



*Saskatchewan Parks and
Recreation Association Inc.*

Trail Specification Guidelines

- Getting starting building***
- Dimensions,***
- Activity needs, signage, and
related information about
creating the Trans Canada Trail***



S.P.R.A. Trail Council

Trail Specification Guidelines

Produced by:

Saskatchewan Parks and Recreation Association
Trail Council

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Specification Guideline Objective

Objective of

1. The Trans Canada Trail

The Trans Canada Trail is a shared use Trail accommodating five core activities: walking, cycling, horseback riding, cross-country skiing, and snowmobiling.

The Trans Canada Trail is envisioned to be extended through all Provinces and territories. The national administrator is The Trans Canada Trail Foundation.

2. The Saskatchewan Trans Canada Trail

The general corridor is shown in Map # 1, on page 7.

The Saskatchewan Parks and Recreation Association administer the Trans Canada Trail in Saskatchewan.

3. The Specification Guideline Trans Canada Trail - Saskatchewan

This guideline is provided as a source of general information about construction, signage, spatial requirements, contracts, and specifications that may be required to create a part of the trail. The guideline is not intended to be all inclusive, nor is it intended to pre-empt the use of, or involvement with professionals qualified to design and construct the various elements that will be required to create the Trans Canada Trail - Saskatchewan. A bibliography of more specific activity needs and construction reference information is at the end of this booklet.

Trail Classifications

Classifications

General

There are three broad classifications of the Saskatchewan portion of the Trans Canada Trail. All classifications of the Trail are expected to accommodate the five core activities. A general description of the classification follows in text. A more detailed listing of recommendations follows that, in chart form.

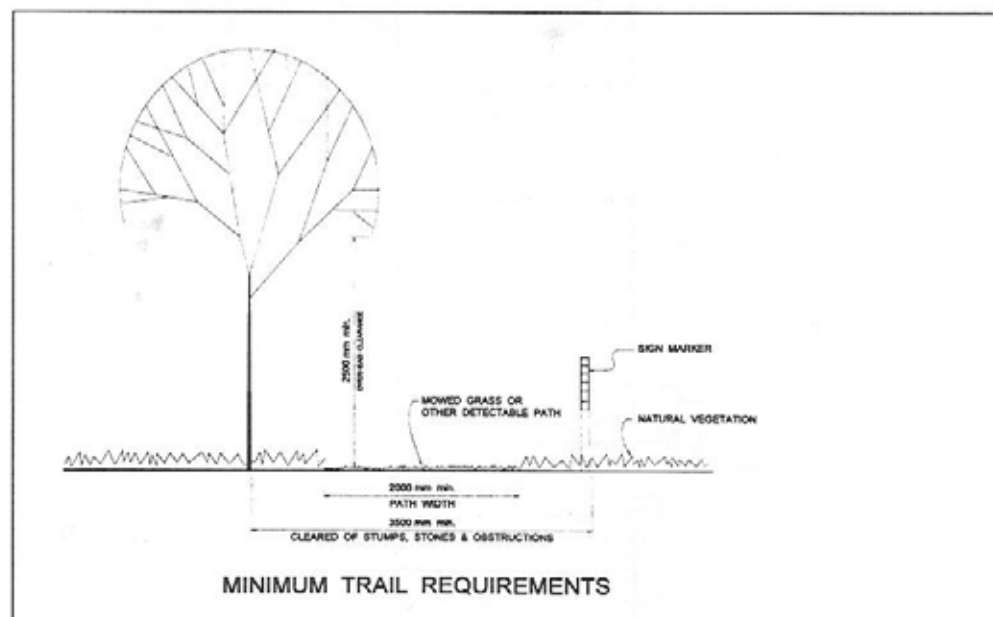
Purpose of the classifications

The classification is used to provide mapping and user expectation for the trail.

Classifications:

1. Minimum

The minimum standard for Trans Canada Trail designation in Saskatchewan is that most of the core activities could be accomplished by persons with considerable experience in those activities. The trail must be marked and signed such that users would not get lost. Grass, scrubs, trees, etc. must be trimmed to define the path and allow sufficient clearances for the activities that are defined as being acceptable on that part of the trail. The trail, if not complete, must be accessible at the termination points and must be able to be continued when the next segment of work is undertaken. (see detailed recommendations chart). For a multi use single trail the minimum width of clearing shall be 3.5 metres and the minimum height shall be 2.5 metres.



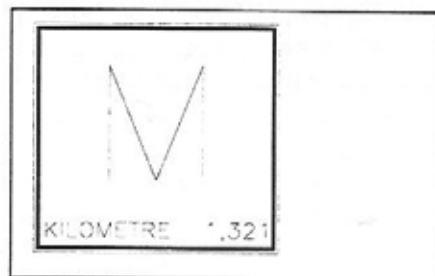
Trail Classifications

2. Improved

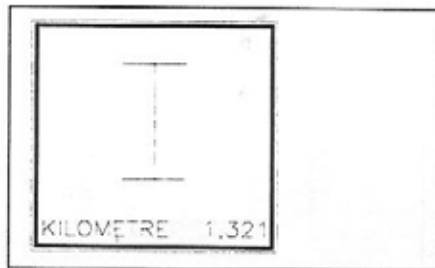
The improved designation will be used on portions of the trail that meet the minimum level plus have a number of additional attributes. The additional attributes may include but are not limited to: separation of potentially conflicting activities, pathway surfacing material, benches, washrooms, parking, trail loops, detailed mapping and periodic maintenance. The improved designation would be applied to portions of the route where most of the core activities could be accomplished by persons with some experience in those activities

3. Refined

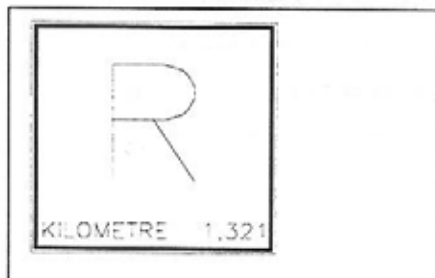
The refined designation would be applied to portions of the route where most of the core activities could be accomplished by persons with little or no experience in those activities. The expectation is that the designation would be applied to urban park settings where there is total separation of the conflicting activities. It is likely that snowmobiling and horseback riding would be on a separate trail, possibly in a different location. Refined trails would have considerable surface treatment, considerable signage, and support amenities such as washrooms, fountains, picnic areas, parking, and ancillary structures.



Minimum trail standard designation sign
(for full information see signage section)



Improved trail standard designation sign



Refined trail standard designation sign

Trail Standards Amenities Chart

Classifications

1. Minimum

Item/feature	Importance	Comments
minimum cleared width of 3.5 metres	r	see drawing page 3
minimum clear height of 2.5 metres	r	see drawing page 3
cleared pathway of 2 metres	r	mowed, grade, level, etc.
signs with Trans Canada Trail logo	r	see signage section
classification signage	r	
major hazard signage	h	water, highway, steep, etc.
minor hazard signage	m	hill, turn, intersection, etc.
information signage	m	distances to amenities
maintenance	r	2 to 3 mowings, grading, etc.
multiple function trail	r	most core activities permitted
gravel, wood chip or improved surface	l	
multiple trail for different usage	l	more than 1 person, activity
washroom facilities	l	
picnic areas	l	
parking	l	
separation of conflicting activities	l	not necessarily side by side
additional clearances for activities	l	see individual activity needs
handicap accessibility trail &/or facilities	l	
incorporation of local features	h	
provision of trail loops	m	
interconnecting with other trails	m	

Importance legend: r = required, h = highly desirable, m = moderate, l = lower

2. Improved

Item/feature	Importance	Comments
minimum cleared width of 3.5 metres	r	
minimum clear height of 2.5 metres	r	
cleared pathway of 2 metres	r	mowed, grade, level, etc.
signs with Trans Canada Trail logo	r	
classification signage	r	
major hazard signage	r	water, highway, steep, etc.
minor hazard signage	r	hill, turn, intersection, etc.
information signage	h	distances to amenities
maintenance	r	2 to 3 mowings, grading, etc.
multiple function trail	r	most core activities permitted
gravel, wood chip or improved surface	r	
multiple trail for different usage	h	more than 1 person, activity
washroom facilities	m	
picnic areas	m	
parking	m	
separation of conflicting activities	h	not necessarily side by side
additional clearances for activities	h	see individual activity needs
handicap accessibility trail &/or facilities	m	
incorporation of local features	h	
provision of trail loops	m	
interconnecting of other trails	m	

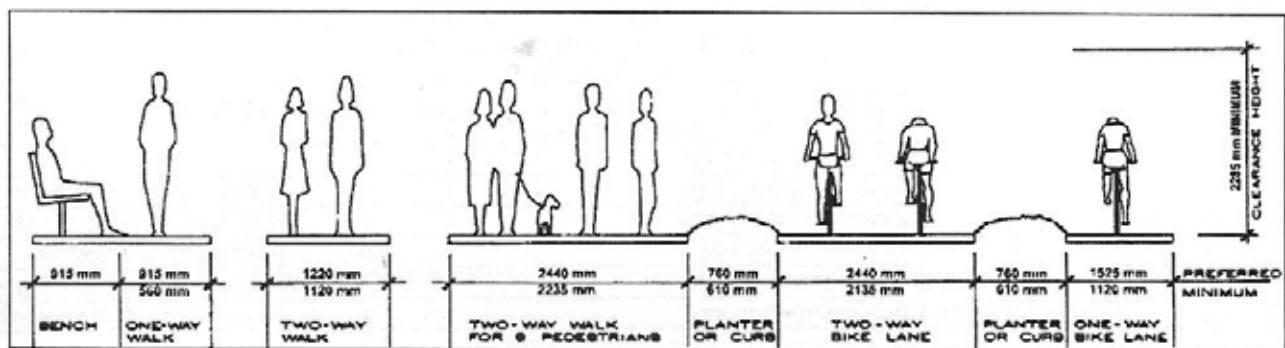
Importance legend: r = required, h = highly desirable, m = moderate, l = lower

Trail Standards Amenities Chart

3. Refined

Item/feature	Importance	Comments
minimum cleared width of 3.5 metres	r	
minimum clear height of 2.5 metres	r	
cleared pathway of 2 metres	r	mowed, grade, level, etc.
signs with Trans Canada Trail logo	r	
classification signage	r	
major hazard signage	r	water, highway, steep, etc.
minor hazard signage	r	hill, turn, intersection, etc.
information signage	r	distances to amenities
maintenance	r	2 to 3 mowings, grading, etc.
multiple function trail	r	most core activities permitted
gravel, wood chip or improved surface	r	
multiple trail for different usage	r	more than 1 person, activity
washroom facilities	h	
picnic areas	h	
parking	h	
separation of conflicting activities	r	not necessarily side by side
additional clearances for activities	r	see individual activity needs
handicap accessibility trail &/or facilities	r	
incorporation of local features	h	
provision of trail loops	h	
interconnecting of other trails	h	

Importance legend: r = required, h = highly desirable, m = moderate, l = lower

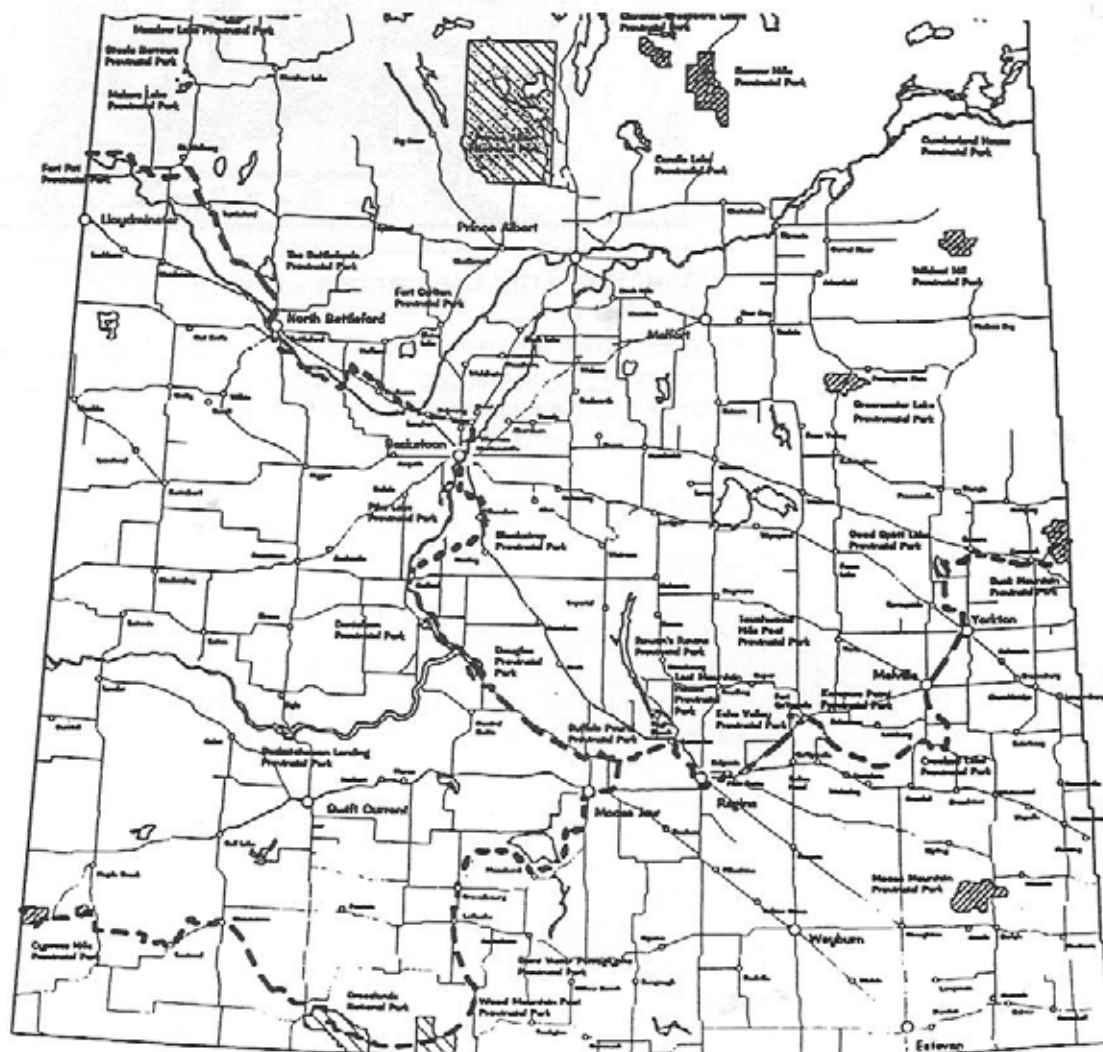


Examples of Refined Multi-Use Functions and Dimensions.

Activities Permitted On The Trail

Core Activities Permitted on the Trans Canada Trail

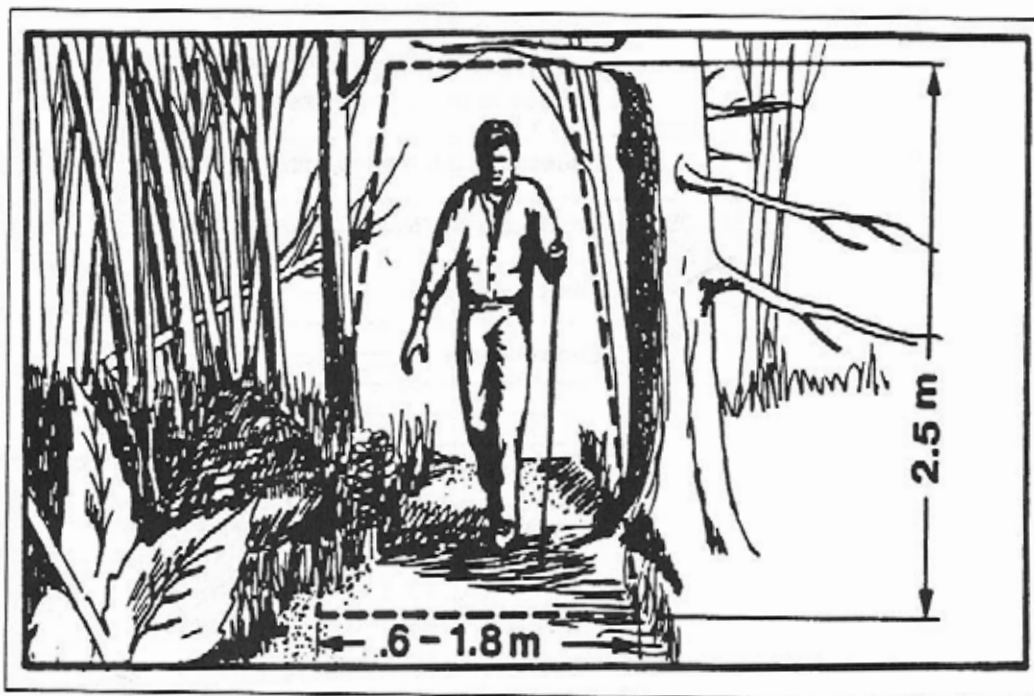
1. Walking or hiking
2. Cycling
 - a) Mountain and off road bicycles
 - b) Road or touring bicycles
3. Equestrian, horseback riding
4. Cross-country (Nordic) skiing
5. Snowmobiling
6. Snowshoeing



Map #1: Approximate Saskatchewan Trail Location

Activity Needs

1. Walking or Hiking



Minimum Trail Clearances - Hiking

Note: Hiking minimum needs dimensions shown are less than the recommended minimum trail clearances. Unless prohibited by other regulations or environmental concerns, it is suggested that the Trail minimum dimensions be maintained.

Activity Needs

Hiking needs table

<i>Item/feature</i>	<i>Needs Description</i>	<i>Comments</i>
Minimum Treadway Construction	On light usage trails special surfacing is not required. Mowing and the removal of stones and stumps is recommended. Materials to mark a trail and prevent erosion, and make all weather travel possible are recommended.	As the trail is more traveled the tread way surfacing needs improvement
Improved Treadway Material	Wood chips, wood and/or bark shreds, crushed rock, crusher dust, pit run gravel, soil cement, concrete, asphalt.	
Clearances	See drawing above. 0.6m is for single passage.	Make allowance for passing and scenic areas.
Alignments	No special requirements.	
Grades	0-5% normal. Maximum 10% on long grades. 15% maxim for any slope.	
Ecological Concerns	Litter and garbage provision. Soils and bank erosion in heavy usage. Treadway surface material may be a concern.	
Signage	Sufficient to not become lost. Sight lines more critical than distances between signs.	
Water Crossings	Requires roadway or bridge structure.	
Road Crossings	Require signage. Highway crossings can be marked by the Saskatchewan Department of Highways.	
Ancillary Facilities	Washrooms picnic areas for heavy usage recommended. Primitive trails will have little.	
Structures	None required. Shelters are nice. See appendix for step and retaining wall structure suggestions.	
Normal Needs	Except for very experienced travelers the trails will be used by persons for short trips of 5 to 10 kilometers. Trails that loop to the start are recommended.	
Special Needs	None. High use trails should be made accessible to special needs. See section on Provincial Accessibility Standards	
Compatibility With Other Uses	Low use trails can be used with mountain bikes and equestrian activities. As traffic increases separation is required.	
Maintenance	Periodic mowing, stump clearance. Earth or granular surfaces may need grading.	
Other Sources of Information	Saskatchewan Environment and Resource Management (Formerly Parks), S.P.R.A. Resource Centre.	

Activity Needs

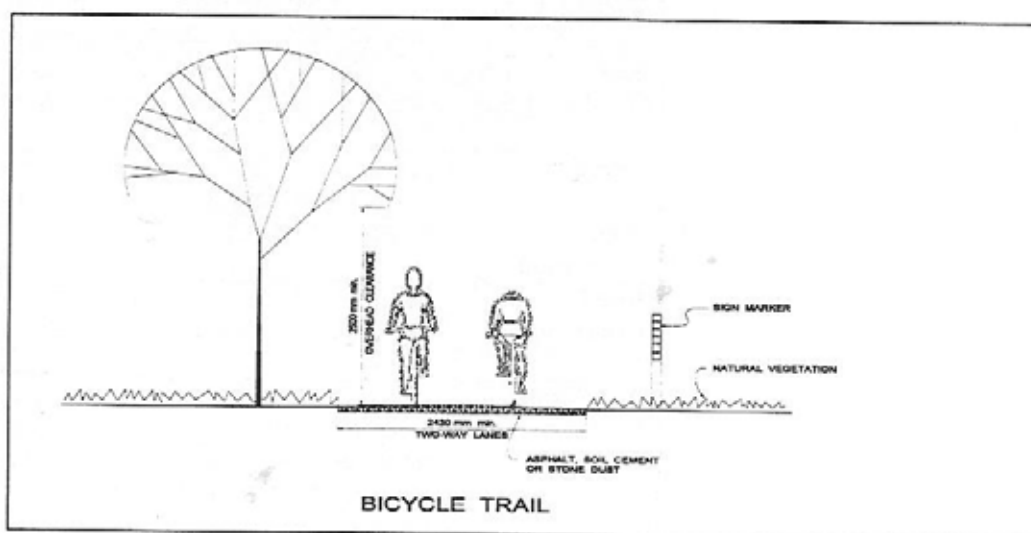
2. Cycling

a) Mountain biking

For experienced rugged mountain bike users a trail suitable for hiking can be used. It is recommended that a minimum clear width be 1500 mm for lightly used trails. The 2500 mm clearance vertically should be straight up rather than tapered in the hiking trails. The trail minimum width of 2000 mm is strongly recommended. To allow for less experienced riders and two-way traffic, the following drawing dimensions are recommended.

b) Recreational biking

For most users the treadway should be improved in accordance with the sketches and table.



Recreational biking recommended minimum standards

c) Road biking

Specialized road equipment requires a solid surface like concrete or asphalt. Specialized information for higher speed hard surface paths suitable for urban areas follows the chart.

Activity Needs

Recreational Cycling Needs Table

<i>Item/feature</i>	<i>Needs Description</i>	<i>Comments</i>
Minimum Treadway Construction	Remove stumps, stones, and organic material. Replace with granular material such as pit run gravel, crusher dust, or highway type 32 base, over a sub-base with good drainage. Weed and dust treatment may be suitable where there is not an environment hazard from the chemicals.	
Improved Treadway	Soil cement, concrete, asphalt.	
Clearances	See drawing. 2400 mm is the suggested minimum width for two-way traffic. Widths beyond 3650 mm give the appearance of automobile roadways.	
Alignments	The faster the speed the more warning time required. Curves should be gradual. Avoid hidden intersections. Average speed is 15 to 20 k.p.h. Improved roadways can have speeds in excess of 30 kph	
Grades	No more than 5% normally. Maximum 10% on short grades and should be marked.	
Ecological concerns	Litter and garbage provision. Soils and bank erosion in heavy usage. Treadway surface material and weed control chemicals may be a concern.	
Signage	Sufficient to not become lost. Grades over 10% should have warnings posted as should curves with less than a 7600 mm radius. Intersecting trails, roadways, and hazards should be marked.	
Water crossings	Requires roadway or bridge structure complete with safety railings.	
road crossings	Require signage. Highway crossings can be marked by the Saskatchewan Department of Highways	
Ancillary facilities	Washrooms picnic areas for heavy usage recommended. Primitive trails will have little.	
Structures	Washroom facilities and trail head parking are recommended. See page 12 for developed trails.	
Normal needs	Recreational trips rarely will exceed 25 km. Looped trails are desirable.	
Special Needs	All but the most experienced riders will need an improved surface. Hard surfaced trail is recommended for urban centres where there is high traffic and a lower experience level of user.	
Compatibility with Other Uses	Low use trails can be used with hiking and equestrian activities. As traffic increases, separation is recommended.	
Maintenance	Periodic grading after initial preparation. Granular material may erode requiring replacement.	
Other Sources of Information	Saskatchewan Cycling Association, Cycling clubs, S.P.R.A. Resource Centre	

Activity Needs

Refined Urban Bike Path Information (note dimensions are in imperial)

VERTICAL AND HORIZONTAL LAYOUT

The gradients of a bike path are directly related to the amount of use it will get. Extremes of steepness and flatness should be avoided if possible. The following gradients are recommended:

GRADIENT	LENGTH	
	NORM	MAXIMUM
1.5%	1000 ft	—
3%	400 ft	800 ft
4.5%	150 ft	300 ft
10%	30 ft	60 ft

The following formula can be used to determine horizontal radii used on bike paths:

$$R = 1.528V + 2.2^*$$

where R = the unbraked radius of curvature (ft) negotiated by a bicycle on a flat, dry, bituminous concrete surface and V = the velocity of bicycle (mph).

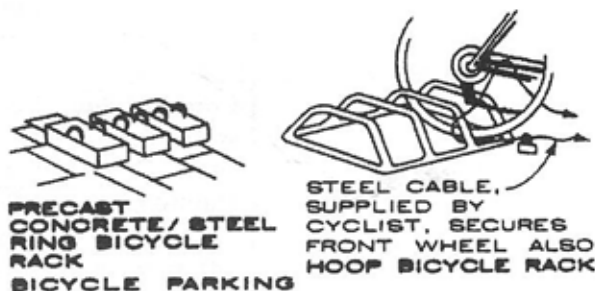
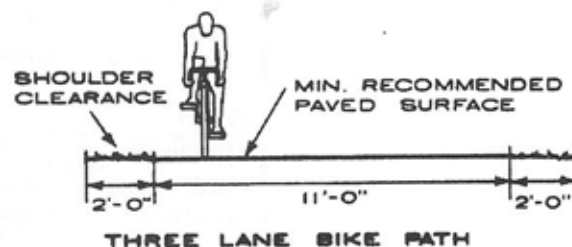
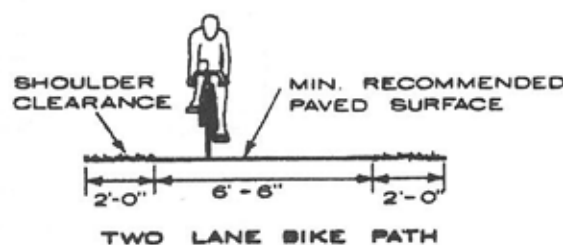
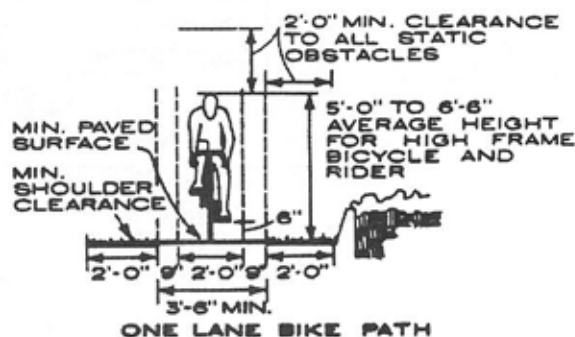
*Formula applicable to a maximum design speed of 18 mph. Using this formula, the minimum radius acceptable for a 10 mph design speed would be 17.5 ft. The radii used at the base of gradients in excess of 4.5% and running longer than 100 ft should be longer to accept higher design speeds (20-30 mph). Shorter radii can be used along approaches to on-grade intersections to slow cyclists down as they merge with pedestrians.

BIKE PATH INTERSECTIONS

One of the most dangerous elements of a bike path system is the on-grade intersection that brings bicycles, pedestrians, and automobiles together. If possible, Class I bike paths should include complete grade separations. Often this is not economically feasible; therefore, the following recommendations should be considered:

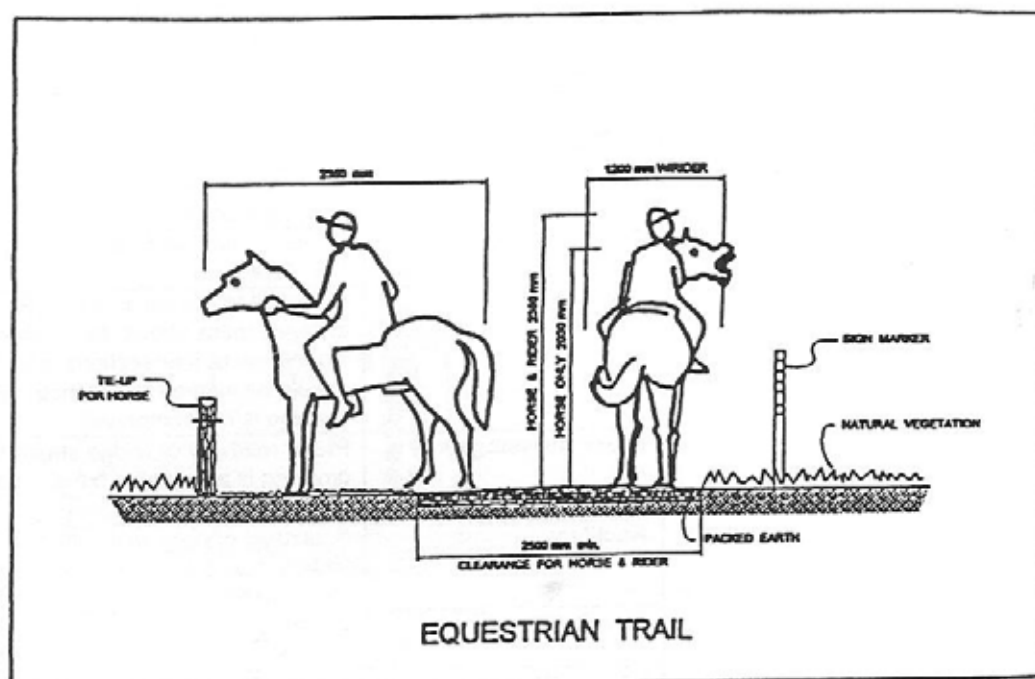
1. If possible, merge bicycles and pedestrians a minimum of 100 ft from the intersection using warning signs for both cyclists and pedestrians.
2. Provide warning signs for motorists indicating special caution at intersections.
3. Maintain adequate lighting
4. Install walk-don't walk, electronic crosswalk signals at busy intersections.
5. Control placement and maintenance of plant materials so as to maintain adequate site distance and visibility.

Confusion at intersections tends to increase at Class II and III bike paths. Warning signs are therefore recommended along approaches to intersections for all three types of users (distance from intersections for signs varies with speed of vehicular traffic).



Activity Needs

3. Equestrian (Horseback Riding)



Trail Clearances - Equestrian

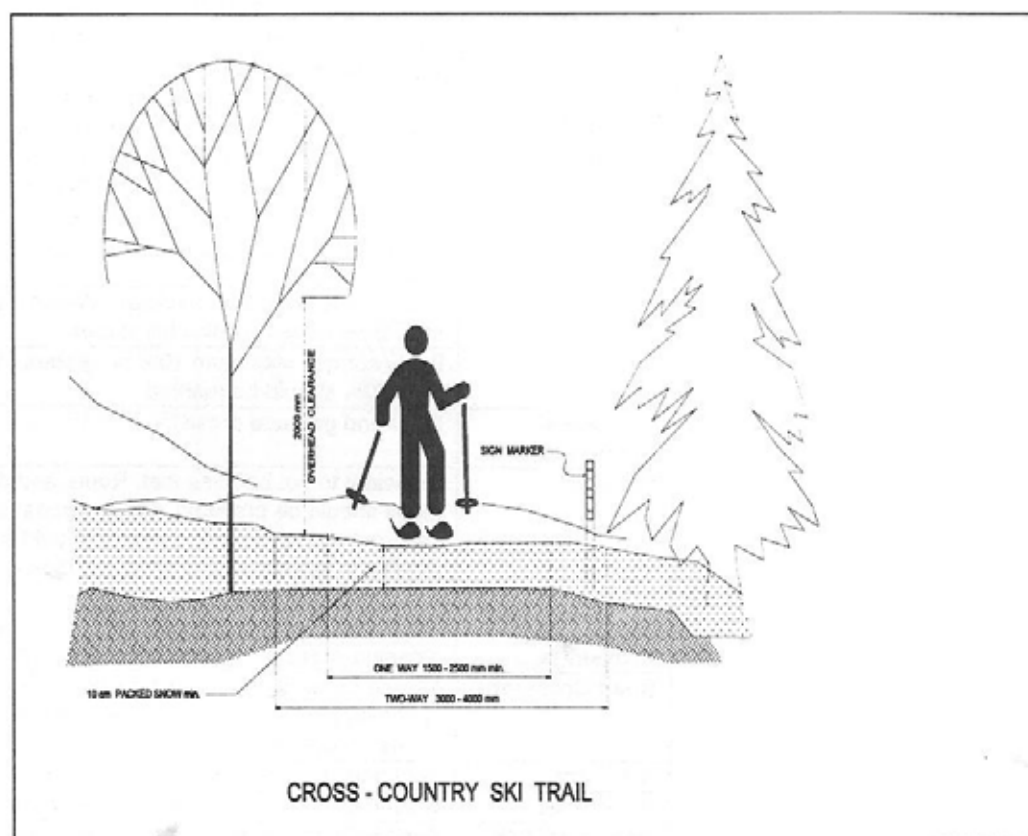
Activity Needs

Equestrian Needs Table

<i>Item/feature</i>	<i>Needs Description</i>	<i>Comments</i>
Minimum Treadway Construction	Mowing grass and brush to 100 mm height. The removal of stones and stumps is required to prevent injuries. The trail should be packed.	
Improved Treadway	For heavy usage trails, 150 mm of wood shavings or sawdust mixed with natural earth.	
Clearances	See drawing. For safety the minimum width should be 2500 mm.	
Alignments		
Grades	Try to stay under 10% on. Slopes over 15% will become eroded.	
Ecological Concerns	Horse manure, litter, and garbage. Erosion of trail slopes	
Signage	Sufficient to not become lost. Route and distance maps should be provided. Steep slopes, turns, intersections, and other dangers should be marked in advance. Skill level signage is recommended.	
Water Crossings	Prefer roadway or bridge structures. Winter ice crossing is acceptable but should be marked.	
Road Crossings	Crossing should be marked.	
Ancillary	Trail head parking with sufficient space for trailers, hitching posts, and route maps recommended.	
Structures	Washrooms, water supply, and shelters with feed are recommended for long distance travel.	
Normal Needs	Day trip trails should be 8 to 30 km. A sustained traveling distance is about 50 km.	
Special Needs	Rest stops, over-night camping with food and water supply. Specialty shelter information is available.	
Compatibility With Other Uses	Low usage on a minimum trail would be compatible with mountain biking or hiking. As traffic increases separation becomes desirable. Winter riding on ski trails is not recommended.	
Maintenance	Mowing, rock and stump clean up. Heavily used trails require grading. Improved treadways will require tilling.	
Other Sources of Information	Saskatchewan Horse Federation, S.P.R.A. Resource Centre.	

Activity Needs

4. Nordic (Cross-Country) Skiing



Trail Clearances - Skiing

Note: Using the Trans Canada Trail minimum vertical clearance of 2500 mm will provide ample allowance for snow build up and still maintain the 2000 mm recommended for skiing.

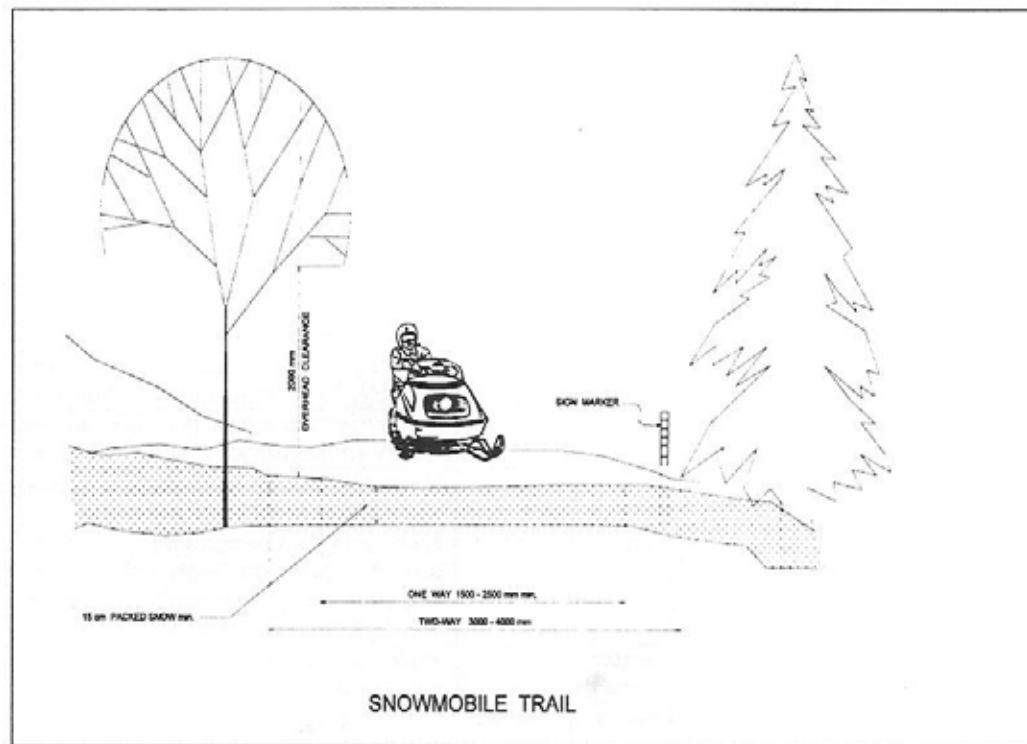
Activity Needs

Skiing Needs Table

Item/feature	Needs Description	Comments
Minimum Treadway Construction	Mowing grass and brush to 100 mm height. The removal of stones and stumps is required to prevent injuries. Snow should be packed to prevent blowing off the trail and to extend spring skiing. Setting of a track is recommended. Track should be set in sheltered areas and try to avoid south facing slopes due to sun melting.	Dimensions given are for classic style skiing. It is recommended that all but the most primitive trails would be tracked.
Improved Treadway material	Most recreational skiing is done on a set track. It is recommended that high traffic areas be one way or be double tracked. Moderate slopes should at least be double tracked for two way traffic.	
Clearances	See drawing.	
Alignments	Sharp turns should be avoided. Widen track for snowplow turns on down hill slopes.	
Grades	0-5% normal. Maximum 10% on grades. Slopes over 10% should be marked.	
Ecological Concerns	Litter and garbage provision.	
Signage	Sufficient to not become lost. Route and distance maps should be provided. Steep slopes, turns, intersections, and other dangers should be marked in advance. Skill level signage is recommended.	
Water Crossings	Prefer roadway or bridge structures. Winter ice crossing is acceptable but should be marked.	
Road Crossings	Should be avoided as much as possible. Unavoidable crossing should be marked. Do not locate on downhill run.	
Ancillary	Trail head parking and route maps recommended.	
Structures	Washrooms, warm up shelters are recommended.	
Normal Needs	Except for very experienced travelers the trails should be looped if possible. Beginner(novice) trails should be 2 to 8 kilometers. Intermediate loops 8 to 12 km. Up to 30 km for advanced skiers.	
Special Needs	Advanced "skate" style requires a non-tracked, packed, and conditioned space at least 1500 mm in width. Classic tracks are set in addition at the edge of the "skate" path.	
Compatibility with Other Uses	Low use trails can be used with snowmobiles but should be marked for the danger. Winter hiking or snowshoeing may be compatible in low use only. Equestrian use & snowmobiling are not recommended as compatible.	Groomed trails will be damaged by all uses and reduce the skiing enjoyment
Maintenance	Packing with snowmobile, track setting, and grooming are related to snowfall events.	
Other Sources of Information	SASKI (Saskatchewan Ski Association), Saskatchewan Environment and Resource Management (Formerly Parks), S.P.R.A. Resource Centre	

Activity Needs

5. Snowmobile Trails



Trail Clearances - Snowmobile Trails

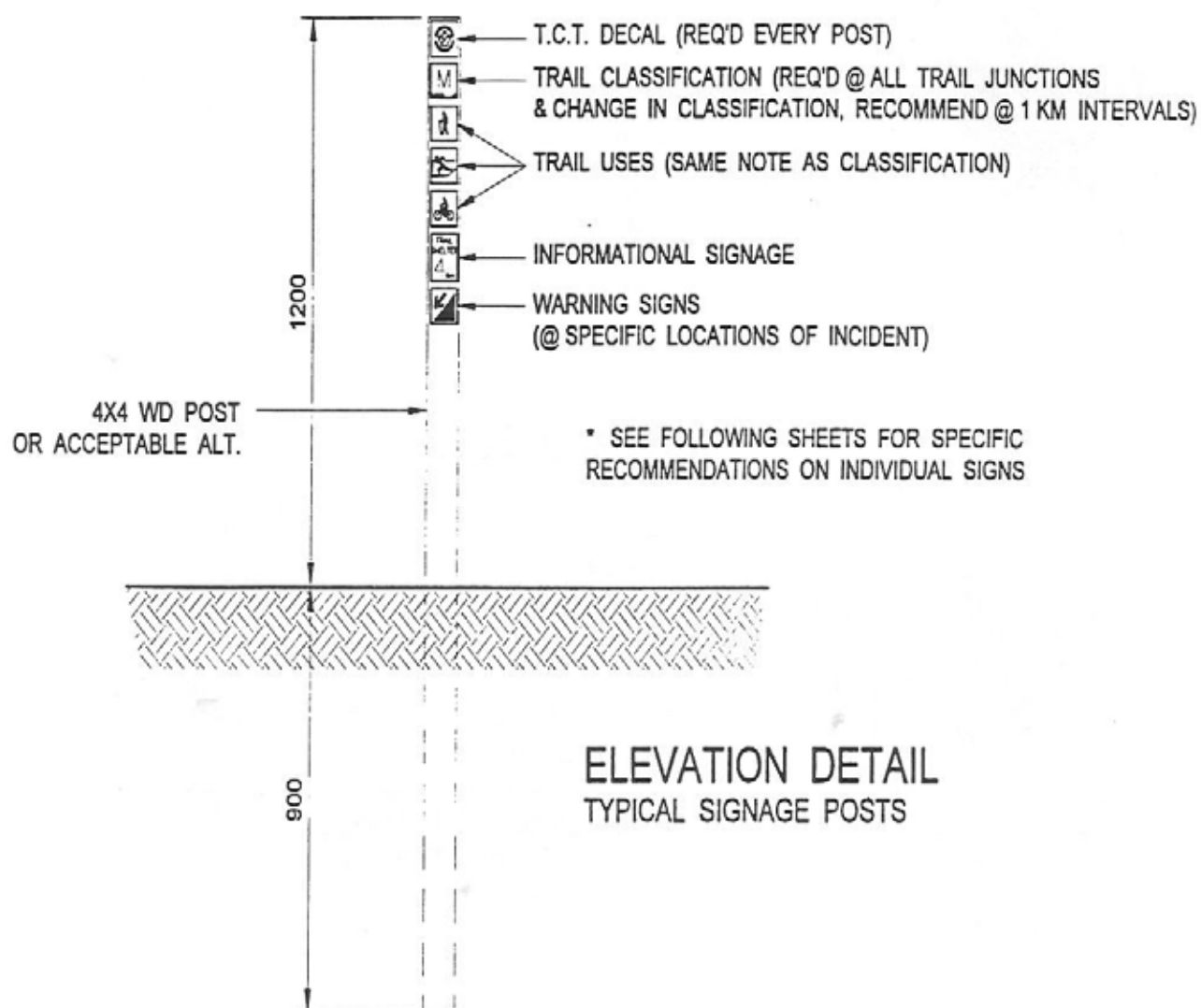
Note: Using the Trans Canada Trail minimum vertical clearance of 2500 mm will provide ample allowance for snow build up and still maintain the 2000mm recommended. The minimum width of the Trans Canada Trail will only provide for safe dimensions for a one-way trail.

Activity Needs

Snowmobiling Needs Table

<i>Item/feature</i>	<i>Needs Description</i>	<i>Comments</i>
Minimum Treadway Construction	Mowing grass and brush to 100 mm height. The removal of stones and stumps is required to prevent injuries. Snow should be packed to prevent blowing off the trail and to extend spring usage. Track should be set in sheltered areas and try to avoid south facing slopes due to sun melting.	
Improved Treadway Material	Regular grooming is recommended for heavy usage trails. 150 to 200 mm of snow is required to groom. Individual lanes should be at least 1800 mm wide. A snow ridge should be placed between two-way lanes.	
Clearances	See drawing.	
Alignments	Curves should be gradual and not banked. Clearing is required for sight distances. 50 km requires 90 metres visibility. 30 km requires 60 metres visibility.	
Grades	Try to maintain a maximum 12% on grades. Hillside slopes should be cut to provide for a flat trail.	
Ecological Concerns	Mixed fuel, oil, gasoline, litter, and garbage. Damage to slopes and vegetation if run down.	
Signage	Sufficient to not become lost. Route and distance maps should be provided. Steep slopes, turns, intersections, and other dangers should be marked in advance, taking the slow-down distance relative to speed into account.	
Water Crossings	Prefer roadway or bridge structures. Winter ice crossing may be used but must be marked.	
Road Crossings	Should be avoided as much as possible. Unavoidable crossing should be marked.	
Ancillary	Trail head parking including provision for trailers. Route map information recommended.	
Structures	None.	
Normal Needs	Ideally, trails should be one way. Two-way trails should be well marked with warning signage. A 20 to 30 km recreational ride length is normal. 100 km per day travel is common.	
Special Needs	The higher the speed the more signage and grooming is required. Most urban centres will not allow snow machines within city limits.	
Compatibility with Other Uses	Low use trails can be used with other functions. Summer hiking/biking trails can be used for winter snowmobiling. Normally, snowmobile use is separate from other use. As usage increases, a dedicated trail will become necessary.	
Maintenance	Packing and grooming are related to snowfall events.	
Other Sources of Information	Saskatchewan Snowmobile Association, Saskatchewan Environment and Resource Management (Formerly Parks), S.P.R.A. Resource Centre.	

Signage



Note 1: The Trans Canada Trail marker posts are used to keep travelers on the trail without becoming lost. Sight lines are more critical than distances. The maximum distance between signs on flats should be 500 m. Sign posts should be installed at intersections, turns, curves, hills, and other obstructions or changes where a traveler may become lost.

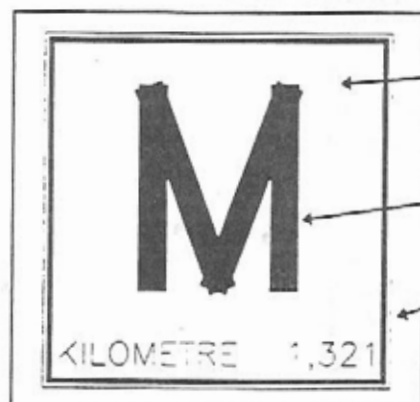
Note 2: The order of signs shown on the post is the recommended placement for identification, degree of difficulty, hazard, and then general information. The order should be maintained in this fashion.



Trans Canada Trail signs and decals are available through the S.P.R.A. Trail Council. For Information regarding signs contact the S.P.R.A.

TransCanada Trail Decal

Recommended Trail Standard Signs



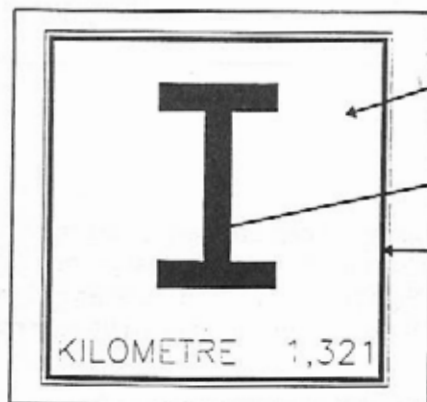
Background of sign is 75mm x 75mm White reflective.

Red M

1mm border set in 1mm for minimum standard trail.

Distance from the trail entry at the Manitoba Border. This is optional and not available yet.

Minimum Standard trail designation decal

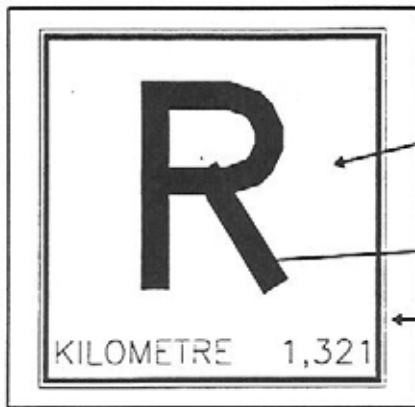


Background of sign is 75mm x 75mm White reflective.

Dark Brown I

1mm border set in 1mm for improved standard trail.

Improved Standard trail designation decal



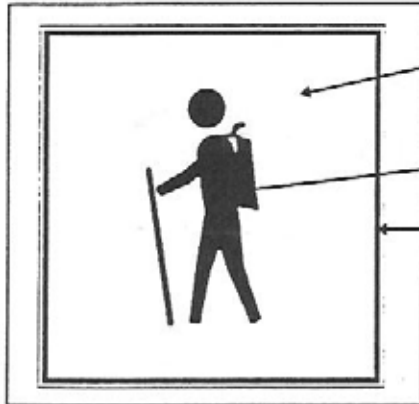
Background of sign is 75mm x 75mm
White reflective.

Dark green R

1mm border set in 1mm for refined
standard trail.

Refined Standard trail designation decal

Recommended Usage Signs

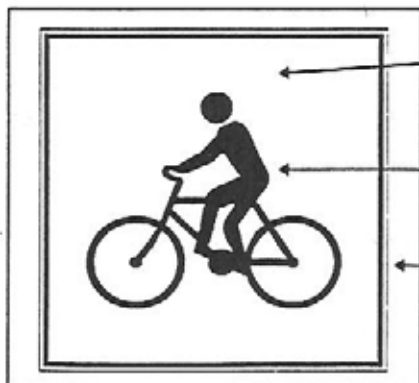


Background of sign is 75mm x 75mm
White reflective .

Dark green symbol

1mm dark green border set in 1mm for
hiking trail.

Hiking permitted designation



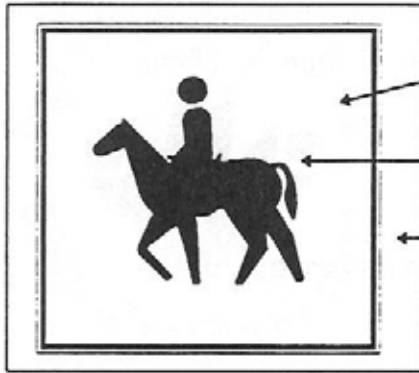
Background of sign is 75mm x 75mm
White reflective.

Black symbol

1mm black border set in 1mm

Cycling permitted designation

Signage

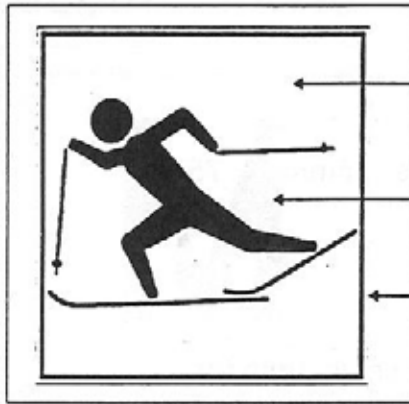


Background of sign is 75mm x 75mm
White reflective.

Black symbol

1mm black border set in 1mm

Equestrian permitted designation

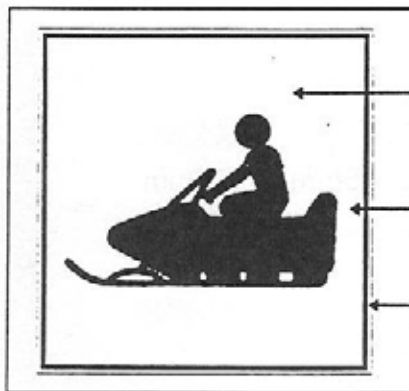


Background of sign is 75mm x 75mm
White reflective.

Blue symbol

1mm blue border set in 1mm

Cross Country Skiing permitted designation



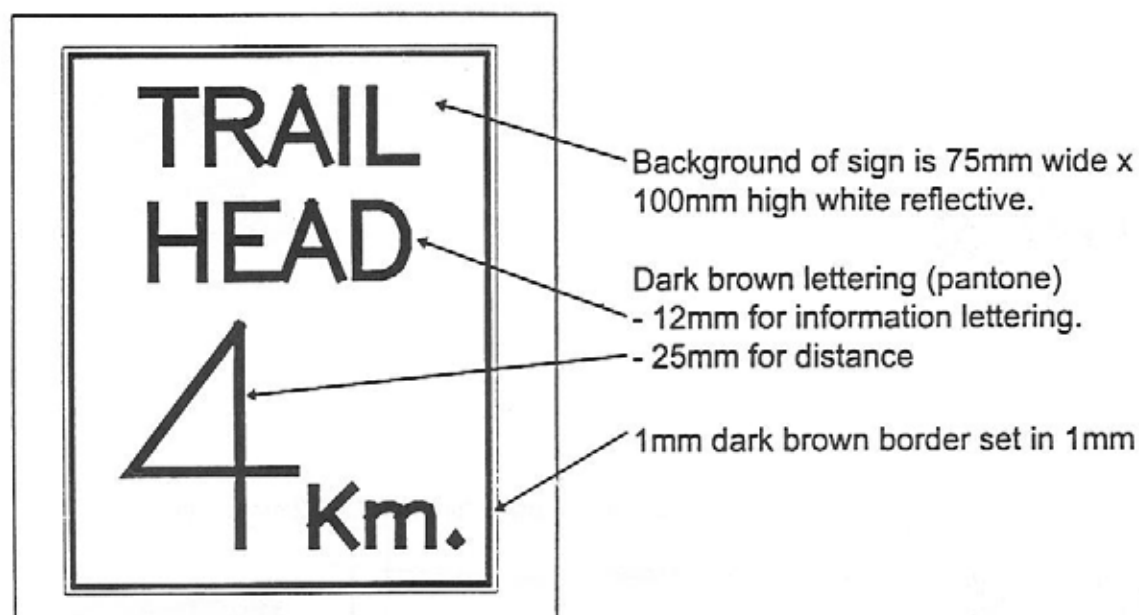
Background of sign is 75mm x 75mm
White reflective.

Red symbol

1mm red border set in 1mm

Snowmobiling permitted designation

Signage

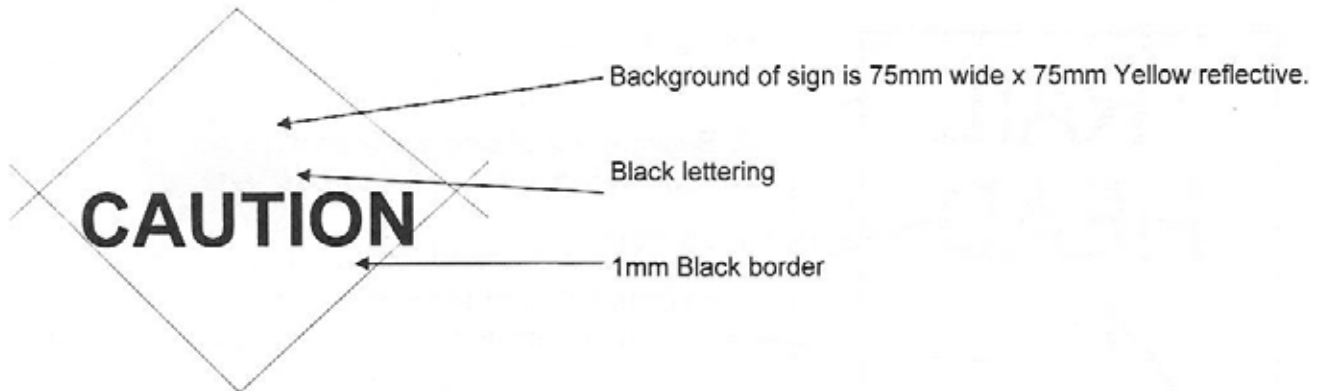


Typical information signage

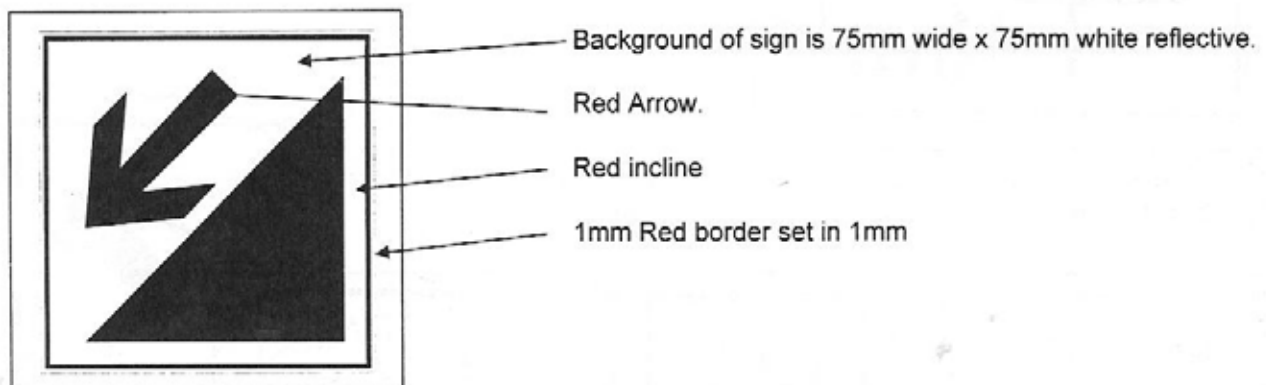


Informational signage can include distance to animal shelters, repair shops, points of interest, accommodations, other trails or any other information that would enhance user's safety or enjoyment of the trail.

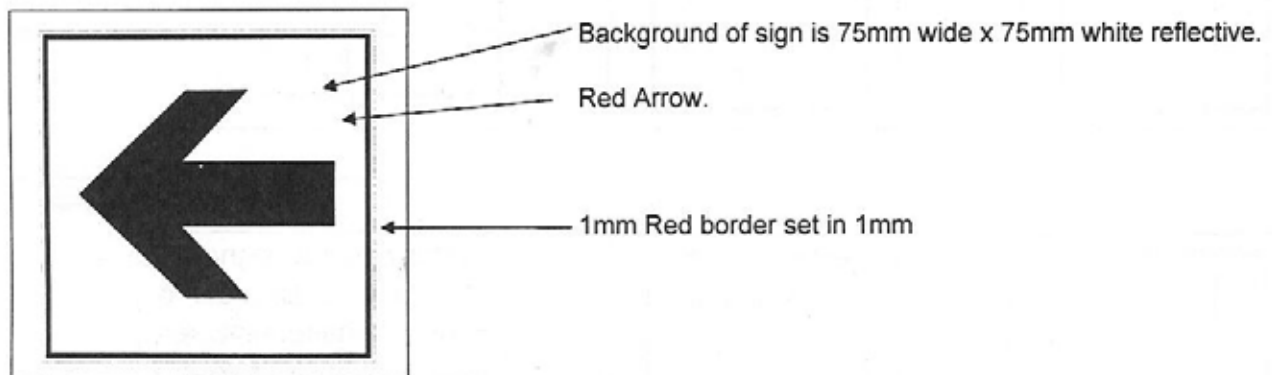
Warning Signage



General Warning signage



Steep slope Warning signage

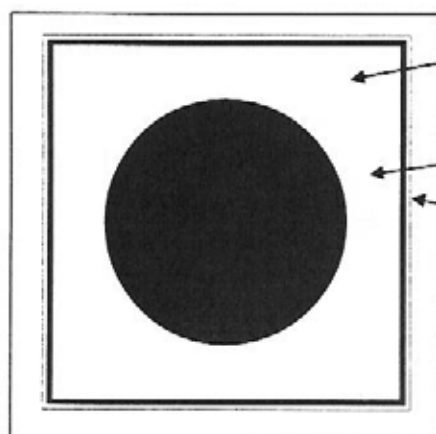


Change in Direction Warning signage

Some Other Recommended Warning Situations

- Highway crossing
- Roadway crossing
- Railway crossing
- River/stream crossing
- Bridge/Narrow bridge
- Narrow trail

Ski/Hiking Skill Level

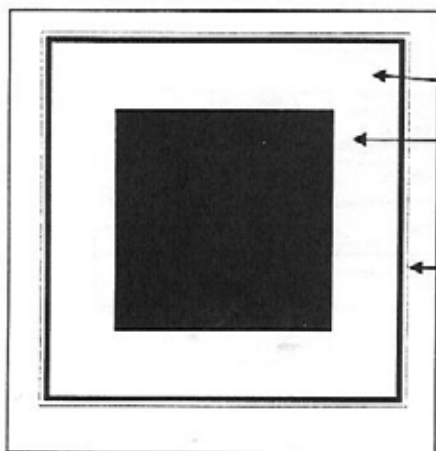


Background of sign is 75mm wide x 75mm White reflective.

Green circle symbol.

1mm Green border set in 1mm.

Novice Trail signage

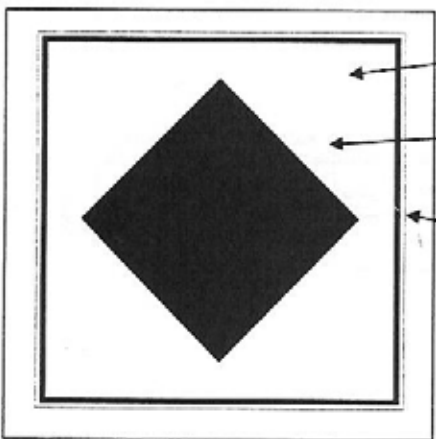


Background of sign is 75mm wide x 75mm White reflective.

Blue Square.

1mm Blue border set in 1mm.

Intermediate Trail signage



Background of sign is 75mm wide x 75mm White reflective.

Black Diamond

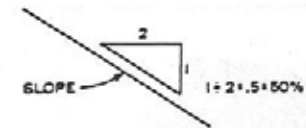
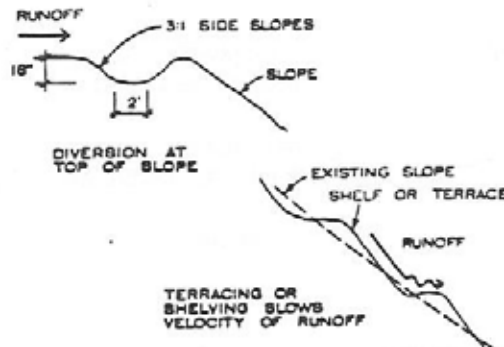
1mm Black border set in 1mm

Expert Trail signage

Hiking/ Cross country ski trail skill level designations

Construction Soil Properties

Embankment stabilization is required where extremely steep slopes exist that are subject to heavy storm water runoff. The need for mechanical stabilization can be reduced by intercepting the runoff, or slowing the velocity of the runoff down the slope. Diversion is desirable at the tops of slopes to intercept the runoff. Slopes can be shelved or terraced to reduce the velocity of runoff to the point where a major erosion hazard is avoided. Use an armored channel or slope drain if concentrated runoff down a slope must be controlled.



SOIL	GRADIENT	RATIO
Dry sand	33%	3:1
Loam	40%	2.5:1
Compacted clay	80%	1.25:1
Saturated clay	20%	5:1

MAXIMUM GRADIENTS FOR BARE SOILS

Slope Stability Guide

SOIL TYPES AND THEIR PROPERTIES							
DIVISION	SYMBOLS			SOIL DESCRIPTION	VALUE AS A FOUNDATION MATERIAL	FROST ACTION	DRAINAGE
	LETTER	HATCHING	COLOR				
Gravel and gravelly soils	GW		Red	Well graded gravel, or gravel-sand mixture, little or no fines	Excellent	None	Excellent
	GP		Red	Poorly graded gravel, or gravel-sand mixtures, little or no fines	Good	None	Excellent
	GM		Yellow	Silty gravels, gravel-sand-silt mixtures	Good	Slight	Poor
	GC		Yellow	Clayey-gravels, gravel-clay-sand mixtures	Good	Slight	Poor
Sand and sandy soils	SW		Red	Well-graded sands, or gravelly sands, little or no fines	Good	None	Excellent
	SP		Red	Poorly graded sands, or gravelly sands, little or no fines	Fair	None	Excellent
	SM		Yellow	Silty sands, sand-silt mixtures	Fair	Slight	Fair
	SC		Yellow	Clayey sands, sand-clay mixtures	Fair	Medium	Poor
Silt and clays LL < 50	ML		Green	Inorganic silts, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity	Fair	Very high	Poor
	CL		Green	Inorganic clays of low to medium plasticity, gravelly clays, silty clays, lean clays	Fair	Medium	Impervious
	OL		Green	Organic silt-clays of low plasticity	Poor	High	Impervious
Silt and clays LL > 50	MH		Blue	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	Poor	Very high	Poor
	CH		Blue	Inorganic clays of high plasticity, fat clays	Very poor	Medium	Impervious
	OH		Blue	Organic clays of medium to high plasticity, organic silts	Very poor	Medium	Impervious
Highly organic soils	Pt		Orange	Peat and other highly organic soils	Not suitable	Slight	Poor

NOTES

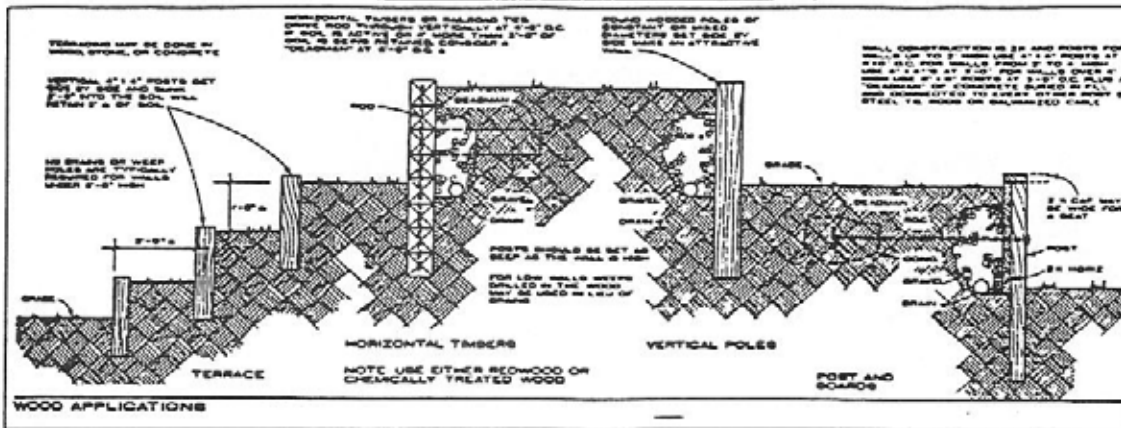
1. Consult soil engineers and local building codes for allowable soil bearing capacities.
2. LL indicates liquid limit.

Mueser, Rutledge, Johnston & DeSimone; New York, New York

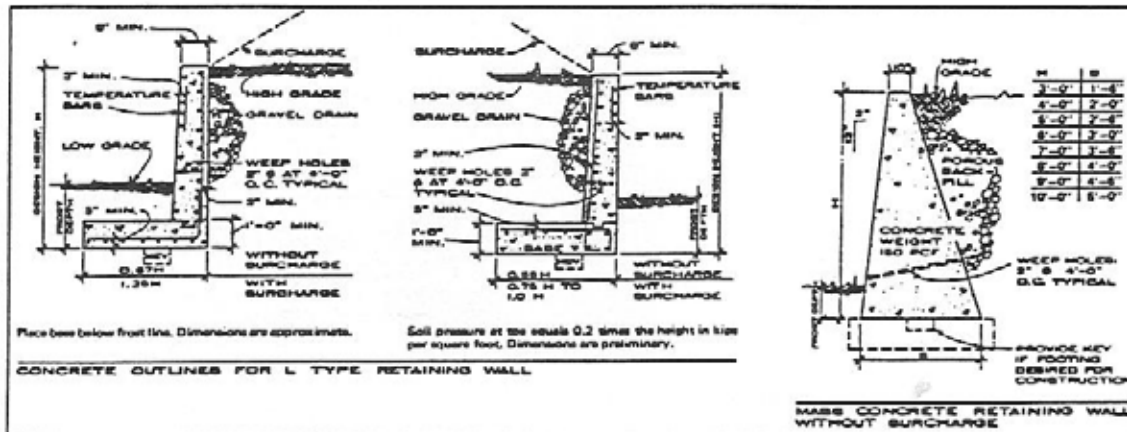
Properties of Soil Types

Soil properties and Slope Stability

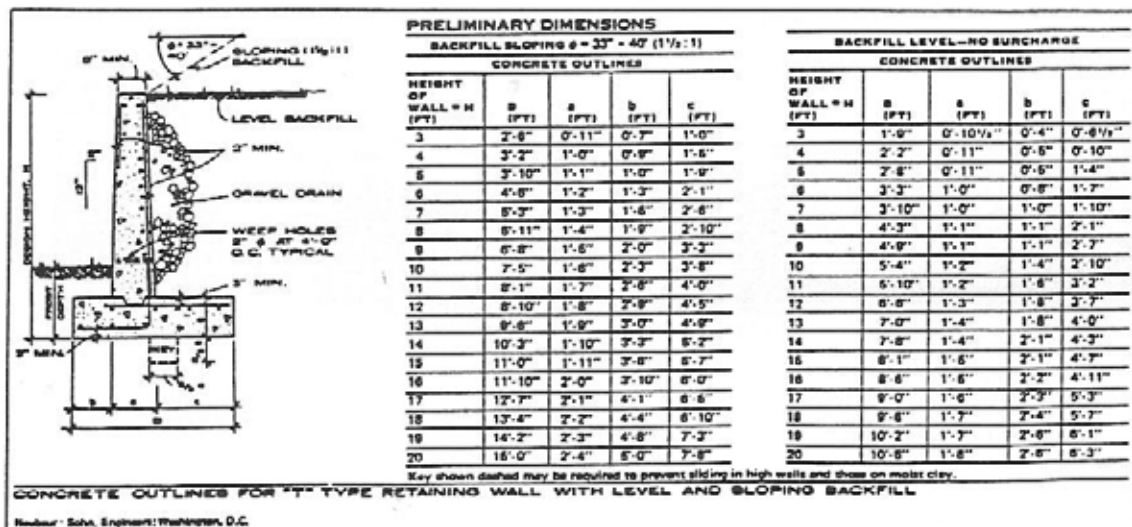
Construction Retaining Walls



Stepped wooden retaining wall - flat soil



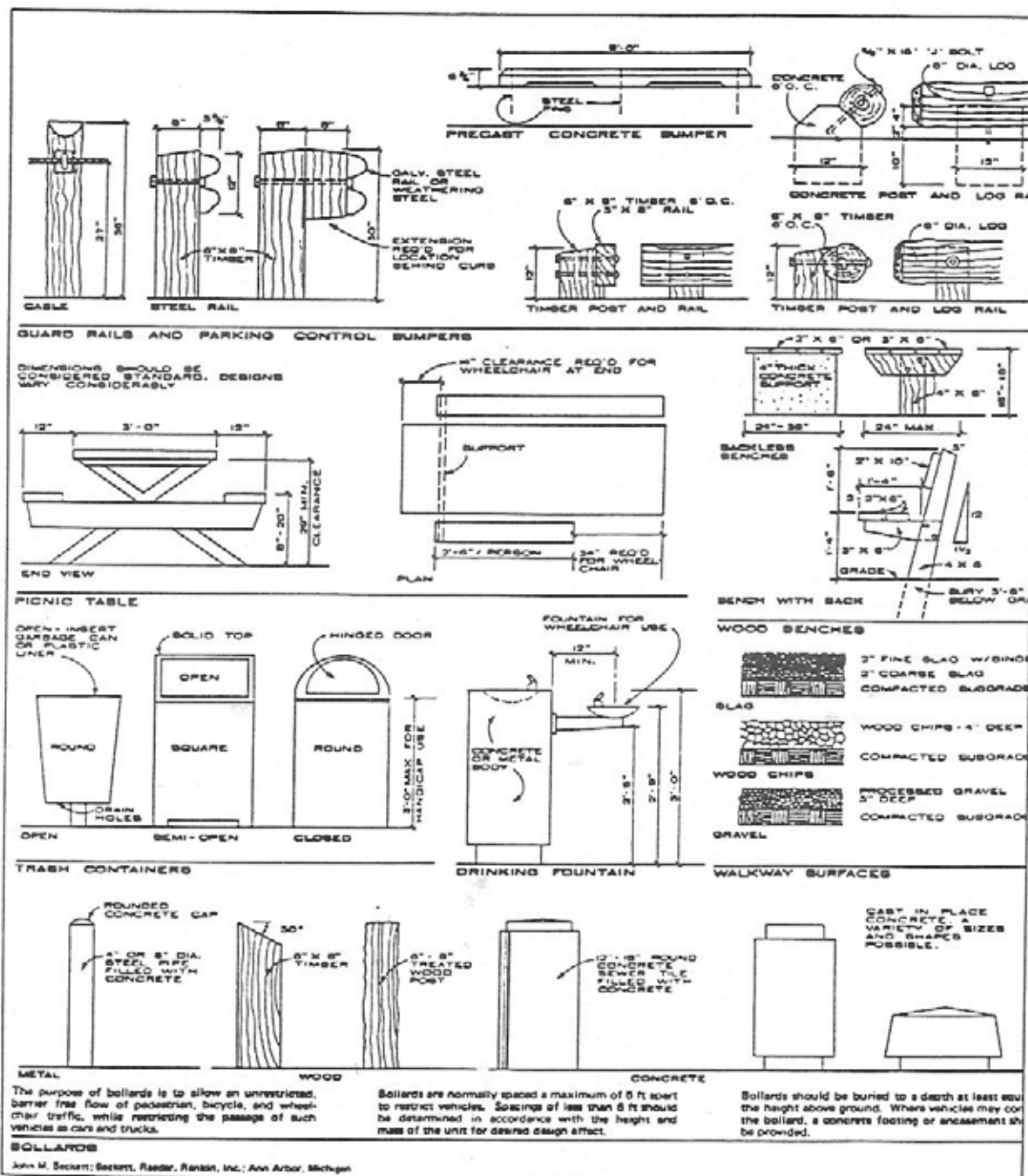
Concrete single "L" retaining wall - flat soil behind.



"T" style concrete retaining wall for flat and sloped sites.

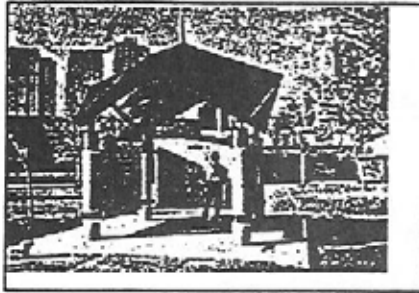
Note: Information is only a guide. Qualified persons should be engaged to design retaining walls.

Construction Trail Furniture

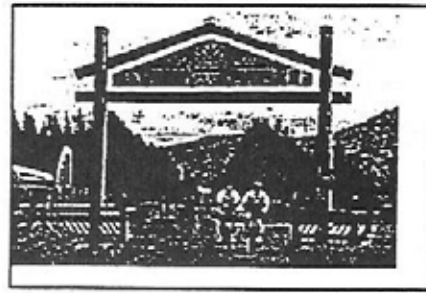


Examples of Trail furniture and enhancements

Pavilion Information



Urban Pavilion



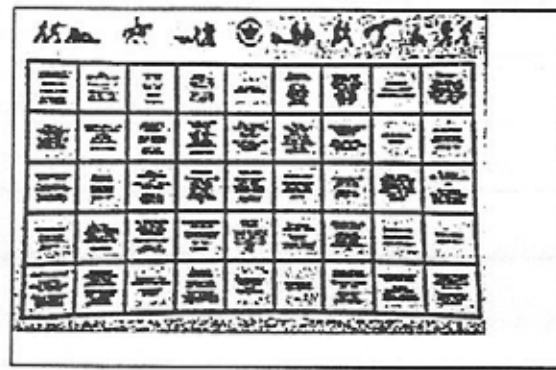
Provincial Gate



Corporate Sponsor Plaque



Pavilion Interior



Interior Plaque detail

Trail Situations That May Require Assistance

Situations Where Assistance Could Be Required.

Examples:	Possible Contacts
Highway crossings	- Saskatchewan highways and transportation regional office (Sask. has several regions)
Small creeks and similar water bodies	- Rural municipal offices - Sask Water Corp. - Geo-technical engineering firms
Marsh areas	- Rural municipal offices - Sask. Environment and Resource management - Geo.-technical engineering firms
River crossings	- Geo.-technical engineering firms - structural engineering firms for bridge design - Sask Water Corp.
Steep or unstable slopes	- Geo.-technical engineering firms
Ecologically sensitive areas	- Saskatchewan Environment
Historic areas	- Sask. Tourism, Sask. Historical Society
Contaminated sites	- Saskatchewan Environment
Sacred cultural sites	- First Nations, Rural Municipalities or whom ever they may belong to.
Provincial Park connecting	- Sask. Environment and resource Management
Grid road ditch or road allowance usage	- Local Rural Municipalities
Connecting to other parts of the trail	- Saskatchewan Parks and Recreation Association, Garry Michael 1-306-780-9262

Contractor Checklist

Why have a Contract?

A contract is a benefit to the seller and purchaser of goods or services alike. A contract is very valuable if there is a dispute. If you don't already have a contract, that is not a good time to negotiate one. Contracts define commitment by both parties to a transaction.

What should be defined in a contract?

At a minimum a contract should have the four following parts defined. A purchase order, an agreement for sale, or a host of other documents can form a contract.

- A contract should define the quantity of a product or service that is to be offered.
- A contract should define the quality of a product or service that is to be offered.
- A contract should define when the product or service that is to be offered will be delivered. If the delivery will be in stages the timing of stages should be defined.
- A contract should define how much the product or service that is to be offered will cost. If the delivery will be in stages the timing payment of stages should be defined.

What should a trail building group expect to provide for a contract?

- A trail building group may be asked to show evidence that they have the capacity to pay for the goods or services provided.
- A trail building group may be asked to designate a person(s) with the authority to accept goods and services for the group and to be the contact person.

When should a trail building group get help before signing a contract?

- A trail building group should consider getting a consultant if they are not knowledgeable about the goods, services, or products they are attempting to acquire.
- If the group cannot understand all or part of a contract they are requested to sign by a supplier of goods or services.
- If a supplier of goods or services has a lawyer involved, it is a good idea for the group to seek legal advice.
- If a supplier of goods or services demands up front payment before goods are received or services rendered, it is a time to beware.

General comments about bids or quotes

Not all bids, prices, or quotes are created equal. There are many forms of contracts. Some different alternates include:

1. Lump sum fixed price - a one cost covers the entire specified contract.
2. Unit price - a price per unit of work. It could be per cubic metre, per hour and as many measurements as people can be inventive.
3. Budget price - gives an approximate cost but does not guarantee that this is the final cost.
4. Upset price - the price will not cost more than a fixed amount. Savings less than the fixed amount are usually shared.

Contractor Checklist

Contractor or supplier checklist for supply of material and labour or labour and material.

**Items applicable to material supplied or labour, or labour and material contracts.
Ask the supplier/contractor if:**

- ☐ The quote is a fixed price (i.e. guaranteed cost)
- ☐ This is a budget price only (approximate only, price is subject to fluctuation)
- ☐ Provincial sales tax is included
- ☐ GST is included
- ☐ Delivery to site is included (some suppliers charge extra)
- ☐ Unloading at the site is included
- ☐ Will they send you a written quote (it is best to confirm now then, later say I thought you were sending me X but I got Y)
- ☐ Is the price or quote for what was asked for, or is this considered an "alternate" or "equal". (if possible, provide a description of what you want at the beginning. Be specific say 10 yards of gravel, not a truck load)
- ☐ Are there any other special terms? If so, what are they?
- ☐ Payment terms (cash, 30 days, or?)

If the contractor is supplying labour or labour and material (examples include constructing a road bed or providing an operated piece of equipment) - ask:

- ☐ Does the contractor have worker compensation coverage? (they should have or your group could be liable)
- ☐ Is work being sub contracted? (if yes, the builders lien act has regulations requiring holdback of part of the payment and further documentation is required)
- ☐ Does the contractor have general and liability insurance? (they should have or your group could be liable)
- ☐ Will the contractor sign a contract or purchase order for the work? (if they won't, be very cautious)