to the highest percentage at 17.8 percent of its population in Nova Scotia.

The Most Common Types of Disability...

The most common type of disability is difficulty with mobility. Following that, the most common disability is related to agility (fine motor control). Almost one million Canadians are Deaf or hard of hearing. 27 percent of Canadians are limited because of learning, emotional or psychiatric disabilities, or because of developmental delay.

What can I do to ensure the full participation of persons with a disability in my community event?

Including persons with a disability in community and leisure events has many benefits for the individuals, the community and society as a whole. Here are a few steps to assist you in the inclusion process.

Develop partnerships with people with a disability. Involve individuals with disabilities and their advocates (parents, spouses, and teachers) as advisors in the planning process.

Develop partnerships with agencies serving people with disabilities. Agencies serving persons with disabilities can provide professional advice about how to best include their clients in community events.

Use a community development approach. Take stock of all that the community has to offer, including programs, services, training and other opportunities. Tap into these resources to enhance opportunities for persons with a disability.

Educate the individual about leisure opportunities. Avoid making assumptions about an individual's interests and abilities. Everyone is different and unique. Some individuals may have limited experience with leisure and recreation, so give them an opportunity to sample an activity.

Believe in inclusion and facilitate the inclusion process. Welcome people with disabilities to your facilities and work to provide necessary supports. Break down barriers to participation. Are your facilities accessible? Are your costs prohibitive? Do people with disabilities know about your program or event? Do you have volunteer support available? Do you make everyone feel welcome?

Be innovative! Think of new approaches. Explore new opportunities. Use an individual and personal approach to creating opportunities for persons with a disability.

Include Everyone!
Create Community!
Have a Blast!

If you want more information about creating accessible and inclusive community events, please contact:

ParticipACTION
Access Consultant: 306-525-6464

The greatest single barrier to participation for persons with a disability is the attitude of others.

Rick Hansen

Source: ParticipACTION

Section 500

Building the Trail

501 Steps in the construction process

Preparations

Construction is a classic example of where getting your "ducks in a row" will really pay off. The "ducks" to be lined up can be summarized as:

- confirm who owns the land: do title searches on all parcels
- confirm that the land is where you think it is: survey the entire route at a level of detail that ensures you are on the parcel that you should be
- locate all buried utilities by calling the "Call Before You Dig" line at 1-800-242-3447
- confirm what is to be built: have detailed drawings and specifications gathered into a single bound report. Ensure that clean-up and disposal of waste, environmental protection and restoration, and safety are included in the specifications
- include letters of permission from landowners, governments, and other agencies
- determine which components can be built with volunteer labour or donated expertise
- set out a timeline, indicating critical times such as freeze-up and the order in which the sub-projects must be done
- tender the contract work
- conduct a site tour with all prospective contractors to ensure they understand the conditions and standards
- get the volunteers working
- review the bids and make a short list by determining which companies can do the work
- award the tender to the company that will do the best job in the required time
- ensure a project manager oversees all aspects of the project and has authority to make changes based on new information
- ensure the manager reports to the Board or Committee regularly
- inspect the trail and identify any remaining problems or deficiencies
- hold back 5-10% of the contract until the deficiencies are remedied
- formally survey the final trail. This may be needed for land titles (License of Occupation, etc.) and as a base for your as-built drawing or plan.
- conduct a final inspection with the contractor, project manager, and perhaps the chair of the trail committee.
- send the final payment, with a letter of thanks, to the contractor formally ending the contract. A predetermined amount may be retained until the re-vegetation is complete, which may be several years later.

Specifications

Specifications are a detailed description of everything which must be produced, including size, material, grade, colour, and finish. Do not specify how the work is to be done (process or equipment) unless this influences the final quality. For things difficult to describe, state "to the satisfaction of the project manager." Detailed specifications should be done for all projects, whether they are going to be tendered or completed by volunteers. The trail committee will likely want to approve these before they are finalized.

Tender Documents go beyond the specifications to include all other aspects of a contract, thus ensuring that all bidders have the same information. Of course, the core of the package will be the specifications. However, the Tender Document includes several other important sections that give general direction while ensuring certain legal obligations are carried out. Your local municipality will have a standard tender document that you can follow. If expensive blueprints are included, most organizations charge $50 for the tender packages to reduce frivolous requests. The main sections are:

- general description or scope of the project
- specifications including all working drawings
- requirement to maintain all applicable licenses and permits, including a Workers Compensation Board account, liability insurance, and a performance bond
- schedule indicating at what stage of the project each payment will be made, including any performance or early completion bonus or late completion penalty
- reporting structure: name of your contract supervisor and details of any coordination with other contractors which may be needed
- safety for workers and the general public
- requirement to meet all federal, provincial, and local hiring practices

- general site and working conditions, such as erosion and siltation control, barricades, signs, and maintenance of traffic past the site
- any promotion or acknowledgement that will be given the contractor

As-built drawings

These can be a nuisance, but don't let this deter you! Future maintenance foremen will judge you on the quality of your records. Every structure, sign, and other feature should be numbered, listed on the trail log, and recorded with a photo. Any details should be listed on an inventory catalogue. Dimensions, materials, stain colour, installation technique, and supplier's name and address should be included. Include all working drawings, modified to show any changes made. Do it now, while the details are still fresh, the enthusiasm is strong, and the manpower is available. Why bother? Let's list some reasons: to facilitate ordering replacement parts, to document insurance claims, to give advice to other trail groups, to ensure the correct tools are taken for a repair job, and to help schedule regular maintenance.

Important tricks to remember:

- Have your maintenance foreman involved in the project right from the planning stage. Because maintenance people make a career of finding and fixing problems, they are valuable to have along on the inspections.
- If one bid seems too good to be true, perhaps it is! Confirm any unusual aspect of the contract (i.e., revegetation with certified native plant material) and confirm this conversation in writing. Even so, be ready to pay someone else to finish the job.
- The more experience the contractor has, the less formal the working drawings need to be. If you know the contractor well, a very informal relationship may develop. But don't let it get too loose.
- Be willing to learn from the contractor, but keep your objectives in mind.
- Surprises happen and they rarely save you money. Keep some sort of contingency fund available. Most contracts should include a daily or hourly rate to be used when these spring up.
- Changes to the project during construction may bring a request for extra pay for the contractor. If changes are anticipated, include some tentative language in the specifications. Possible phrases include: "as determined by the project manager," "subject to confirmation in the field," "contractor to confirm conditions before beginning".
- Mark "off-limits" areas with snow fence, or equipment may wander everywhere. Include a penalty for damaging nearby vegetation. Always work inside the trail right-of-way, not beside it.

502 Trail construction

Steps in construction

The main differences are the types of material and equipment used.

- flag the route with survey tape and/or stakes
- build the parking lot if one is needed. Use this to store any equipment or materials
- install any utilities needed (septic field, toilet vault, electricity, etc.)
- remove deadfall from the route
- do rough clearing of largest trees, salvaging timber where practical
- ensure the full clearing width is achieved
- remove stumps, roots and large rocks
- install bridges and other structures (these may have been prefabricated elsewhere)
- grub the soil to remove rocks and vegetation, and to smooth the surface
- remove topsoil, then add and compact the subgrade if gravel or asphalt is to be used
- install surface material and replace topsoil as required along edge of trail
- ensure crowning on level trails, or a slight cross slope on trails with a grade. To test, roll an orange down the trail, it should curve slightly to the downhill side
- clean up the area and re-vegetate any disturbed ground
- install signs, furniture, and trailheads

The last ten percent

Attention to final details and the cleanup of a site make a great difference in the ultimate appearance and quality of a project. Unfortunately, that final ten percent of effort is often neglected. Crew leaders should include time in their work schedule for this and motivate their crews to take pride in giving their work the polish it deserves.

Hand equipment

Construction in the backcountry requires a wide range of tools and equipment. However, a few basic tools will handle the majority of situations when hand-building a trail. Most of these tools are readily available at hardware or farm supply stores. Some of the more specialized items can be purchased from forestry supply stores, which often have mail-order departments.

- compass
- measuring wheel
- stakes
- pulaski
- pruning saw
- loppers
- spade
- chain saw
- drinking water
- clinometer *
- flagging tape
- axe
- rock bar
- frame saw (2 or 3 ft)
- mattock
- rope
- first aid kit
- hammers (regular and large)
- tool box with handtools: pliers, file, wire cutters, and screw drivers

* The clinometer is described in Section 504, Surveying.

Doing it right

Sometimes volunteers will say, "Enough of this planning! Let's get out and build"!

The drawings, specifications, meetings, surveying, and contracts can seem to go on forever. No, they aren't compulsory. Yes, you can get away without some of them, most of the time.

Some groups will save time by having an experienced project manager do most of this work, either on contract or as a volunteer. With a high level of trust and honesty between all parties, this can work very well. If your funding agency doesn't mind the informal nature of the arrangement, this person can go directly to people who have the skills and get the work done quickly.

If this arrangement goes wrong, it can go very wrong. The Development Plan is the statement of what you expect to be built. Without it to fall back on, you have no way to criticize what the contractor has given you. You may be back at the beginning, but with a lot less credibility.

The **pulaski** is a peculiar tool used mainly in forest fire fighting. It has a light mattock blade, with a small axe blade on the opposite side. Roots can be grubbed out with the mattock, then the tool is flipped over if the root must be cut.

Frame saws, sometimes called Swede saws, come in a variety of sizes. Their coarse teeth allow quick sawing of quite large logs. If the length of the blade is 2 ft or more, two people can work together. This tool is light weight and safety make it essential for any projects in forests. Often, this hand-powered saw is used for most work, then a skilled operator with a chain saw is brought in to finish the largest logs.

Bike trailers have been used successfully to carry the tools to the work site. They can be pulled by a bicycle if the grade is moderate, or by hand in steeper terrain.

Each worker should be equipped with:

- long, durable pants (jeans)
- leather work gloves
- safety equipment required for the tools being used
- substantial footwear, preferably hiking boots or shoes with safety toes.

Notes:

503 Finding a workforce

Once approval has been given and funds raised, it is time to organize an implementation plan. Decide what part of the project to build first and who will do the actual construction. The choice of using volunteer labour or hired labour will depend on both the complexity of the job and financial resources. A professional landscape architect or project manager will be able to assist you in determining the most appropriate route for your project. The options to consider are:

- hire a contractor to do all the work
- use volunteer labour under the direction of a construction foreman
- use strictly volunteer labour from the community.

This last option is recommended only if you have someone experienced in coordinating and supervising construction on your planning committee.

Contracted labour

If you choose to hire someone for any part of the project, investigate the previous projects that the candidates have managed. Are they similar in scope and approach to your project? Are the present managers happy with the results?

When you have chosen a person or company, you will require a contract to set out the terms of your agreement. It is important to have professional help in developing the contract to avoid legal and quality control problems. Most of the items which should be included are mentioned in the description of Tender Document in Section 501.

Volunteer labour

It takes a great deal of patience and skill to manage construction and to manage people, especially community labour. If you choose to use volunteer labour for any part of your project, make sure your construction manager can bring out the best from people with unique abilities.

Perhaps the ideal situation is to find "professional volunteers." These people do similar tasks as part of their regular employment, but have been loaned to the project. They often bring their equipment with them. For example, a municipality or large company may loan a truck, loader, and bobcat with their operators to build the trail if the project pays for the materials. This work can be scheduled during a slow period. Flexibility and cooperation are essential to match the needs of the employer and the project.

Once leadership for the project has been established, construction dates should be set, material ordered, equipment secured, volunteers contacted and committed, and task leaders assigned to supervise specific aspects. Planning sessions in advance of construction should be held. The project construction manager and task leaders should review construction drawings and confirm all arrangements. A first aid kit and refreshments should be available at all times during construction.

Crew safety

In any situation where the supervisor and the crew are not familiar with each other, there exists the possibility of misunderstanding directions or abilities which could lead to accidents. One of the very first statements from the project manager during the initial orientation should be, "If you are asked to do anything that you feel is not safe for you, another worker, or your equipment, do not do it. Instead, bring your concerns to my attention."

Full safety equipment, as required by the Workers Compensation Board (WCB), should be worn at all times when using power tools. Chainsaw operators must wear goggles and chainsaw pants and ensure the saw's safety features are operational. These points are especially important if workers are volunteers, who may not be as skilled with the equipment as regular workers. Workers should wear long, durable pants and long-sleeved shirts. Hard hats and safety boots should be worn if they are available.

Volunteers can be covered by the WCB if they are registered in advance through Alberta TrailNet's Edmonton office. Ask volunteers to sign up for work parties to ensure their names can be passed on to WCB. This will also enable the foreman to gather sufficient tools and materials.

Tailgate safety talk

Agency crews often start each workday and each new task with a brief review of safety issues. Devoting a few minutes to talking over safety concerns is time very well spent, allowing workers to shift into a safe-work mentality before starting the job.

Notes:

504 Surveying

"Any other feature of construction may be improved from month to month or from year to year, but if the grade is not properly established, the trail must in time be abandoned. Thus, not only may time and money be wasted, but the trail while in use will be unsatisfactory."

Trail Construction on the National Forests ; U.S. Forest Service, 1915.

Seven steps of surveying

Finding the route can be called exploring, but the documenting of it so others can build the trail is called surveying. Birkby (1996) lists these seven steps of surveying a trail route:

- study the printed resources
- explore the territory
- identify the control points
- plot the potential grade
- lay out the preliminary flag line
- survey subsequent flag lines
- stake the final route location while generating a construction log

By printed resources, Birkby refers to maps, air photos, and legal plans or land descriptions. Of course, a thorough knowledge of the area is essential before attempting to create a path through it.

Control points

The concept of control points may not be readily apparent. These are places where the trail must pass. While the destination is almost always a control point, the location of the trailhead may be flexible. Other control points may include passes, important viewpoints, and highway or river crossings. These are plotted on a topographic map and the elevation difference between them is determined. By measuring the straight-line distance between the same points, the average grade can be calculated. If this exceeds the desired amount (see Section 402), then the distance must be increased with curves, diversions, or even switchbacks.

Determining the optimum grade

Finding the slope of an existing trail requires patience and the proper equipment. Finding the slope of a future trail, where the ground is covered with vegetation and other obstructions, is difficult. Instead, let your fingers do the walking by determining the approximate route at home. With a topographic map and a pair of dividers, you can do much of the initial grade work without leaving your chair. In the process, you may also discover new possibilities for the route that could result in a better location for the trail.

Reminder: the grade is determined by dividing the amount of elevation gain (rise) by the distance needed to achieve this gain (run).

1 Consider the contour interval to be a unit of rise. Calculate the amount of run needed to achieve this rise with the desired grade.

i.e., contour interval = 100 ft; maximum grade = 8%; the horizontal distance between contour lines must be 100 ft/0.08 = 1250 ft.

2 Use the map's scale to set the dividers at this distance, i.e., 1250 ft.

3 With one point of the dividers on the contour line nearest your control point, place the other point on the next contour line. (You will have two choices.)

4 Mark this point, then swing the dividers around and onto the next contour line.

5 Continue this process toward your next control point. If you should pass this point before you have gained enough elevation, a route change or switchback will likely be required.

6 Use this process to try different options with different grades. Watch for secondary points of interest that could be used to improve new routes. Perhaps the trailhead can be adjusted to allow for a better grade. See Section 412 for more thoughts on how to handle steep slopes.

Using a clinometer

A clinometer measures the slope of the land between the surveyor and a point which is being sighted. (Most clinometers have two scales. Make sure you are using the percentage scale, not the degrees or chains.) Look through the instrument with one eye, and look beyond the instrument to your target with the other. Tilt your head and the instrument until a horizontal line appears to pass through your target. The number on the line should be the grade between your eye and the target.

Unless the target is the same height as your eye, errors will occur. The most convenient target is another surveyor. Conduct a test on a level surface to find out what part of the "target's" body is the same level as your eyes. Out in the field, the target should adjust their position until the appropriate grade is indicated. The person will then mark the position with a piece of flagging tape and move farther along.

By following this procedure, the approximate route determined on the map can be transferred to the ground. This preliminary flag line can then be adjusted to take local features such as large trees and rocks into account.

The surveyor's final task will be to stake the route and prepare a detailed log of what work must be done at each location. (Ensure that the construction workers know if the stakes identify the centre line, or the uphill or downhill edge of the trail.) Use a surveyor's wheel to measure the distance, and a labeled stake every 100 m becomes a "station." Each point needing special attention is labeled in the notes as "station number + metres," eg., 09+45 will be 945 m from the start of the trail. This log should be transferred to the Trail Strip Map described in Section 202.

Notes:

505 Total material removal equipment

Godzilla meets the Boreal Forest!

Total material removal machines have been developed by logging equipment companies. Imagine a large bulldozer with a giant grinder mounted on the back. The blade pushes down the trees, the treads flatten it, and the grinder shreds everything into coarse wood chips. It creates a smooth path as it rolls through the forest.

These gargantuan machines can make trail building a snap and save money at the same time. The concept grew out of the need to cut thousands of kilometres of seismic lines through the northern forest. This is extremely labour intensive and has led to problems with the trees being pushed up into giant windrows, which become barriers for wildlife.

The advantages of this system are:

- speed of construction - about 2 km per hour
- thorough removal of roots and stumps to a depth of about 40 cm
- little labour required
- can be cheaper on a finished, per km basis, than hand-clearing

What is the downside?

- leaves too much organic material, making the trail mucky in moister areas
- machine must be booked well ahead of the season
- requires substantial cash outlay - no chance for volunteer labour
- reduces the economic benefits of trail building to the local community
- hard to adjust the route at the last moment

Several people who have reviewed the system have come to the consensus that it will work well in certain situations. Ideally, the route will be planned like any other, using the methods described earlier in this manual. The larger trees will be felled and the trunks removed or burned. The equipment will then be hired to shred the smaller branches and the stumps to leave a pleasant trail surface.

Manufacturers suggest removing the mulch and replacing it with gravel for a firm tread. In some areas, this mulch is valuable for restoring other disturbed sites. If the wood has been removed, the residue can just be plowed to the sides, the soil packed, and gravel laid.

So, if you are planning quite a long trail through fairly dry level terrain, consider using this equipment. It can be an important cost-saving tool.

If you have trees to clear, you may have a local logging equipment dealer. Ask them about these machines. Most manufacturers have something along this line and will be able to tell you who they have sold to in the past.

Notes:

506 Trail Tailor equipment

Many urban and suburban trails are built wider than necessary just because contractors do not have any smaller equipment. A Peace River contractor recognized this specialized market for small construction equipment and set out to fill it.

Equipment and their benefits

Until now, the small skid-steer tractor, widely known by the trade name Bobcat, has been used for this work but it is heavy, expensive, and slow. The new design bases it's system on the ordinary all-terrain vehicle. Both the ATV and its replacement parts are easily available, and it has plenty of pulling power. Fully loaded, it can maintain a speed of 20 km per hour.

The first new piece of equipment was the belly-dump hopper trailer. It holds almost a cubic yard of gravel, at least twice what a bobcat will handle. With just a bit of practice, the chute can be opened on the move and the gravel is spread out well. In some cases, the excess soil is carried out on the return trip. The final width can be adjusted but is generally between one and two metres.

A small grader has an adjustable blade mounted on wheels. This cuts into the sidehill, then spreads the gravel evenly. A tanker, with a built-in sprayer, can spread water, herbicides, sealants like MC-30, and even calcium chloride. Both of these can be towed behind the hopper trailer. The final piece of equipment is a roller to pack the gravel. Together, this equipment provides all that is needed to build an aggregate trail.

Now, how well does it work? "Great!" according to the project manager for the 29-km Friendship Trail between Peace River and Grimshaw. The Trail Tailor is the best thing since sliced bread. "Even better than sliced bread. You can slice your own bread, but try moving a thousand tonnes of gravel in a wheelbarrow. This equipment let us build 25% more trail than planned, and still come in at least 25% under the budget!"

If you expect a fairly low use, say under ten people per hour, but still want a granular surface, then this is for you. The benefits of a narrow clearing width - less disruption, less material, more flexibility in routing - can be yours at a reasonable cost.

For details contact Alberta TrailNet at 1-877-9-TRAILS

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507 Digital mapping

The computer age has come to trail building! New technology has revolutionized the process of mapping trails. Traditionally, mapping has been carried out by survey crews using optical instruments. While these techniques give excellent accuracy over short distances, sight lines are required between the points. Significant time, expense, and extra clearing often result from the surveyor's requirements, and may not seem warranted in remote locations.

Computer-based mapping techniques can be divided into two types of machines: those which determine locations (GPS) and those which plot the results (GIS).

The combination of these techniques can result in professional reports and maps that can be updated very quickly. On the other hand, the detailed work required can also drive many people to distraction. Find someone experienced in this process, not necessarily even a trail enthusiast, to do this project. The result will be the ultimate in documentation, but don't let the work get you down!

Global Positioning System (GPS)

Global Positioning System (GPS) will accurately determine your position anywhere in the world by comparing radio signals received from several orbiting satellites. The result will have an accuracy of 15-100 m, which is excellent for most applications away from developed land. No line of sight is required between stations. The readings can be presented using the UTM grid or latitude and longitude.

This rapidly expanding technology brings frequent upgrades, but the basic accuracy seems to have stabilized. Older models tracked eight satellites on a single channel. Newer units track twelve satellites simultaneously on twelve channels, giving faster readings. With more satellites to choose from, new units have fewer problems from tree cover and nearby cliffs. The cost ranges from $250 to $700, and a variety of models can be obtained at most sporting goods stores.

Features to watch for include:

- ease of use, particularly the type of menu
- ability to up-load the data to a personal computer
- the ease of manipulating the data
- the type of map which can be displayed
- the number of points which can be stored
- the life-span of the batteries compared to the type of use envisioned

A few shortcomings should be considered when deciding which model is suitable for your needs:

- at this time, no models can directly print out their data
- relating the data to an existing digital map requires careful choice of compatible systems
- the machines can unexpectedly quit, or data may be lost due to operator error
- the accuracy may not be sufficient for some sites, such as a trailhead along a road

To get started, consider using GPS to locate control points along a proposed route and transfer these points manually to a map. By the time the trail is finished, you will likely be familiar enough to locate all trail features on the as-built drawings. If a survey is needed for a government permit, ask if GPS provides sufficient accuracy. Although professional surveyors will still be needed, the cost will be much less than an optical survey.

Many outdoor enthusiasts have purchased these devices as high-tech compasses. They can be used for this purpose but should supplement, not replace, a real compass and map.

Geographic Information System (GIS)

Geographic Information System (GIS) will plot a comprehensive map by integrating digital location data from various sources. The resulting map shows relationships between different land uses, enabling the trail planner to better understand the competing claims in the study area. GIS makes good use of existing data, reducing the time and expense required to accumulate the information.

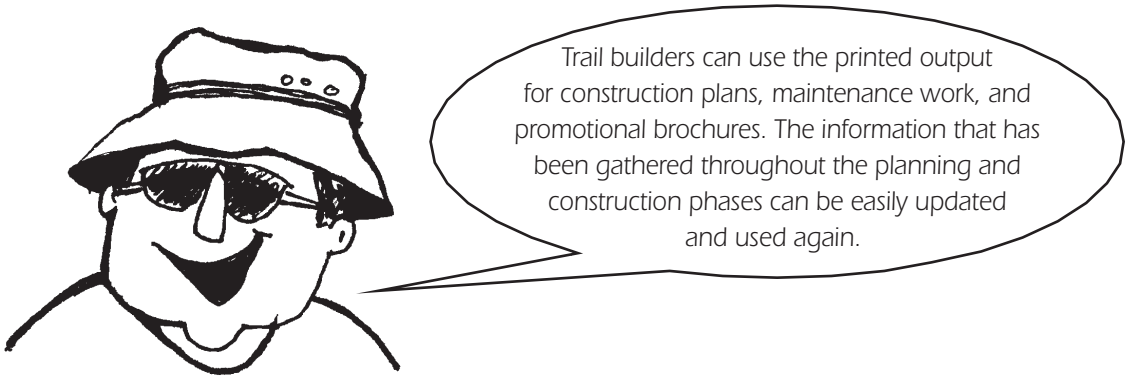
Sources of data include GPS measurements and digitized topographic maps. With suitable facilities, maps, blueprints, and air photos can be electronically scanned. The operator will identify several locations found on both data set, and the computer merges the data together. In the "olden days," draftsmen put layers of tracing paper over a map then photographed the total picture. This is simply an electronic version of this process.

Many resource agencies and companies use these systems, so you may be able to access their data, i.e., locations of cut blocks, forest types, access roads, pipelines. Check to see if the relevant organizations are willing to make this data available to you. Some companies are already doing this mapping as a public service for local trail groups. In other cases, technicians familiar with computer-assisted drafting may be willing to work for reduced rates.

The computer, software, and printer requirements are substantial and increasing quickly. Operators require years of detailed training. It is not feasible for trail committees to attempt this type of project without dependable technical support.

Future applications for this technology will increase as more organizations develop the capacity to use it. A national sponsor will provide digital base maps of the Trans Canada Trail so the local trails can tie into the bigger picture. At some point, the computer database will be directly linked to on-line information centres for remote access. A simple version of this can be found in Nova Scotia tourism offices right now.

Notes:



508 Re-vegetation and landscaping

Plants are the trail builder's friends! Millions of leaves soften the effect of rain and wind, while millions of tiny root hairs tie together the soil particles. Together, the natural vegetation stabilizes the ground's surface in a way we cannot hope to duplicate. It's too bad that a natural forest is so hard to ride a bicycle through!

The trail builder's challenge is to provide access for the trail users with the minimum disturbance to the vegetation. In some cases, the vegetation has already been disrupted and we should repair this as best we can. At the same time, the thoughtful use of planted vegetation can enhance almost every aspect of the trail experience.

Realistic standards

The first step is to determine what level of development is really needed. Sometimes trails get "overbuilt." The planner must take into account the trend to increasing use without simply trying to meet arbitrary standards from another jurisdiction.

The type of trail must match both the type of transportation proposed for the route and the type of experience. If wilderness is the experience desired, maybe the trail should be grass-covered with bridges only over the largest streams. Don't build a wide trail just because someone offers the use of a bulldozer! The less vegetation removed, the less erosion will occur.

In remote areas, the encroachment of vegetation on the trail can be a problem. This should be addressed with a regular maintenance program of mowing or pruning rather than creating an overly wide right-of-way to start with.

Landscaping as a management tool

Plants can effectively direct people to the appropriate location without the expense or intrusive appearance of a fence. For example, a large tree will mark the turn in a switchback and prevent people from taking a short cut. It will also physically support the upper trail. Shrubbery will prevent people from wandering off the trail. You may have to plant shrubs in certain areas to achieve this. If a real hazard would result from leaving the trail, use thorny vegetation. (Roses grow well, but will create a problem by suckering into the trail, especially if the surface is asphalt. Instead, use buffalo berry in the grassland region, or hawthorn in the moister regions. Neither of these will sucker.)

Sometimes a visual barrier is wanted to screen the trail users from the nearby residents, or vice versa. Planting a few native trees and shrubs will provide this, while focusing the trail user's attention ahead. On the other hand, trees can frame a view and give it real impact. In some areas, a few trees may need to be removed to allow viewpoints out of the "green tunnel" surrounding the trail.

If a physical barrier is needed right away, consider building a berm. This is an earth bank separating the trail from potential problems, such as a railway or highway. This should be planted with shrubs that will soften the appearance. The cost is high to produce this but it may be useful for short distances.

When a trail intersects with a road or railway, a fence may be needed to ensure that everyone crosses at the same place. This is especially important if the trail follows the same right-of-way before crossing. A fence is preferable to shrubs in this situation because of the better visibility.

Skiers and snowmobilers become extremely sensitive to the surrounding vegetation as it affects their activity. Dense evergreens catch and hold the snow leaving a bare patch below. Aspens, on the other hand, shade the trail from the sun while still allowing the snow to reach the ground. In the region south of Highway 16, where the snow can be uncertain, keep the winter trail on the north side of evergreens where it will be shaded. Farther north, it may be more important to gain protection from the wind by staying on the south side where possible. When passing through aspens keep the trail narrow to maximize the shelter.

Re-vegetation

Any land disturbed during trail construction must be replanted as soon as possible. Linear features like trails can allow weeds to gain access to previously weed-free fields. The objective is to create an extension of the existing vegetation patterns. Keep maintenance needs in mind by avoiding trees and shrubs that send out suckers.

The most appropriate species to plant are those that already grow adjacent to the disturbed area. Collecting seeds from nearby areas and planting them next to the trail is a labour-intensive activity suitable for a volunteer outing. Any commercially available seed mixes are likely to contain weed seeds. Use them with caution even if the species are suitable.

Pipeline companies are leading the field in vegetation restoration techniques. Some new products can be used in critical areas where the extra expense will be justified by reduced erosion problems. These include hydro-mulch and erosion control blanket, both of which are weed-free.

All developers considering plant restoration are encouraged to consult Gerling et al (1996).

Closing Trails

Some trails should be taken out of use and restored to a natural state. These may be ad hoc routes that have been replaced by planned trails. In other cases, a dense network of trails may have been developed before their impact on wildlife was appreciated. The habitat can be partly returned to the animals by focusing human use on fewer trails. Whatever the history, trail managers should take every opportunity to reduce their impact on the natural environment.

When trails are closed, the users must be informed of both the reason and the process. Signs should be posted before the site is reached as well as at the closed trail. The main idea is to keep people off the old trail until it can restore itself. A little effort in hiding the start of the closed section will go a long way to achieving this. Even a single tree planted in the middle of the former trail can change the flow pattern.

If sufficient labour is available and the slope is not too steep, cultivate the trail surface to allow quicker infiltration of rain. Place deadfall across the slope to slow runoff. Sometimes soil can be brought from a nearby area. Don't create a new scar or bring in soil from another site. Where the trail has eroded into a trench, dig logs or stones into the sides of the trail to create small check dams. These will trap sediment and help the runoff sink in. Finally, cover the trail with leaves, dead vegetation, and stones to break up the outline.

Shrubs should be the focus of restoration programs. This type of plant has become adapted to disturbance, whether that be fire, flood, or trampling. They can be easily transplanted, and can often be grown in bulk from cuttings before being planted.

Notes:

509 Final report

The final report brings closure to your committee's work. It formally passes responsibility from the Trail Development Committee to the trail operating group which will maintain the route. It documents the results, and explains the process which you followed to achieve them. It also provides inspiration for others embarking on similar tasks.

If you have faithfully recorded each step of your trail's development, you will have done most of the work already. The final report will mainly be a collection of other reports, bound together with a letter of transmittal from the chair of the development committee to the trail sponsor. Major donors will want copies of the report, as will your local library, some government agencies, and other trail groups.

The major sections will include:

- letter of transmittal
- goal and objectives of the project
- development plan
- narrative summary of the development process
- committee members and list of volunteers
- financial arrangements:
  - –initial budget with actual expenditures and revenues added as new column
  - –sources of funding for capital and operational expenses, especially major sponsors
- management plan and recommendations for future operation including waste garbage disposal, trail repair, policing, weed control and insurance etc.

The files that have accumulated should be consolidated and put in order. These should be placed in a single box or filing cabinet, preferably in the possession of the Trail Operator.

Materials that should be included:

- strip map
- resource book (review Section 202)
- all clippings and media coverage
- endorsements received
- landowner agreements
- other permits and documents
- contracts which were awarded
- all financial records: bank statements, cheques, invoices, receipts
- all specifications of the trail, materials, furniture, and other work
- sample copies of all promotional material, including maps and brochures

Distribution

Trail Resource Catalogue

The resources listed below are now available, for the cost of printing and shipping.

To order, send cheque or money order to:
Alberta TrailNet, 11759 Groat Road
Edmonton, AB T5M 3K6.

For more information, please call 422-7150 or toll-free 1-877-9-TRAILS.

Publications:	**Prices**
30 Years in the Making: A comprehensive economic impact and user study of the Bruce Trail, Ontario, Canada. 9 pages.	$ 5.00
Conflicts on Multiple-Use Trails: Synthesis of the literature and state of the practice. 38 pages plus appendices.	$12.00
Economic and Social Benefits of Off-Road Bicycle and Pedestrian Facilities. 4 pages.	$ 3.00
Economic Impacts of Protecting Rivers, Trails and Greenway Corridors: A resource book. 135 pages plus appendices.	$15.00
An Economic Impact Analysis of the Proposed Alignment of the Trans Canada Trail in East-Central Alberta	$25.00
Grass Routes Legacy Project: A proposal for trail development in Alberta. 21 pages plus appendices.	$ 8.00
Guide to Alberta's Trails. 16 pages.	$ 5.00
Multi-Use Trails in Canada: An analysis of some successful cases. 45 pages.	$ 8.00
Rails-Trails and Safe Communities: The experience on 372 trails. 15 pages plus appendices.	$ 5.00
Retrofitting Communities for Sustainable and Healthy Active Transportation. 41 pages.	$10.00
Trail Builder's Companion. 185 pages.	$20.00
Developing Your Wildlife Viewing Site: 79 pages.	$6.00
Cross Country Ski Trails: 69 pages.	$6.00
Alberta TrailNet Conference Proceedings: 1993 & 1994.	$12.00
Trail Talk Conference Proceedings: 1995 & 1996.	$12.00
Trail Talk Conference Proceedings: 1997.	$12.00
Trans Canada Trail Calgary Pavilion. Approximately 95 pages.	$15.00
Trans Canada Trail: Public Presentation. 17 pages.	$ 5.00
Wild Rose Trail System: A plan for the development of recreation trails across Alberta. 52 pages plus maps & addendum.	$15.00
Videos:	
"Rails to Greenways," Enhancing our Communities & Trans Canada Trail. 27 min.	$12.00
End of the Line: The Uhthoff Trail. 12 min.	$12.00
Trans Canada Trail Foundation: "Countdown to a Dream." 47 min.	$12.00

Section 600
Operation

601 What "operation" means

Recreation activities require two types of on going attention: the physical maintenance of the facility and the people-oriented operation. Of course, both are needed for a successful experience. Most of these topics are treated in some detail in other sections. This listing summarizes the overall program.

Physical maintenance:

- regularly inspect all trails to ensure safety and good repair
- remove deadfall and hazardous trees
- remove litter and empty garbage cans
- clean toilets and other structures
- keep woody vegetation from encroaching on trail
- repair or replace trail surface
- stain and repair trail furniture
- check and replace signs
- control erosion of trail surface or nearby areas
- ensure water drains away quickly
- set tracks for ski and snowmobile trails

Trail operation or programming:

- arrange appropriate advertising or promotion
- continue fundraising activities, as required, to ensure long-term viability
- produce and distribute maps, interpretive materials, and other brochures
- provide information to users, either with information attendants or with bulletin boards
- arrange special events and other programs
- set up volunteer programs
- operate trail patrols or other security programs where considered beneficial
- provide for the rescue of injured or lost people
- maintain contact with landowners, recreation groups, and other stakeholders
- provide commercial activities related to the trail
- ensure the operation is administered properly and the financial records are accurate
- evaluate and document the trail's impact

Who should manage the trail?

Building a trail requires a long-term commitment to maintaining it. Regardless of the size of the project, it will need repair, cleaning, and promotion. Eventually, in perhaps ten or 15 years, a substantial rebuilding may be required. An organization of some sort must be in place to handle this. The trail committee must address this issue early in the planning process. If the group does not expect to grow to fill this role, partners must be sought that can provide long-term support. The choices include government departments or agencies, not-for-profit organizations, and companies. Each type of organization has advantages and restraints.

Volunteer organizations, including service clubs and recreation associations, have increased in number and influence in recent years. Often growing out of special interest groups, they may go one step farther and provide the services they promote. Members bring a strong motivation and detailed knowledge of requirements for their particular area of interest. Their diverse backgrounds ensure a wide range of contacts and experience. A high profile and clearly defined project will keep interest high.

But volunteers can only carry on for so long before their enthusiasm wanes. Many groups handle this "burnout" by hiring staff to do the most demanding part of the workload. The Bruce Trail Association, for example, has staff who carry out most of the technical or administrative tasks. The staff support hundreds of volunteers who do much of the field work. Together, volunteers and staff provide an exceptional experience for hundreds of thousands of recreationists at no cost to the public.

Contractors are increasingly being used for specialized maintenance operations. They can bring expertise and equipment suitable for certain tasks with little overhead or administration charges. They can generally achieve economies by doing the same task for similar facilities in the same region. Custom track-setting for snowmobiles is one service now available in Alberta, but other services could be initiated by the private sector as well.

So what is the best approach to managing a trail? Obviously, there is no single "best" answer. Increasingly, recreation facilities are moving towards partnerships where several organizations have meaningful roles. Each will bring strengths to the table and each will contribute to the overall project. Look at the following example of how this could work:

Government agency:

- Provides the land base in cooperation with the forestry company
- Provides some capital funding through granting foundations

Trail group:

- Advises the government staff on what facilities are needed
- Raises money to pay for their operation and some capital development
- Carries out most ongoing maintenance, especially weekly trail checks
- Staffs the visitor centre and sales counter with volunteers
- Hires the trail grooming contractor

Contractors:

- Groom the winter trails as per schedule
- Provide firewood
- Produce brochures or books for sale based on research by volunteers

Financial security is an essential aspect of long-term stability for the trail. Some of the funding sources used in Alberta and other places include:

- **Annual permit:** province-wide or local; just local users, or all users
- **User fee:** requires staff for collection and enforcement; creates high liability, potential security problems
- **Donations:** most effective away from the trail; users don't bring wallets
- **Sponsors:** a service club, agency, or company may pay some or all of the costs
- **Services:** selling food, supplies, or souvenirs can bring substantial revenue
- **Events:** races, loppets, and fun runs etc., generally bring in profits

Notes:

602 Preventing user conflicts

Many trail surveys have shown that all users are seeking relaxation in a natural environment. The means of achieving this experience range from solitary walking to rigorous cycling or long-distance snowmobiling. Each of these activities is valid in itself, but the simultaneous use of the trail by several types of users can cause problems. This becomes more pronounced as the level of use increases.

If people realized how difficult it was to plan and build a trail, they might be more willing to share it with other recreationists. However, most people simply arrive at the trailhead ready for fun and enjoyment. They give little thought to other people with other ideas of "fun."

Generally, people with the slower mode of travel will be upset at the presence of faster users, but not the reverse. Eventually, the faster users will begin to have negative reactions to the negative comments of the slower users. Planning can reduce conflicts and enable more people to use the same trail. These points should be considered for all trails but particularly when reports of trail conflict occur.

The initial response of trail operators confronted with user conflicts is to limit the use by one particular type of user. This reaction fails to recognize overcrowding as the basic problem. Reducing the length available to certain users will only increase their effect somewhere else. The conflict will persist, although it may move to a different jurisdiction.

Trail management

Instead of restricting trails, operators should search for ways to expand the trails available. Some lands have not been considered for recreation because they do not meet the personal needs of recreation managers. For example, abandoned gravel pits, unused logging roads, and rural roads offer real appeal to certain types of recreationists. In other situations, a little promotion for under-used trails can disperse the crowds. Many people use popular trails just because they do not know of any alternatives.

- Recreation managers should respond quickly to new trends in trail-use by providing suitable facilities.
- The trail must be suitable for all of the allowed uses. In particular, the grade should not be so great that bicycles skid going downhill. Good drainage should prevent mud holes.
- Maintenance programs should repair any problems before they become serious.
- All users should be aware of the other types of users on the trail and potential conflicts posed by adjacent landowners.
- All users should be aware of appropriate behaviour on the trail and especially how to interact with other users and adjacent landowners. (Refer to the Use Respect notice on the following page. All trail managers are encouraged to use this for shared-use trails.)
- A Trail Patrol has been shown to bring significant benefits to shared-use trails with a moderate or high number of recreationists. Patrollers provide a positive role model, as well as explaining the reasons behind the regulations. Volunteer patrollers should not be expected to issue tickets.
- A management or advisory committee, with membership from all stakeholders, allows concerns to be discussed before they become serious. All groups can be involved in seeking solutions.
- Trail managing agencies should monitor both the trail condition and the level and type of use, to determine any trends and to substantiate requests for maintenance funding.

Alberta

TRAILNET

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USE RESPECT!

When enjoying the Wild Rose Trail System.

As a responsible trail user, I agree to:

- Inform myself about trail conditions and local rules

Respect the Landowners by:

- Staying on the trail
- Stay off their property, trespassers will be prosecuted
- Respecting privacy by minimizing noise and disruptive activities
- Obeying all signs, including trail closures and any local firearms regulations
- Not interfering with any livestock or other farm animals.

Respect the Environment by:

- Camping, "smoking", and lighting fires only in designated places
- Carrying out all garbage including cigarette butts
- Respecting restrictions on dogs as posted
- Not disturbing wild animals or plants (you could be prosecuted)
- Not taking short cuts off the trail, especially across switchbacks
- Using the toilets where provided (animal and human waste must be dealt with appropriately)
- Avoid use of trail under wet conditions

Respect other Trail Users by:

- Behaving courteously toward all other users
- Ensuring other users are aware of you
- Yielding the right-of-way to users traveling more slowly
- Always traveling at a speed which allows a safe response to the conditions
- Sharing the trail experiences with others

* Remember, when meeting equestrians, it is important to speak so the horses are aware of you

Continued use of this trail depends on your prompt reporting of trail abuse!

TRANS CANADA TRAIL
SENTIER TRANSCANADIEN
TM/MD

For more information about Alberta TrailNet or to report any problems with this trail:

Toll-Free 1-877-9-TRAILS

PROMOTING A TRAIL NETWORK, INCLUDING THE TRANS CANADA TRAIL, WHICH CONNECTS ALL ALBERTANS

603 Public safety

Managing a trail involves providing a safe and enjoyable experience. This seems straightforward at first, but challenges arise when the provision of safety begins to infringe on some people's enjoyment. How can these be balanced?

Legally, the responsibility (and required level of service) is based on the expectations of an average person. A national park trail, cared for by many professional staff, would lead to a higher level of expectation than a local nature trail obviously created by volunteers. Regardless of experience, though, all trail managers should do their best to provide a safe trail.

Conditions of the trail

The other important task is to ensure that the user is aware of what conditions will be present, and that they take responsibility for their own actions while on the trail. Promotional material and trailhead signs must accurately describe the conditions. A regular maintenance program must ensure that these conditions are met. The particular level of maintenance is not as important as its dependability.

Some trails have inherent dangers, and without them, the trail would be pointless. For example, nearly every viewpoint has a sharp drop-off in front of it. A handrail is a reasonable expectation. A waist-high chain link fence could be expected if families often use the trail and the drop is substantial. A higher fence with barbed wire would likely be over-reacting. Choosing the appropriate level of protection must be done in consultation with others on the committee, perhaps after talking with other trail managers.

Other dangers do not significantly improve the user's experience. A trail along the edge of the cliff could be spectacular, but would a more protected route with a few viewpoints give the same effect with less opportunity for accidents?

The users must be made aware of the specific hazards that may be encountered on the trail. This must be obvious; don't try to downplay the danger. If the problem is worth mentioning, the warning should be firm enough to cause a few people to turn back. Some of the hazards that should be mentioned include: bears (specify grizzly and/or black), cliffs, falling rock, ice across trail, rattlesnakes, impure stream water (or lack of drinking water in hot areas), potential for hypothermia or heat stroke, or dangerous domestic animals on the trail (bulls).

A formal waiver is one way of documenting that the user has been told of the hazards. Few trails have the degree of risk or sufficient manpower to make this feasible. Some agencies have put warnings on each page of sign-in books to ensure maximum visibility. A waiver may be warranted for specific guided activities, but must be carefully worded to be valid.

The trail development itself must not introduce hazards. Ensure the trail is wide enough for the anticipated volume and type of use. Good sight lines will allow users to avoid each other. Trailheads should provide a smooth and safe transition from one mode of travel to another. Remember that in many cases, trails greatly increase overall safety by allowing recreationists to get off roads and follow a managed route.

Emergency services

The public expects the trail managers to respond efficiently in the event of an accident. A process must be in place to ensure this. The most common problems should be considered and preparations made for quick reactions. If emergency services cannot be provided, this should be clear on the brochures and trail guides. Users should be informed of the location of the nearest telephone and the emergency telephone numbers. This can be on the trail guide or at the trailhead.

Emergency services should have the names of experienced contact persons. These may be the trail managers but could be others. The local RCMP detachment may respond to these calls, or perhaps nearby provincial parks will take on this role. These arrangements must be made in advance and all parties must know their responsibilities. All incidents should be recorded and filed, filed by the trail operator with regular review to determine if safety could be improved.

Insurance

The final step is acquiring insurance. One can hope that with a proper risk management program, no accidents will occur and insurance will be unnecessary. However, accidents do happen and insurance will protect the volunteers on the sponsoring group. The most economical practice is to have the municipality co-sponsor the trail and include the trail in their policy. This can be done with little or no extra expense as the trail has insignificant risk compared to the roads, recreation centres, and other facilities already covered.

The Trans Canada Trail has secured a broad insurance policy that organizational members of Alberta TrailNet can join. Trail groups operating parts of the Trans Canada Trail must have coverage under this or a similar policy; for other trails, it is an option. Specific questions may be directed to Johnston Meier Insurance Ltd. at 1-888-664-4544.
It should be stressed that this does not cover any trail users if they sustain injuries. Generally speaking, the policy includes these aspects:

- liability coverage for the trail managing organization
- liability coverage for adjacent landowners for claims brought by trail users

- property insurance for the trail itself (i.e., damage to bridges or the surface material)
- optional Directors and Officers insurance. This is usually needed only if the group has employees, contracts, and fairly broad business interests

The current Alberta Occupiers Liability Act places a high level of duty on landowners, making liability insurance a prudent precaution. This provincial legislation specifies that landholders are liable for the safety of recreationists on their land. This is true whether the land is primarily used for recreation or if it is agricultural in nature. Similar legislation in many states and several other provinces has been amended to reduce the obligation when there is no entry fee. For further information, please consult the recent report by the Environmental Law Centre at 1-800-661-4238 Occupier's Liability or McCarthy Tetrault (1995).

Another type of hazard frequently mentioned when new trails are discussed is the chance that trail users could be criminals seeking to commit a crime. Both other trail users and adjacent residents are potentially at risk. Tracy and Morris (1998) have conducted a comprehensive study of 372 existing trails to determine the actual frequency of reported crime along trails. They separated responses from urban, suburban, and rural trail managers. The incidence of crime was correlated with the number of users. Overall, the crime varied from very low in the urban area, to virtually non-existent on rural trails.

Trail design is an effective way of promoting trail safety. Overgrown shrubbery should be pruned back, security lighting may be placed at trail intersections where feasible and parking lots, and emergency access accommodated. Vandalism or worn features must be repaired immediately because a run-down facility receives much more vandalism than a well-kept one. Many trail managers have set up special trail patrols. These range from maintenance crews on regular safety checks to police or bylaw officer patrols, either on bicycle or motor vehicle.

To summarize, risk management involves carefully considering all possible risks which may be present, then removing those which are not essential for the experience. The user must be aware of those that remain and take personal responsibility for using the trail. Emergency procedures must be in place to deal with accidents and criminal activity. An insurance policy is considered a worthwhile investment to protect the trail managers and the adjacent landholders. Regular and planned reviews of the entire program will indicate if changes should be made.

Notes:

604 Fire control

Wildfire presents a serious risk to adjacent landholders and trail users. All trail operators must have a well-considered fire management plan which has been developed in cooperation with existing emergency services. All preparations, including maps, radios, and other equipment, must be compatible with those used by the local fire department. The fire suppression plan should be presented to all adjacent landowners and the municipality for their information and comments. Other important stakeholders include provincial departments (forestry, mining, public lands, parks and protected areas, fish & wildlife) and the principal industrial companies (forestry, pipeline, oil and gas). The main points to include in the plan are indicated below, along with suggested standards.

Prevention

Uncontrolled fires can be prevented through many practical means which will vary with the location and even with the season. Each of the following points should be discussed with all stakeholders and applied if they seem appropriate for your situation:

- include on your strip map an inventory of fuel loads, vegetation breaks (cultivated areas, roads, etc.) and sources of water (summer and year-round)
- ensure signs clearly state the required behaviour, and include emergency information
- restrict smoking to campsites, or ask people to smoke only when stopped at designated spots
- restrict campfires to designated fireplaces
- prohibit all open fires (when fire hazard is high or perhaps at all times)
- temporarily close the trail to all use (when fire hazard is extreme)
- keep grass mowed along trail
- keep brush mowed two metres back from trail
- arrange grazing of the right-of-way to reduce fuel levels
- consider building a fire break between the trail's r-o-w and any cultivated or hay fields
- with the close cooperation of the adjacent landholders, isolated areas with high fuel load can be selectively burned. Refer to *How to Manage Small Prairie Fires,* by Wayne Ruby, for practical advice (available from the TrailNet office)
- clearly post the name of each feature (campsite, river, viewpoint, road) and post kilometre markers to facilitate the clear reporting of all problems

Readiness

All people associated with the trail must always be alert and ready to decisively extinguish any fires. This requires the cooperation of all parties. Fire control must be built into all maintenance operations, enabling the entire operation to be constantly ready. Remember that in the grassland region, the peak fire season is in fall and early spring, so fire suppression equipment must be available at all times.

- Review the Fire Management Plan at least annually and amend as required.
- Have all volunteers and staff firmly enforce the preventive measures listed previously.
- Where the terrain allows, ensure that fire trucks can access the trail (i.e., along road allowances or abandoned rail lines). Have keys to any gates clearly labeled and kept with the fire fighting equipment.
- If the trail is not accessible to vehicles, arrange with adjacent landholders to access through their land. Keep their telephone numbers handy.
- Have a map which clearly shows the best access routes in every fire vehicle.
- Ensure all brochures and signs indicate a 24-hour telephone number to call to report fires. Post this at all campsites and trailheads, along with the location of the nearest phone.
- Consider placing simple fire fighting equipment at key locations, for use by trail users.
- Consider having one fire drill each spring to ensure the system is ready.
- Have a formal method of determining the fire hazard, and a specific person and an alternate named to make this decision. This person may also be the "fire boss" who supervises the suppression actions.
- Have a formal method of letting the public know what the hazard is and what behaviour is appropriate.
- Acquire any specialized equipment required to fight wild fires in your region.
- Find and train volunteers to fight wild fires. These people may be in addition to an existing local fire department.

Action

When a fire is reported, the first thought is to rush in and get fighting. Stop! Take a deep breath and review the fire suppression practices you have set up. A few seconds taken here to review the entire situation - weather, terrain, trail users, and manpower available - will make the entire operation run smoother. Notify all other emergency services in the region.

Remember that the first priority is to protect human life, so ensure the firefighters are safe and can be evacuated if conditions change. Register every firefighter, and have them sign out when leaving. Now is not the time to recruit numerous new and untrained "volunteers." Notify any residents near the fire and ask them to remain on alert. Have a responsible person dedicated to handling the telephone and radio messages.

Question the person who reported the fire to determine if other people were along the trail. What time did it start or when was it first noticed? How fast was it spreading? Make notes of these informal interviews so you can refer to this information later. Consider how the fire may have changed since it was last seen.

Actual suppression techniques vary with the landscape, from grasslands to muskeg to forest. Your provincial park or forestry staff may provide advice and perhaps some training for volunteers. Wherever you are, concentrate your efforts on using and improving any existing fire breaks. Even the trail itself can interrupt small fires. Dramatic actions like felling trees and bulldozing new fire guards in the heat of an actual fire should be left to professionals. More harm than good can result from ill-considered measures.

Equipment

Pulaski: The same pulaski which was so useful in building the trail should be kept handy to help extinguish any fires.

Flapper: A flapper is a 300X450 mm piece of reinforced rubber attached to a 1.5 m handle. (Truck mud flaps can be used.) Strike the base of the flames, then leave the flapper in place for a second to smother the fire. Flappers work best when teamed up with a backpack sprayer. Knock the flames down with the water then put out the fire with the flapper.

Sack and bucket: Although this sounds primitive and ineffective, these simple tools can give excellent suppression in grass fires. The burlap sack can be dipped into a pail of water then swept across a metre or two of burning grass. This makes very efficient use of water, which is often difficult to get to a fire site.

Backpack sprayer: This tool consists of a 20 litre plastic water tank with shoulder straps for carrying. A short hose leads to a nozzle which can direct water about 5 metres. Pressure is provided by an air pump built into the nozzle. Easy to use and cheap to buy! Most useful for putting out illegal campfires and similar minor situations. Also very good for soaking "hot spots" after the main fire is out.

Fire Rake: The triangular tines, similar to the cutters on a bar mower, can be honed with a file. When fighting a fire in a forest, use the fire rake to clear duff from a quick fire break.

605 Programming

Let's look a year or two into the future. Planning the trail involved meetings and hard work. Building the trail was challenging and hard work. Using the trail is a lot of fun, but still some hard work, too. It will take a few years for the trail to become part of the community. Until then, someone should help it get established.

Unlike most facilities, trails benefit from being used. The surface gets tougher and the weeds are trampled. Any problems get reported promptly and can be repaired before they get worse. Vandalism will be reduced to a minimum if folks are using the trail frequently. The bottom line is a little time spent getting people on the trail will be a good investment.

Luckily, trails are easy to "sell." The citizens are already looking forward to seeing what the route looks like. Your volunteers have probably brought their friends out to see it even before completion.

Trailhead maps and brochures

Keep in mind that the trail users have two simple questions: where does the trail go and what behaviour is acceptable? You should make the answers clear and consistent from the first time you promote the trail. Trailhead maps will be needed for most systems. Perhaps a simple brochure with a map and the code of behaviour can be distributed to all households to promote the official opening.

If your trail has a significant tourism objective, you will need to work with your local and regional information office or Chamber of Commerce. Have them distribute your brochures and tell visitors about the trail. Make sure the trail is included on the general map given out at these offices. Ideally, this group will give monetary support for the trail's maintenance. After all, visitors are coming, in part, to see the trail. Very few people come to town just to see the motel! A trail is the best way to keep tourists in town for another meal. The companies making the profit can be expected to help pay for the attraction.

Many people will find the trail on their own if you have sited it properly and it goes to and from places of interest for the user. Others will need some inducement to take the first step. As with other parts of your organizing, it will make more efficient use of your time to focus on existing groups at first. For example, every organization in the community should receive an invitation to visit. Members of your committee can give guided tours to groups, especially those who helped with the fundraising or construction.

Use by community groups

Community development means getting more and different people involved. Show other community leaders how the trail can help meet their goals. Naturalists can be asked to offer regular nature walks along the trail. Fitness centres can distribute maps and include the trail as part of their routine. School physical education classes may need to have the trail pointed out to them, but will soon become firm supporters. Contact organizers of existing fun runs, loppets, and walking clubs. They will want to move their activities to the trail, where safer and more enjoyable conditions will enhance their projects.

Trail security and emergencies

Trail security is an important program. Ensure your police or bylaw officer knows the trails and visit them regularly. Patrolling the trail can be an excellent opportunity for the police to develop positive rapport with the younger citizens. A group of trail stewards, perhaps with a distinctive vest or other identification, can keep an eye on behaviour while removing litter and checking for maintenance problems. These people can notify the manager if a party spot seems to be developing. Volunteers can advise other users of the correct behaviour, but should never be asked to reprimand offenders or give tickets. This requires professional training.

A plan for dealing with emergencies should be written down and practiced to ensure it works. Possible problems include injuries, wildfires and floods.

Hunting while on trails has raised considerable discussion. The hazard to other trail users must be balanced with the desire for better off-road access to hunting areas. In some areas, hunters will be the largest group of users. The provincial government has set a precedent by allowing an annual hunting season in Cypress Hills Provincial Park. The final decision will be up to each trail operator, in consultation with the adjacent landowners. If hunting is allowed, signs must be posted at all trailheads advising users.

Special events

Many trail operators find that a special event will raise awareness and generate fresh enthusiasm for the trail. And these activities are just plain fun! Excellent suggestions are included in ParticipACTION's Handbook for Community Events. (See References.) When planning the event, keep in mind that people often take a couple of weeks to get adjusted to the changing seasons. An event scheduled for early in the season may help make the transition easier. Mother's Day is a good time and can be helped by the many wildflowers generally found then. (But leave them for other mothers to enjoy!) On the other hand, if conditions could be uncertain, aim for the best possible time. Winter-oriented events in the grassland region should be held in February to reduce problems from extreme cold.

Generally, only a small committee is needed to organize this event. Don't try to do everything for everyone. Maximize community spirit by inviting other groups to

take part. Keep the formal speech-making to a minimum and just let people mingle. Most event programmers commit to having a venue or site prepared. This would include electricity and portable toilets. The general promotion would also be handled by the committee. Beyond that, the participating groups or companies are responsible for their own arrangements.

Some sort of a theme helps promote the event, but you can't stick too closely to this. Food booths, the high school band, and the dog obedience class are always popular, no matter what the event. "Hang loose" and let people have a good time.

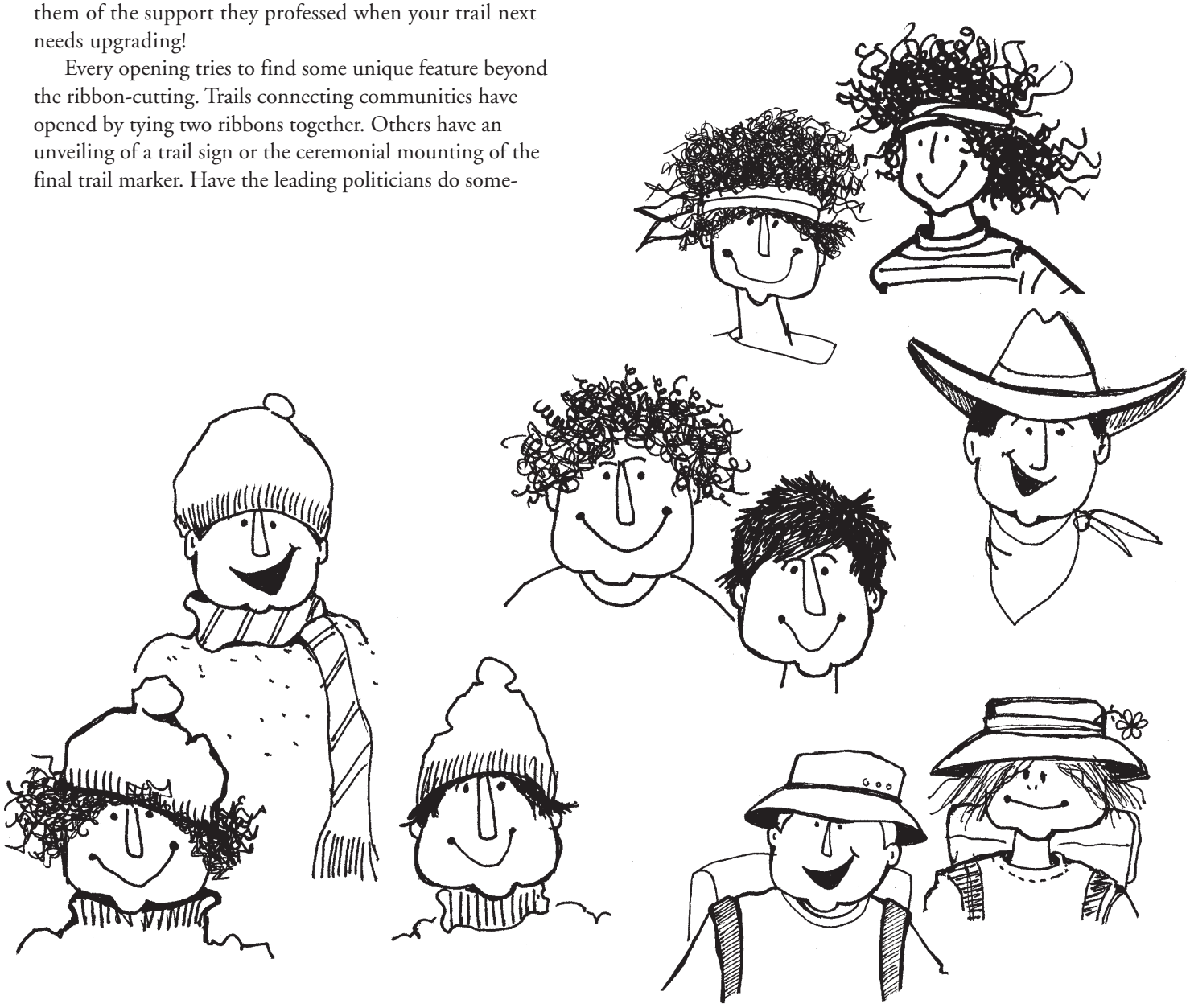
Grand opening

The official opening of the trail is one type of special event. Of course, in addition to the activities already mentioned, this event should have some messages from politicians. Let them share in your glory now. Remind them of the support they professed when your trail next needs upgrading!

Every opening tries to find some unique feature beyond the ribbon-cutting. Trails connecting communities have opened by tying two ribbons together. Others have an unveiling of a trail sign or the ceremonial mounting of the final trail marker. Have the leading politicians do something! Most openings end with the group travelling at least part of the route, perhaps accompanied by a well-known "patron."

The invitation list to this event is critical. If someone is left out, they will be disappointed. Get your letters out well in advance to ensure attendance. Check with the essential politicians before setting the date, to ensure they are available. If your MLA is not able to attend, ask for a personal message to be read by the master of ceremonies. Personal invitations should be mailed to the mayor or reeve and all counsellors for all jurisdictions that the trail crosses, as well as all volunteers, contractors, suppliers, and donors.

Review Section 306 to ensure you have the news media fully involved. Give them enough notice, but not so much that they forget about the event. Take some pictures for them, just in case.



606 Signs

The bane of the maintenance manager. The darling of the graphic artist. A blight on the landscape. Whatever you feel about signs, they are here to stay. And for good reason.

Important functions of signs:

- safety for the trail user
- management of the trail and surrounding lands
- information about the trail, including how to find it
- purpose and image of the trail sponsoring organization
- emergency contact information

However, they can get out of hand, too. Consider every sign before you install it. Is it really necessary? What will happen if it isn't used?

Unnecessary signs include:

- signs warning of signs ahead
- too frequent reminder of regulations
- too frequent advertisement of commercial services
- information about very distant sites or routes

Signage standards

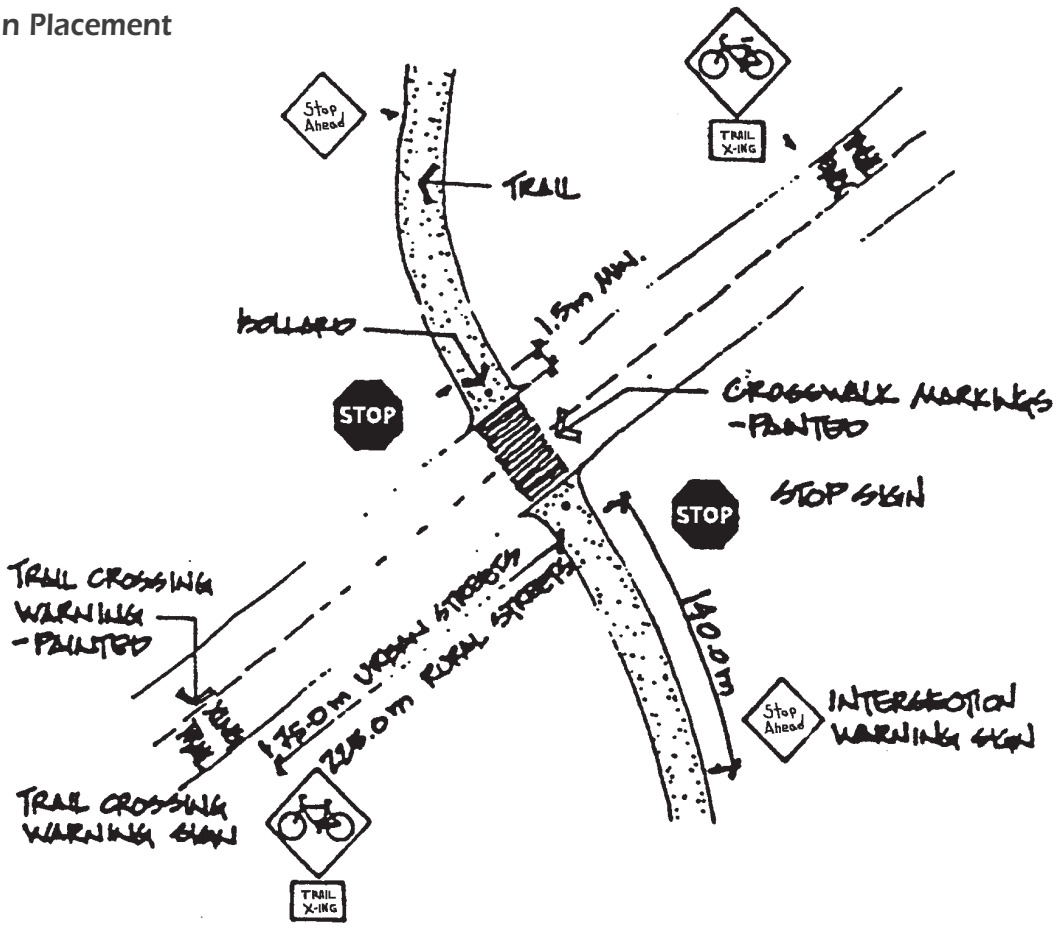
As this list suggests, the problem is more the number of signs than the actual message. Managers should remember that trail users are travelling slower than motorists and will have time to read and understand the information. Repetition is not needed. At the same time, the trail user can be encouraged to take responsibility for paying attention to the signs installed.

When putting direction signs on roads, the highways Code of Practice must be followed. This will specify the size, shape, location, and colour of most regulatory signs. Get the details from your municipal public works department, which may approve and install the signs.

Trail directional signs tend to be more individualized, but even so, they generally follow some standards. Each agency will have its preferred specifications, developed primarily to make installation and replacement easier. In addition, the uniform look of the signs brings a distinctive image to the organization. For example, most Albertans have learned to associate yellow-on-green signs with Parks Canada facilities.

Even the most rigid sign manual allows considerable room for individual discretion when placing the signs. To have a successful sign, you must remember the perspective

Typical Sign Placement



Source: Saskatchewan Parks and Recreation

of the trail user. The location and style of each sign must reflect its purpose. In this way, the user will be expecting the appropriate message and will be more receptive.

Suggestions for sign standards:

- keep the size proportional to the speed: small for non-motorized users, medium for snowmobiles and ATVs
- site any warnings well before the actual hazard to allow time for response
- ensure the signs do not become a hazard themselves
- remember that most trails are two-way; have signs facing both directions
- use standard pictographs wherever possible
- avoid using plywood, as porcupines will eat it quickly
- signs are expensive, but are a good investment

Pavement markings

The growing number of asphalt trails in urban and suburban areas has led to direct marking of the trail. This approach has great potential since the facility itself can be identified instead of just having a sign pointing to it. Pavement markings supplement, but do not replace, the more traditional signs.

As an example, consider a typical crosswalk. Most have both a sign warning of it and a sign marking it, for both directions of vehicle traffic. Still, traffic roars by as children and the elderly wait. What if the crosswalk was painted bright blue, like some disabled parking spaces are?

Physical structures can reinforce signs while offering a positive design feature as well. The previously mentioned crosswalk can be raised to curb height, making a giant but fairly gentle speed bump. The pedestrians clearly have precedence at these locations. In other places, bike lanes are separated from motor vehicles by decorative stones or pavers. These allow cars to cross them, but provide a continual reminder of the bicycles.

Some asphalt trails have a yellow centre line. Even if this is not generally considered necessary in your circumstances, it is recommended for the 50 m leading up to an intersection. This alerts cyclists of the approaching hazard.

Pavement markings can be painted on the asphalt with regular street paint using a stencil for the more complex shapes. Paint is now available in a variety of colours. One reference mentioned decals that can be glued onto the pavement.

Suppliers

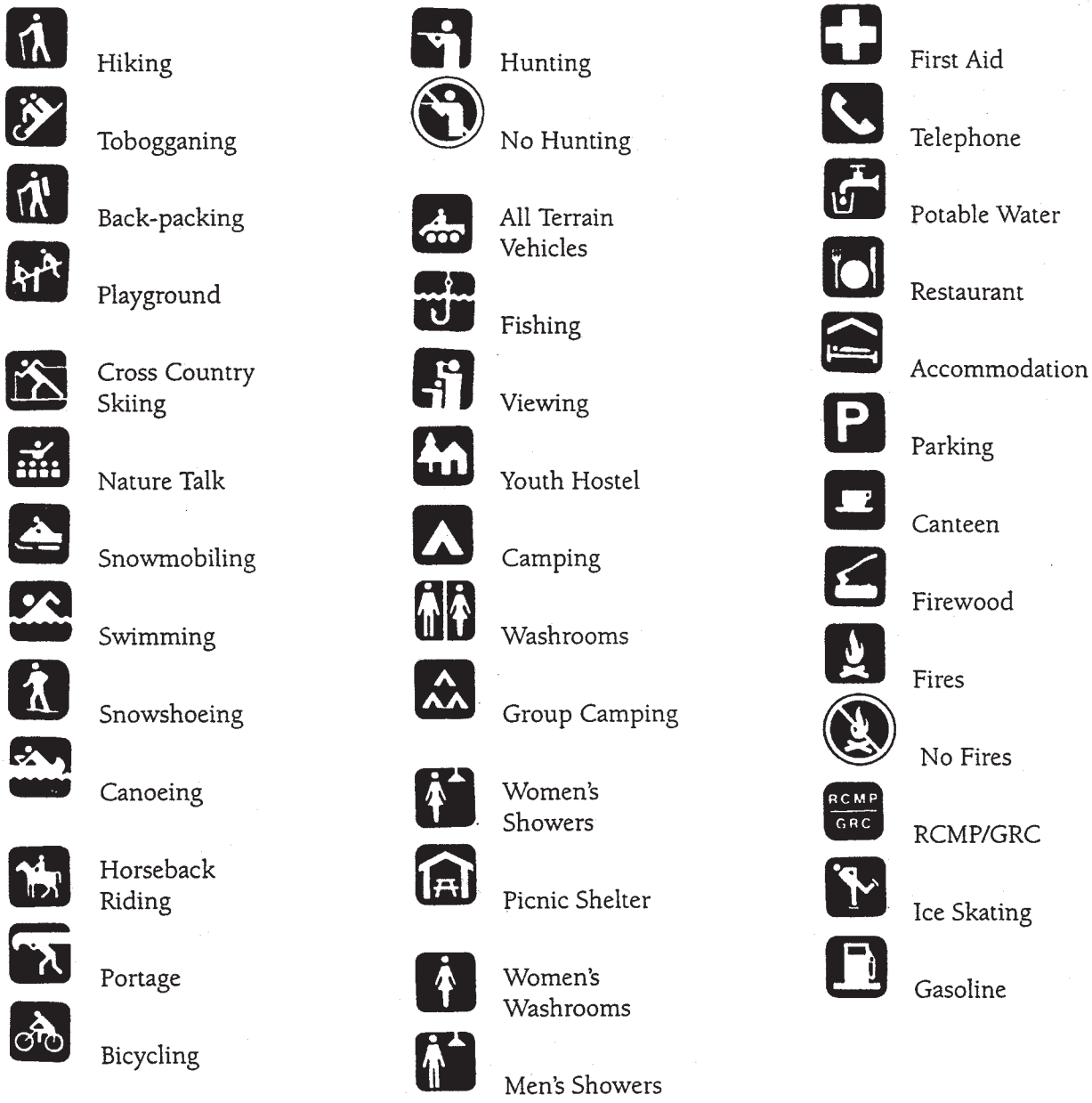
Alberta Snowmobile Association distributes traffic-style signs suitable for motorized recreational trails. They can be contacted at (780) 453-8668 for a catalogue and specifications.

Signs directing people to your site should be installed with the cooperation of your Alberta Infrastructure office. This department can advise you of the appropriate design and supplier. Their Edmonton number is (780) 415-1381.

Notes:

607 Symbols

Symbols are used on signs and in pamphlets. They effectively relate simple messages to the trail user. Maintain a symbol system for the trail so that there will be no inconsistencies. The symbols included here are from Department of Canadian Heritage and are provided as examples for what works well for their parks. Trails are not required to use these exact symbols, however, operators are encouraged to at least have something similar. Symbols that conform across the province will be much easier for users to benefit from.



Note: The symbols shown here convey affirmative messages. They can have a prohibitive sense if placed in a circular border with one diagonal bar crossing over the symbol. See "No Hunting" and "No Fires" for an illustration of this.

Notes:

608 Interpretation

Interpretation stimulates an understanding and appreciation of our natural and cultural heritage through first-hand experience. Trails are a major tool in this process, enabling people to gain access to both historic and natural points of interest.

Many trails are built to support the managing agency's mandate to provide interpretation, while other trails respond to the public's desire to learn. In either case, it makes sense to help trail users understand the landscape through which they are travelling.

Interpretation is a well-established field, with several associations that can give you advice. Contact your local museum or nature centre to get advice regarding the best method to present your information. You may well find that these organizations want to get involved, too:

Interpretation Canada - Alberta Section
c/o Kerry Wood Nature Centre
6300 - 45 Avenue
Red Deer, AB T4N 3M4

Museums Alberta
9829 - 103 Street
Edmonton, AB T5K 0X9
Telephone (780) 424-2626

Media types

Trails bring excitement to an excursion because they connect so many different experiences. Parks are joined to the adjacent agricultural scene, and the residential neighbourhoods are connected to nearby industrial sites. Each area provides an enriching experience. Trail use becomes a casual form of learning that can be made a bit more explicit with help from the trail operator. Several different media are available for these messages and each has its strong points.

Signs work well in areas with high tourism, but become stale where the users return many times. Save them for major viewpoints where people bring their out-of-town relatives. Spend the extra money to make them vandal resistant.

Brochures can hold a lot of information (often too much!), which can be read later. They act as an inexpensive souvenir. A good method of distribution is needed, such as souvenir shops, tourist information offices, or outdoor equipment stores.

Audio cassettes can be sold at a reasonable price at souvenir shops. They allow the visitor to learn about the sites in a region before they arrive, or to review what they have learned as they drive on. Professionally produced scripts can have impressive sound effects, such as bird songs and historic reenactments.

CD-ROMs & videos must be used at home, but are popular souvenirs. Videos have also become dramatic introductions to a recreation area. Some tourist regions will distribute the introductory video free upon request; others will charge a nominal fee which may be refundable upon registration at the resort.

Books, including regional guidebooks, histories, and nature field guides spring up quickly, usually as a labour of love by the author. The overhead of printing is high, so the time spent writing the book is generally donated to keep the cost reasonable. Even so, the audience is limited to those who are both seriously interested and able to afford the price. Only a small fraction of the trail users (<1%) will buy a book about the area.

Interpretive map sheets

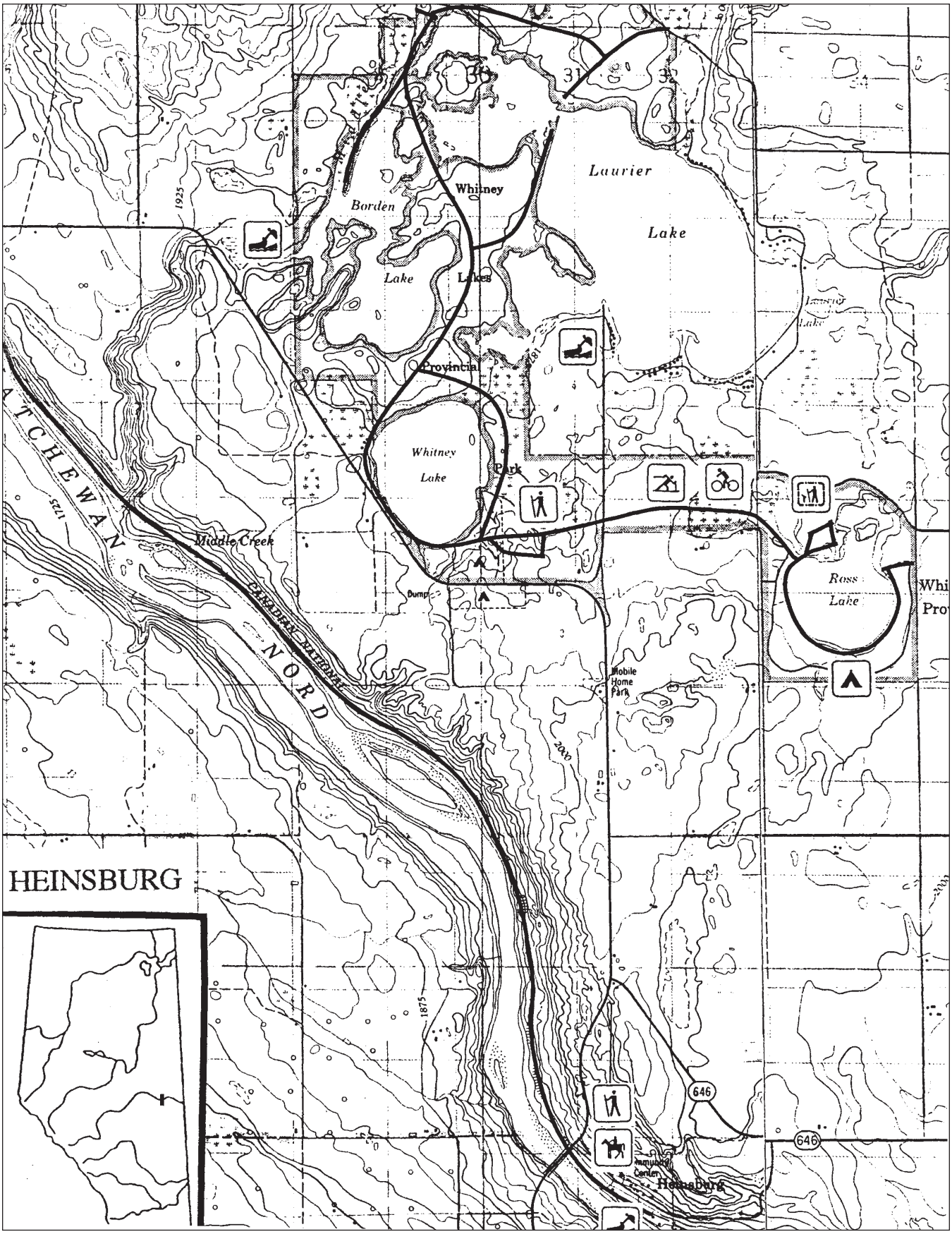
Maps form an important or even essential component of a trail. They enable users to find their way while gaining some understanding of the surrounding landscape. It makes sense to include interpretation of local points of interest on the same page. The format suggested here is inexpensive to produce, yet the consistency gives a professional appearance. When a number of sheets have been written for an area, they could be combined into a guidebook if preferred.

Main features of map sheets:

- topographic map (scale 1:50,000, copied on an 8.5 x 11" page)
- all trails in map area are shown regardless of jurisdiction or sponsor
- other recreation facilities and points of interest are included
- reverse side has contacts for all trail operating agencies
- general review of the scenery and conditions in the area as well as main modes of travel
- instructions for following the trail, if needed
- recommended safety precautions, seasons of use and other restrictions
- more detail regarding points of interest
- detailed interpretation of one feature typical of the area
- trail code of conduct

These maps can be collected in a binder, with only those needed for a particular trip being taken out and carried in a plastic sleeve. In this way, the weight carried will be reduced, as well as the damage to the other maps. Your group can distribute an economical brochure which can be updated easily. It can be considered an interim map as the trail system is growing. If the sponsor wishes, coloured ink on contrasting paper and design by someone with artistic sense will give a very credible product.

Interpretive Map Sheets



Source: Iron Horse Trail Society

HEINSBURG

Sponsors:
County of St. Paul #19
5015 – 49 Avenue
St. Paul, AB T0A 3A4

Whitney Lakes Provincial Park
Box 39
Elk Point, AB T0A 1A0
(403) 943-3761

Legend:

Year round trail

Trailhead (recommended start) 

Topographic map:
Two other maps in this series - Elk Point and Fort George - show the western parts of this rail-trail.

Surface: Gravel on rail trail
Natural on park trails

Camping:
Whitney Lakes Provincial Park, and at Elk Point Golf Course, 30 km west of Heinsburg.

Access:
The trail is situated about 180 km north-east of Edmonton. The most direct approach is to turn north from Highway 16 just east of Vermilion on Highway 893. Heinsburg is 45 km due north.

Description:
The Elk Point Trail follows the abandoned Canadian National Railway right of way for 34 km, from Heinsburg west to Elk Point. The easy grades and pleasant rural scenery make for great family outings.

From Heinsburg, the trail follows the very edge of the North Saskatchewan River northwest to Riverview. Wildlife is abundant throughout the area. Deer, fox and moose can be expected, and watch out for black bears!

Whitney Lakes Provincial Park, justs eight kilometres north of Heinsburg, has about 24 km of pleasant trails.

Trail Conditions:
Users should watch for the gullies where the railway bridges have been removed. These are passable, but may cause difficulty for snowmobiles or horse-drawn wagons. Some fences cross the trail; please leave the gates as you find them.

Skis/Bicycles/Canoes/ Horses:
The trail is excellent for hiking or horseback riding. Bicycling is allowed, but not recommended because the gravel is quite loose. Horse-drawn wagons will find the route suitable, although caution must be exercised where the bridges have been removed.

Pleasant canoeing is found on the North Saskatchewan River from May to October. Caution is advised for the high water period, usually in June and early July. Put in at Elk Point or Fort George, and take out at Heinsburg. Whitney Lakes offer excellent flat-water canoeing.

Winter use on the rail-trail is mainly by snowmobiles, but Whitney Lakes Provincial Park encourages cross-country skiing.

Points of Interest:
Step back in time as you enter **Heinsburg!** This village looks like it did fifty or more years ago. The railway water tower was built in 1927 when the CNR first came to the area, and is still standing. A more recent station adds to the railway flavour. A living historic site is being developed, and will be more interesting each time you visit.

Victoria Trail

Earliest travel in central Alberta was by canoe, using the river networks like highways. However, this required skill, stamina, and considerable organization. When settlers began entering the area, they had too much baggage to make canoes practical.

In 1862, Father Lacombe sent the first wagons east from Fort Victoria (just east of Edmonton) to Fort Garry for supplies. They followed the north bank of the North Saskatchewan throuth Fort Carlton (north of Lloydminster) and Battleford.

For many years, the squeaky ox carts dug deep into the rich soil. The route was used right up to the First World War, when roads reached the district. The C.N.R. followed the general route of the trail when it was built in ____.

Now, seventy years after the wagon trail was last used, the ruts are still visible at the entrance to Whitney Lakes Provincial Park.

Horse-drawn wagon or sleigh rides can be arranged by calling Roy or Marjorie Scott at 943-2700.

Whitney Lakes Provincial Park protects several lakes typical of the boreal mixed wood natural region. Both overnight and day-use facilities are well developed. Beaches and interpretive trails are some of the attractions. The natural experience is what people remember, and the haunting call of the loon will always be with you.

Further information:
Elk Point Historical Society (Gail Kozicky) 403 724-4097 or 724-3159

Acknowledgements:
Last revised August, 1997.

Notes:

609 Evaluation

Evaluation means finding out if your hard work has achieved the objectives you first set out to achieve. The more specifically you were able to state them, the easier the assessment will be (eg., to build a trail which will be used by at least 30 people per week). Review these objectives frequently to keep your group on track.

Evaluation soon after the opening will enable you to find minor problems and correct them before they grow larger. Later, you may notice changing trends in the users, such as an increasing number of joggers. Indications of crowding or user conflict can substantiate a plan for extending the trail network. The trends may also suggest whether advertising or other promotion is required to ensure people remember the trails.

You might wait a couple of weeks for the initial novelty to wear off, then begin counting people. If volunteers are available and the volume of use seems to warrant it, try to count people and cars in the parking lot from dawn to dusk for one week. Later, a regular count of just a four-hour period, preferably the time of highest use, will enable you to track the attendance trends. Of course, weather will be a factor. Note if the weather was either exceptionally good or bad.

Trail use estimation

To estimate how many people use the trail, you may have to rely on indirect measures. Spend a day counting people, and compare this number to the number of vehicles they used or the number of signatures in the registration book. This ratio will remain fairly constant for each site. In the future, you can estimate the total use by counting signatures or vehicles, and multiplying by the value previously determined.

Registration

Registration or guest books offer an important opportunity for feedback from the visitor. Realize that many people will not sign in and that most will limit their comments to "nice" or "had a good time." However, the occasional eloquent phrase of thanks will make your work worthwhile and it can even be quoted in an annual report or brochure. The suggestions or meaningful comments should be treated seriously because many others likely agree but are too shy to say so. You can help the visitor give useful information by replacing the "Comments" section with "What was your favourite experience here"? or "How did you hear about this trail"? Each page could have a different question, creating a simple ongoing survey.

Trail inspections

The people responsible for the trail maintenance will be inspecting the trail regularly. They should ensure that any design deficiencies that appear are communicated to the planners. This is not to point fingers, but to help the planner avoid similar mistakes in the future. Any innovative features of the trail should be particularly studied. If they achieve their objective, they could be written up and submitted to *TrailNet News* for publication. In this way, the general expertise of the trails community will increase.

Signs of poor design:

- short cuts worn into vegetation
- premature degradation of trail surface
- mud holes or water pooling
- loose or broken furniture
- severe erosion and gullying

Signs of over-use:

- crowded parking lot or parking on adjacent road
- complaints about other users or litter
- widening trail and trampling of adjacent vegetation
- multiple trails developing in open areas

Signs of under-use:

- weeds growing in trail or parking area
- graffiti and other vandalism
- vegitation encroaching on trail

Notes:

610 Maintenance

Trail maintenance ensures the continued operation of the trail and the many benefits that come from its initial construction.

Overall goals:

- the enjoyable use of the trail by recreationists
- the reduction of safety and liability issues
- the reassurance of the adjacent landowners

The cost of maintenance is difficult to estimate, but one source suggests that an annual cost of 6% of the capital cost would be good. Unlike other facilities, trails become cheaper to maintain as they age and trouble spots are fixed (see flow chart "Cycle of events in trail track degradation").

Each trail or identifiable group of trails should have a maintenance file including the Trail Log, maintenance reports, and notes about any work done on the route.

The Trail Log includes both the natural features around the trail and the constructed features developed to date. The regular updating of this list is essential for planning the trail maintenance. For example, it is embarrassing how often a maintenance person will say "Didn't we have a sign here"? Without a proper inventory, no one will be able to answer for sure, and a slow degradation of the entire facility is inevitable. An accurate and well-prepared trail log will pay dividends worth far more than the original cost of gathering the data.

Maintenance reports

These should include the general condition of the trail and any work that has been done. A sample "Trail Assessment Form" is included. Each trail system will have certain features that must be checked and should be listed.

Before maintenance can be done, the optimum condition must be defined. This should reflect the experience the trail is presenting; smoother is not necessarily better. Some people will have a tendency to continually upgrade a trail, creating a pattern of use not originally intended. The original construction drawings will be a good guideline for most aspects. The frequency of some tasks, such as staining or litter removal, must be determined by the manager.

The sponsoring organization has several options with regards to who actually does the work. Staff can be hired, although this can be expensive even for government agencies. Paid people may spend a considerable amount of time just searching for problems, compared to doing the actual work that requires their skills. Volunteer trail stewards can take responsibility for a certain section and check it whenever convenient. While the price is right, the results can vary considerably unless there is some sort of supervision and feedback. Volunteer's strong feeling of ownership makes them vigorous supporters of the trail. A volunteer trail crew can do a lot of work and will generate a strong feeling of camaraderie.

Many organizations use a combination of volunteers, staff, and contractors to gain the maximum benefits with minimum cost. For example, volunteer stewards provide regular checks and carry out simple tasks like picking litter and removing small deadfalls. Mainly, they identify larger tasks that require professional attention or even the efforts of an entire crew. Washouts, major deadfall and restoration work fall into this category. An experienced trail manager, either volunteer or staff, should check the trail twice annually to ensure that the maintenance is meeting the correct standards.

The trail manager will probably want to develop a checklist for field workers that includes instruction on each maintenance activity and its frequency. These can be grouped into weekly, monthly, and seasonal tasks, depending on your trail's characteristics.

Maintenance activities

Consider this partial list of maintenance activities a starting point as you develop your maintenance budget and plan:

- patch holes in asphalt, fill cracks, and feather edges
- sweep to remove leaves, mud, gravel, and other debris
- mow trail shoulders 1 m back from trail
- pick up litter and empty garbage cans
- clean out ditches, culverts, and other drainage structures, correct drainage problems or trail surface
- inspect structures for deterioration
- remove fallen trees
- remove snow and ice
- replace missing and damaged signs
- repaint worn pavement markings
- trim trees, shrubs, and grass to maintain sight distances
- maintain furniture and other support facilities
- remove graffiti from restrooms, retaining walls, rocks, and other surfaces
- repair gates and fences
- clean and replace lights, trailhead facilities
- groom snowmobile and nordic trails
- clear and clean parking lots
- spray or remove weeds, especially those listed as "noxious" by the municipality

Ensure that the equipment needed to carry out this work is available and that the persons doing the work know how to do it. All safety precautions must be followed. In particular, power tools must not be used without other workers being present to help in case of accident. The tools should be stored at a secure central place where the workers can gain access easily. As token recognition, volunteer stewards can be outfitted with a small day pack with the commonly needed equipment: clipboard and maintenance reports, folding pruning saw, rasp, first aid kit, water bottle, and garbage bags.

Vandalism

Vandalism is the intentional damaging of a facility. The seriousness can range from minor scratching of wooden furniture and painting of signs to full-scale arson when a bridge is torched. In either case, the response should be the same: immediate removal of all signs of the problem and prosecution of the vandal, if possible. This damage differs from ordinary maintenance in that it is generally not predictable. This highlights the need for frequent patrolling and has been found to decrease with increased trail use.

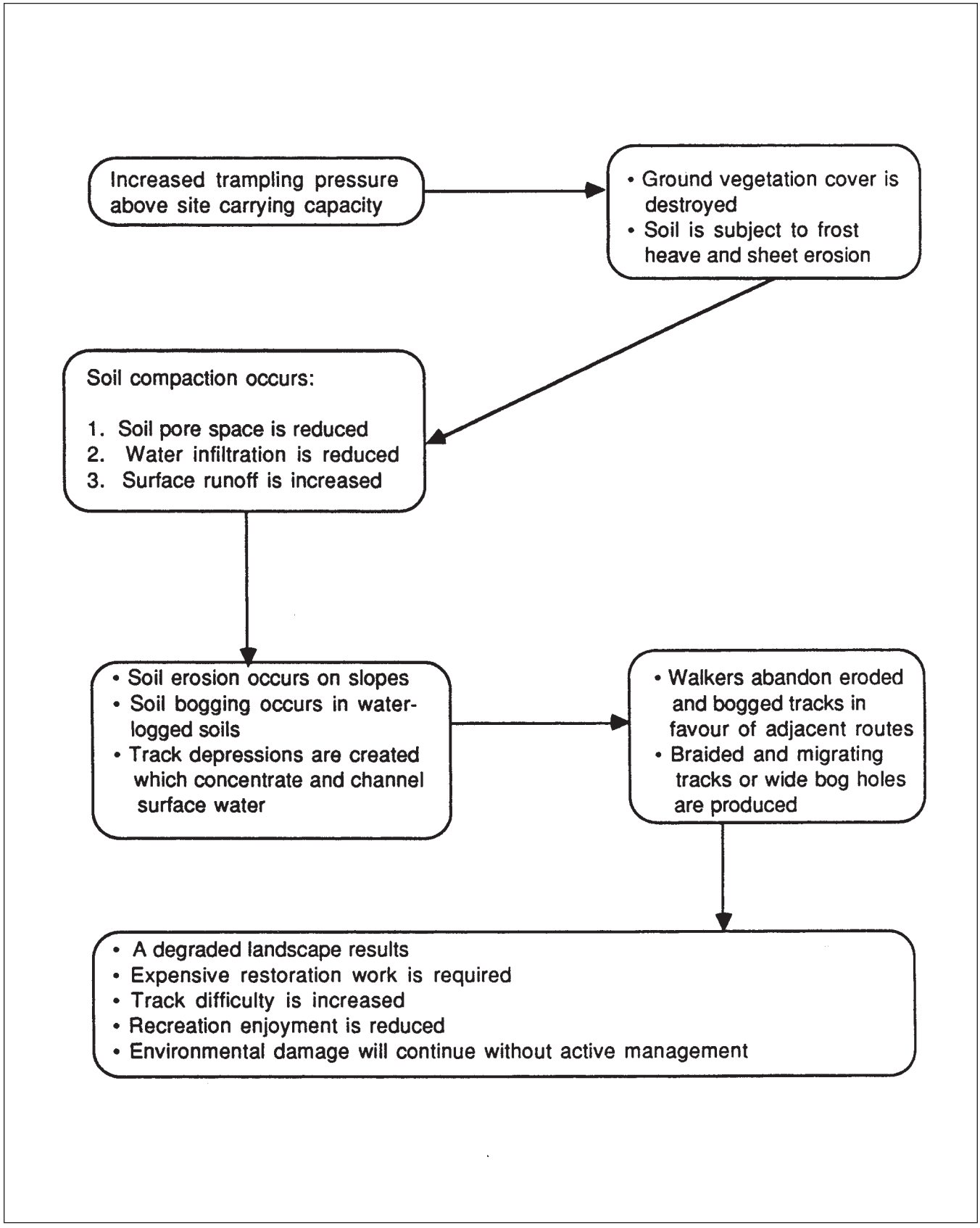
High quality, well maintained facilities are rarely damaged. It seems that these people have very little imagination, and need the suggestion of a previous vandal to initiate their own behaviour.

Thoughtful planning will reduce the incidence of problems, too. Durable materials may cost more, but they will be worth it. Keep facilities to a minimum, especially near the trailhead. (Vandals seem unwilling to walk!) Place signs about 30 m from road crossings to reduce drive-by shootings. Consider placing them at an angle to further reduce their visibility from the road.

Trees and wooden furniture are often carved with knives. These marks can be removed with a sheet-metal rasp. This tool comes in a variety of sizes, but the smaller ones are best for getting into awkward places. The damaged area can be blended into the surrounding material. If the furniture has been stained (not recommended for this reason), it must be restained right away to complete the repair.

Notes:

Cycle of events in trail track degradation



Source: Source: Neil Blamey, *Walking Track Management Manual* (1987)

Trail Assesment Form

Trail Assesment Form

Observer: Date:

Trail segment: From _____ to _____ .

Landowner: Contacted first Y N (circle one)

General condition of trail (or route):

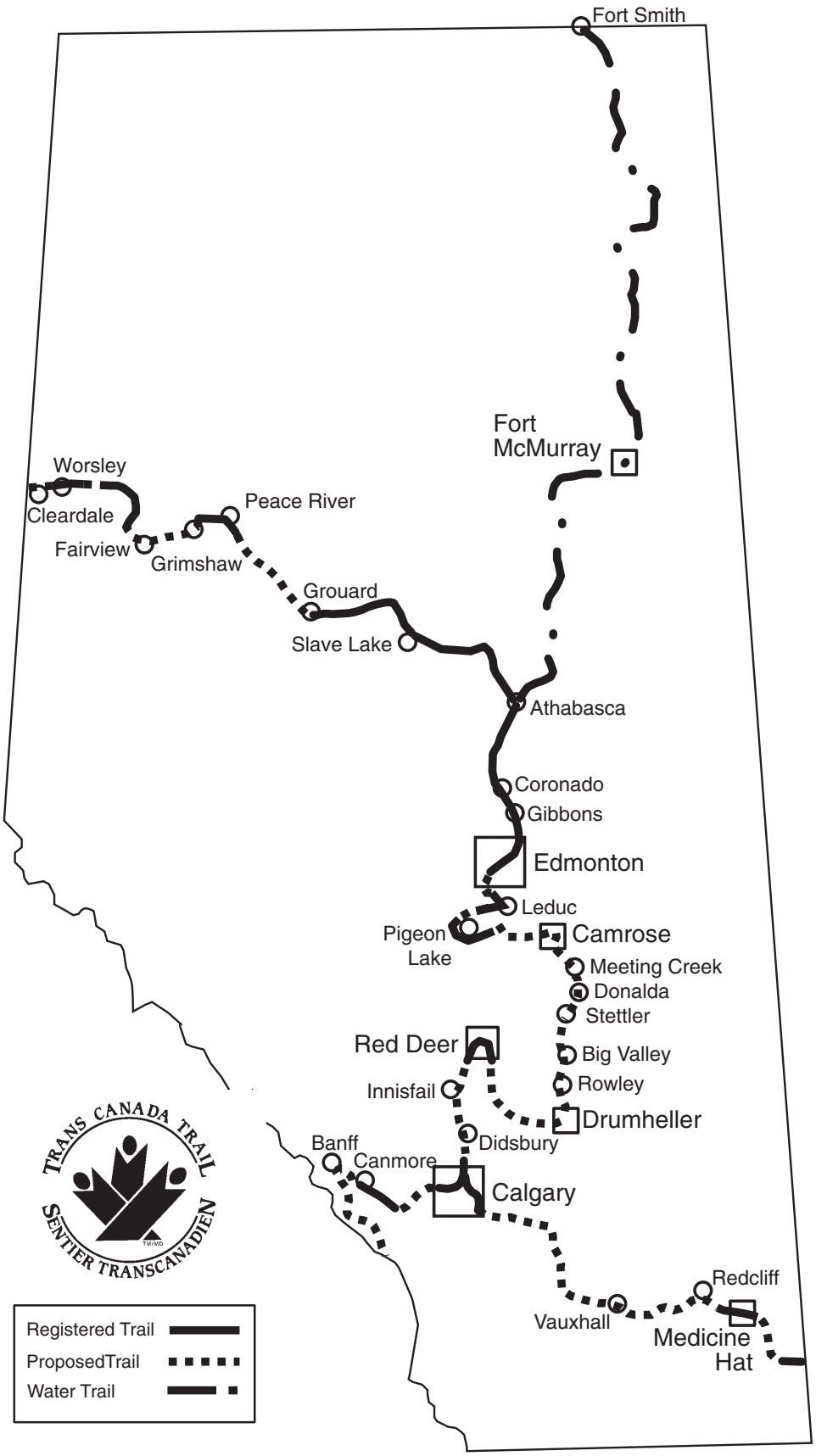
	Poor	Average	Good	Excellent
Drainage				
Tread condition				
Furniture/ stiles/ gates				
Bridges				
Erosion				
Litter				
Landowner response				

	Work required	Location	Tools or materials
1.			
2.			
3.			

General comments regarding your visit:

Source: Alberta TrailNet Society

Trans Canada Trail in Alberta



Source: *Alberta TrailNet*

Notes:

Section 700

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702 Trail and recreation organizations in Alberta

Alberta Bicycle Association 780 427-6352
11759 Groat Rd.
Edmonton T5M 3K6

Alberta Camping Association 780 427-6605
11759 Groat Rd.
Edmonton T5M 3K6

Alberta Canoe Association 780 427-6717
11759 Groat Rd.
Edmonton T5M 3K6

Alberta Centre for Well Being 780 427-6949
11759 Groat Rd.
Edmonton T5M 3K6

Alberta Equestrian Federation 403 253-4411
#210, 8989 Macleod Trail SW
Calgary T2H 0M2

Alberta Fish & Game Association 780 437-2342
6924 - 104 St.
Edmonton T6H 2L7

Alberta Orienteering Association 780 427-8138
11759 Groat Rd.
Edmonton T5M 3K6

Alberta Recreation and Parks Assoc. 780 415-1745
11759 Groat Rd.
Edmonton T5M 3K6
Contact: Steve Allan

Alberta Snowmobile Association 780 427-2695
11759 Groat Rd.
Edmonton T5M 3K6
Contact: Louise Sherren

Alberta Triathlon Association 780 427-8616
11759 Groat Rd.
Edmonton T5M 3K6

Alberta United Recreationists Society 403 258-0211
(off-road vehicles)
#2, 6025 - 12 Street SE
Calgary T2H 2K1

Alberta Wilderness Association 403 283-2025
Box 6398, Station D
Calgary T2P 2E1

Alpine Club of Canada 403 678-3200
Box 8040
Canmore T1W 2T8

Athletics Alberta 780 427-8792
(Cross-Country Road Running)
11759 Groat Rd.
Edmonton T5M 3K6

Calgary Area Outdoor Council (CAOC) 403 270-2262
1111 Memorial Drive SW
Calgary T2N 3E4

Canadian Motorcycle Association, 780 475-0943
Alberta Region
2908 - 150 Avenue
Edmonton T5Y 2B5

Canadian Parks & Wilderness Society 780 422-5988
11759 Groat Rd.
Edmonton T5M 3K6

Canadian Wheelchair Sports Assoc. 780 427-8699
11759 Groat Rd.
Edmonton T5M 3K6

Cross Country Alberta (skiing) 780 415-1738
11759 Groat Rd.
Edmonton T5M 3K6

Disabled Skiers of Alberta 780 427-8104
11759 Groat Rd.
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Edmonton Bicycle and Touring Club 780 424-2453
10125 -97 Ave.
Edmonton T5K 0B3

Federation of Alberta Naturalists 780 427-8124
11759 Groat Rd.
Edmonton T5M 3K6

National Trail Association of Canada 403 678-5551
Box 8063
Canmore T1W 2T8

Ski & Snowboard Association 780 427-8581
11759 Groat Rd.
Edmonton T5M 3K6

Sport & Recreation Assoc. for the Blind 780 415-0184
11759 Groat Rd.
Edmonton T5M 3K6

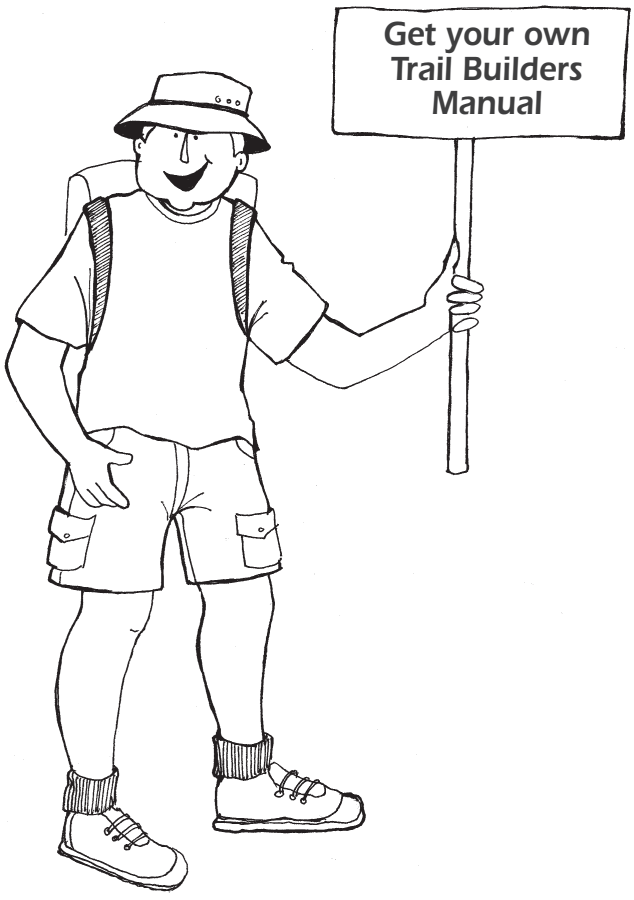
Volksport Association of Alberta 780 458-2592
Box 131, 3-11 Bellrose Drive
St. Albert, AB T8N 5C9
Contact: Grace Newman

Waskahegan Trail Association 780 483-4838
P.O. Box 131
Edmonton T5J 2G9

Notes:

703 Trail Builder's Manual Order form

This manual is intended to provide ideas and guidance for the planning, design, construction, operation and maintenance of trails in Alberta. Municipalities, not-for-profit groups, trail owners and operators will find the information most useful. A clear approach is provided by describing each step in planning, building and operating a trail. A variety of ideas and trends involving trail development are discussed. Specific examples and trail designs are also presented. Helpful tips and additional references complete the document.



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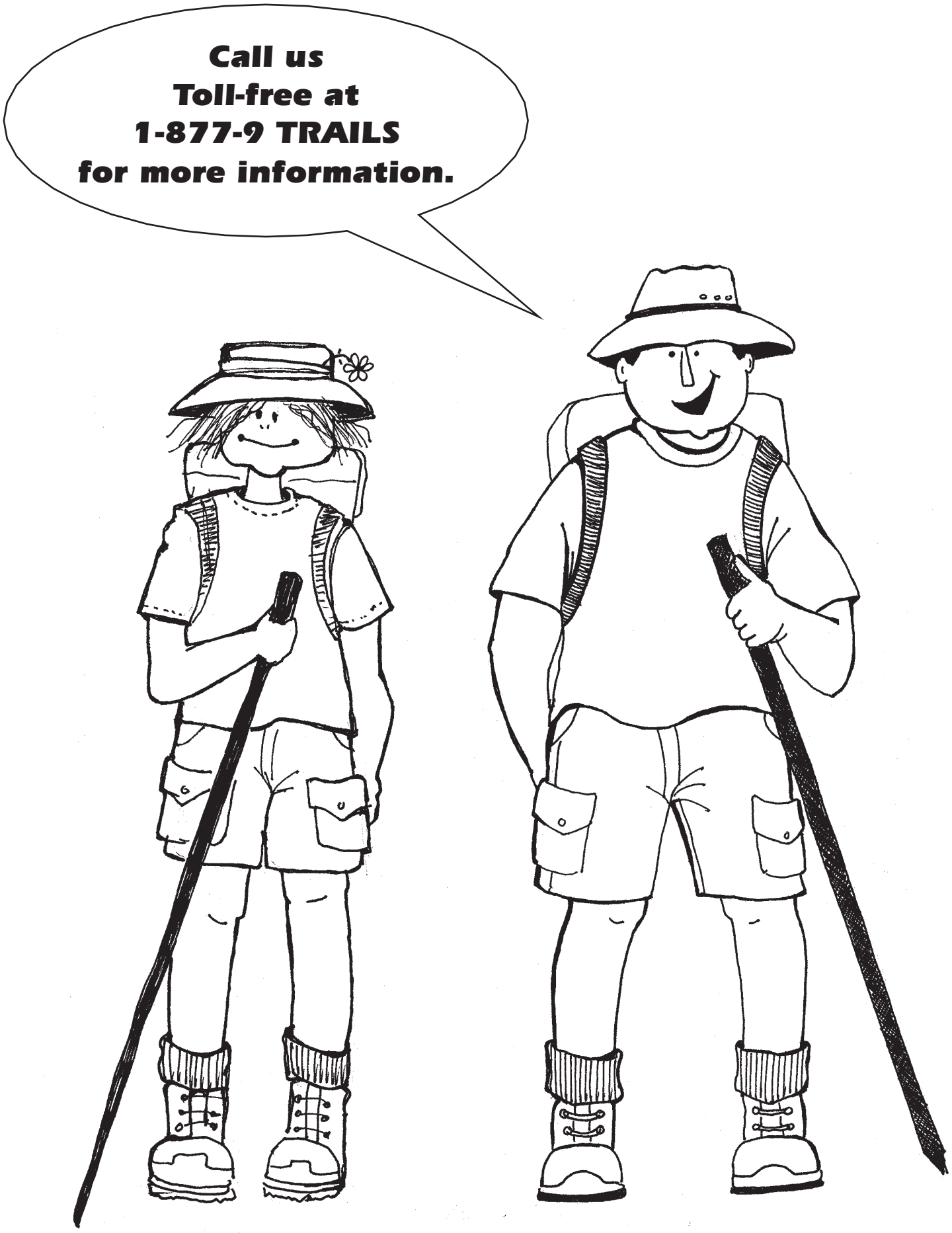
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