

7.0 DESIGN CONCEPTS

This section describes the key elements of the Concept Plan for the conservation area. A final Concept Plan was developed by combining options and ideas which received the greatest support during the public consultation process, and which best exemplified the management objectives and guidelines put forward in Part I of this document (see Appendix J for a discussion of the original design options).

Given the limitations imposed by terrain and slope in some parts of the conservation area, particularly in areas which appear to be less sensitive with respect to other environmental factors (e.g., vegetation, wildlife and watercourses), it was inevitable that human use be concentrated in areas that are more suitable from a slope and public safety point of view. Nevertheless, a balance was sought in the more ecologically sensitive areas between protection and human activity.

7.1 Habitat Blocks

The Concept Plan identifies and protects a number of habitat blocks (see Figure 7-1), defined as large areas that currently have no trails within them. From an environmental standpoint, it is considered desirable to retain these areas as wildlife refuge and to avoid making any new trails to prevent fragmentation and further human disturbance.

A "modified" habitat block has also been identified on the northwest corner of the conservation area adjacent to the large contiguous block of habitat that makes up much of the north slope. Due to the presence of existing trails extending from Centennial Pavilion to neighbouring communities on the west, and the desire to maintain these access routes, this area did not meet the defining criteria of a true habitat block. However, an opportunity was recognized to extend the existing northern block around to the west side of the mountain into an area that was only minimally disturbed. This modified habitat area has been designated for pedestrian use only. Use is restricted to existing trails and there are no provisions in the plan for new trails in this area. These blocks represent intact habitat areas free from possible impacts from trail and, especially, cyclist activities.

7.2 Trail Concept Plan

The Trail Concept Plan is presented in Figure 7-2. The elements of the plan are discussed individually in the following sections so that their role in the overall plan can be more readily understood.

7.2.1 Trails for Pedestrians (Hikers)

Individuals and hiking clubs have been using the mountain for many years and some feel that their access to the trails in the conservation area has been reduced in recent years by the growth of mountain biking as a trail use. The Conservation Area Management Plan is based on the premise that all trails should be available to hikers

and that some trails should be designated as pedestrian only, including trails on sensitive, steep terrain, not suited to cycling. On this basis, pedestrians will not be excluded from trails unless there is a parallel pedestrian only trail in place.

7.2.2 Trails for Cyclists (Mountain Bikers)

Prior to development of the Conservation Area Management Plan, mountain bikers used all the trails within Burnaby Mountain Conservation Area⁴. The Concept Plan identifies, on a temporary trial basis, a number of multi-use pedestrian / cycling trails. This type of trail is intended for shared use and could indicate a priority for one mode or the other, such as 'Cyclists Yield to Pedestrians' or 'Pedestrians Yield to Cyclists'. Cycling only trails have been identified only where a pedestrian route is available with similar start and finish. For example, the proposed link for the Trans-Canada Trail between the foot of Hastings Street and the Centennial Pavilion area is a parallel pair of trails, both adapted from existing trails so that one will suit hikers (stairs in steep sections) and one will suit cyclists (switchbacks in steeper places).

7.2.3 Equestrian Trails

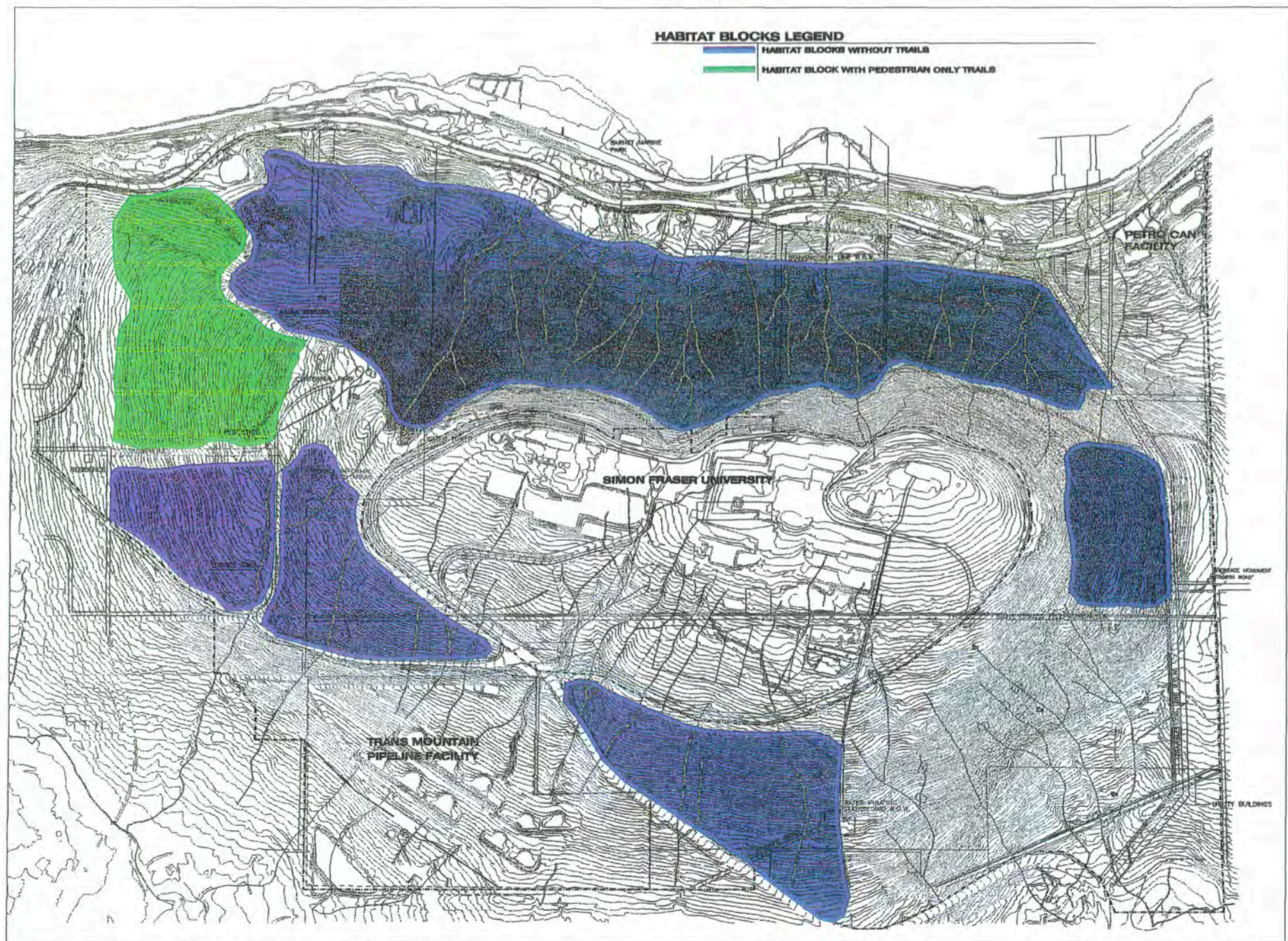
Local equestrian groups have used a few of the trails on Burnaby Mountain for trail riding for many years, and equestrian club members were involved in early trail construction and in maintenance over past years. The plan preparation process included consultation with equestrian groups and sought to identify suitable trails for equestrian use on multi-use trails.

In this review, the Trans-Canada Trail, east of the Centennial Pavilion area, was anticipated to have heavy usage from pedestrians and cyclists because of its status as the Trans-Canada Trail and its role as a key trail link to many of the loop routes in the conservation area. Given this anticipated heavy future use, the Trail, as recently reconstructed, is considered too narrow for combined pedestrian, cyclist, and equestrian use. Within the steep terrain in the vicinity of this trail, further widening is not recommended due to the visual impact, loss of important vegetation, and expensive retaining walls and other engineered structures that would be required. A new equestrian route was identified which extends along the existing transmission line right-of-way, already popular with equestrians, to the former target range sites. This route offers equestrians a long trail opportunity with appropriate grades and trail widths to accommodate all user groups due to its role as a service access for the transmission line.

7.2.4 Loop Trails

The Concept Plan identifies two major trail loops and a number of smaller loop opportunities in the conservation area (Figure 7-3). The concept of loop trails was widely supported in discussions with interest groups and at the first Public Open House. Loop trails permit trail users to achieve long, diverse circuits to meet their

⁴ Mountain bike use on Burnaby Mountain was not sanctioned by previous land owners (SFU) or the City of Burnaby prior to approval of the Plan.



exercise and other objectives and should reduce the incentive for seeking variety of trail experiences through creation of new or braided trails. Prior to the closure of the target ranges, it was not feasible to provide a trail loop around the mountain. The Concept Plan changes this by creating a long loop, which circumnavigates the mountain and links to Barnet Marine Park. The length of new trail sections to achieve these loops is minimized by utilizing existing service access corridors. Where new trails are introduced, their total length is less than the extent of trails which will be closed and decommissioned.

An important aspect of the loop trails within the conservation area are the opportunities created to link with off-site existing and planned Urban Trails and Greenways. This will allow residents of adjacent neighbourhoods to the east, south, and west of Burnaby Mountain to arrive by foot and bicycle, decreasing dependence on vehicular access.

7.2.5 Summary of Trail Concepts

The allocation of trails as illustrated on the Trail Concept Plan is as follows:

Multi-use pedestrian / cycling / equestrian:	4.46 km
Multi-use pedestrian / cycling:	22.1 km
Cycling only:	1.27 km
Pedestrian only:	5.27 km
Long-term potential options:	3.06 km
Decommissioned trails ⁵ :	1.96 km

7.3 Parking Opportunities

A number of parking opportunities are also identified on the Trail Concept Plan (see Figure 7-2). Reclamation of the former target range sites provides a new opportunity to create a major entry, parking, and interpretive node for the conservation area at a prominent location at the lower elevations of the mountain. Prior to this opportunity, the main entry and orientation point was in the Centennial Pavilion area, well within the conservation area. At this new entry point, Burnaby Mountain Conservation Area will have a strong identity along Barnet Highway and will be able to effectively integrate its trail network and parking with the City's major marine park, Barnet Marine Park. Adaptive reuse of the target range parking areas will provide a significant number of spaces for park users to supplement other available spaces currently serving the conservation area. The supply should be sufficient to provide an alternative to use of on-street parking in residential areas abutting the conservation area.

The Concept Plan identifies a number of existing public parking locations which serve the conservation area and clearings which could provide future parking opportunities. The overall strategy is to have a variety of small parking areas

⁵ Other existing trails not designated on the Plan will be closed.

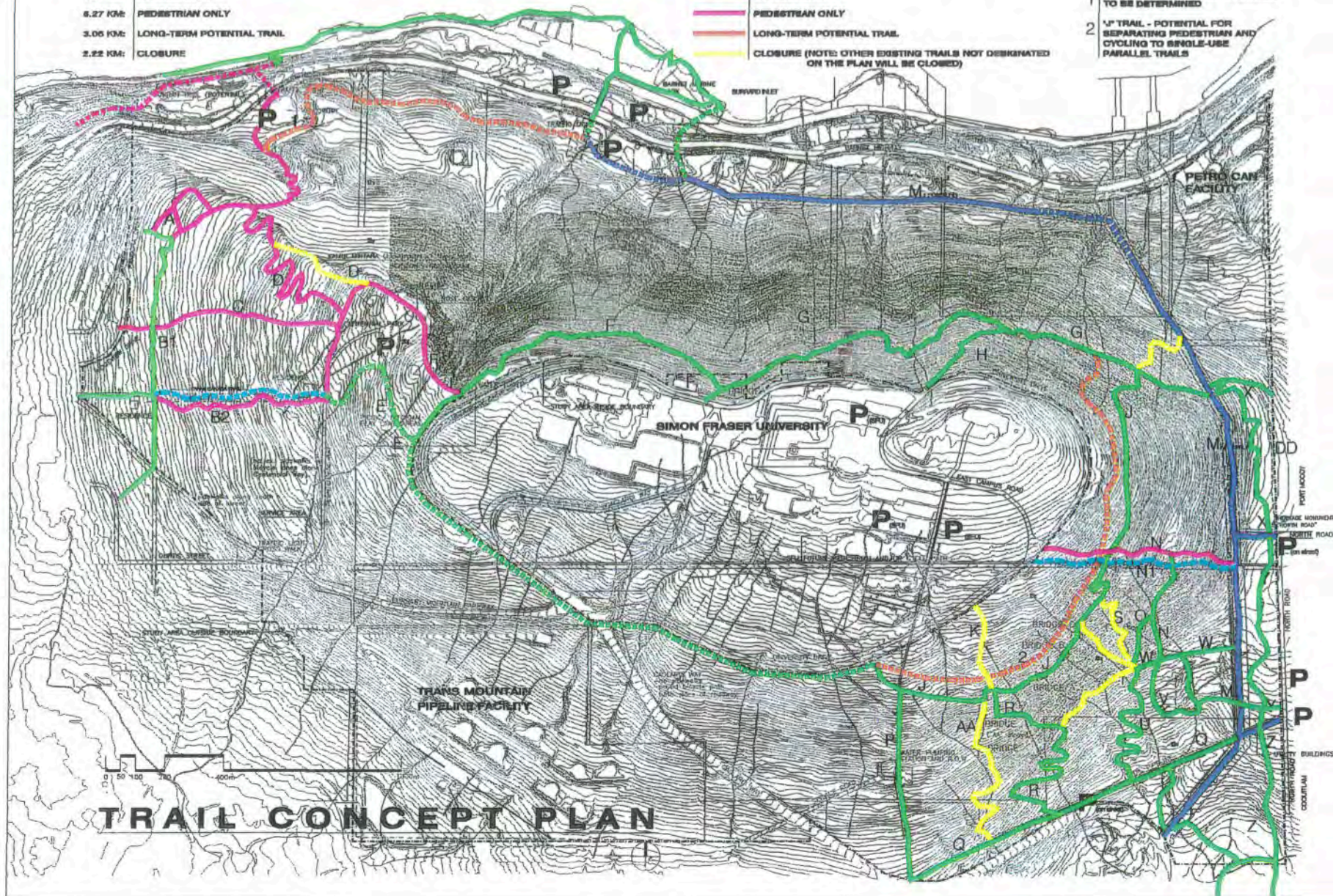
TRAIL LENGTHS

4.46 KM:	MULTI-USE PEDESTRIAN / CYCLING / EQUESTRIAN
22.20 KM:	MULTI-USE PEDESTRIAN / CYCLING
1.27 KM:	CYCLING ONLY
5.27 KM:	PEDESTRIAN ONLY
3.05 KM:	LONG-TERM POTENTIAL TRAIL
2.22 KM:	CLOSURE

TRAIL LEGEND

	MULTI-USE PEDESTRIAN / CYCLING / EQUESTRIAN	(Solid line)
	MULTI-USE PEDESTRIAN / CYCLING	(Dashed line)
	CYCLING ONLY	
	PEDESTRIAN ONLY	
	LONG-TERM POTENTIAL TRAIL	
	CLOSURE (NOTE: OTHER EXISTING TRAILS NOT DESIGNATED ON THE PLAN WILL BE CLOSED)	

EXISTING TRAILS
1 VELODROME TRAIL - USER STATUS TO BE DETERMINED
2 "P" TRAIL - POTENTIAL FOR SEPARATING PEDESTRIAN AND CYCLING TO SINGLE-USE PARALLEL TRAILS



throughout the conservation area and to avoid expansion of existing parking in the vicinity of the Centennial Pavilion and removal of valued habitat for creating new parking lots.

Additional parking opportunities are identified in the plan to serve as options in the future. The intent is to limit and manage the number of new parking spaces made available to conservation area users as a way to manage the intensity of conservation area use into the future.

7.4 Clearings in the Conservation Area

The Concept Plan incorporates the assumption that no new clearings should be made in the forest cover of Burnaby Mountain. This objective implies that the existing cleared areas of the conservation area should be the focus for uses which require clearings, from deer browse areas to picnic meadows. Key clearings include:

The former target range sites: envisioned as clearings maintained for wildlife habitat and picnicking with continued use of existing gravel parking lots (Figure 7-4).

Viewing area and other functions in the Centennial Pavilion area: envisioned as having little change and as requiring some tree modification to keep key views available. Some expansion of the children's playground is noted as an opportunity supported by the first Public Open House.

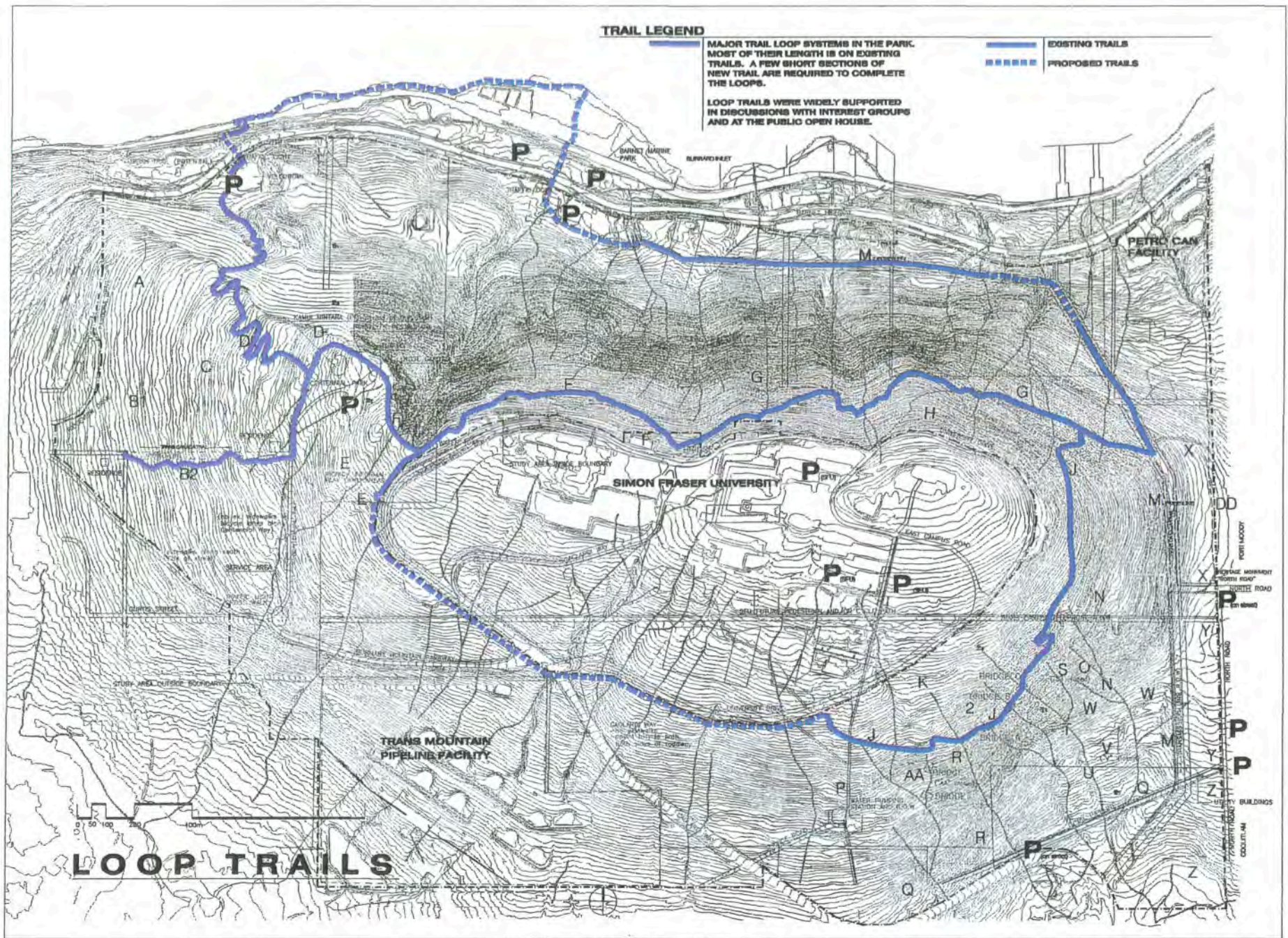
Open grassy area along the Ring Road: noted as an opportunity for wildlife habitat and for providing views toward Port Moody.

7.5 Long-term Potential Options

Three long-term potential options are proposed for trails. These long-term options are intended to respond to an expected growth in recreational use of the conservation area, while recognizing that existing use levels may not warrant implementation of such measures until well into the future, if at all. In consideration of conservation and recreation objectives, these future options will only be considered if the following criteria are met:

- a demand for the action is recognized and justifiable;
- an ability to steward Burnaby Mountain trails in an environmentally sensitive manner will have been demonstrated;
- an environmental and geotechnical assessment will be performed to determine impacts; and
- use of the trail will be determined at the time of development based on demand and environmental impacts.

The long-term options are:



- Lower Loop Trail:** Complete a lower loop of the Mountain by creating a new connecting trail between the former target range sites and the Harry Jerome Sports Centre. User status is to be determined at time of development. When presented to the public at the second Open House, 62.8% of respondents supported this option.
- 'J' Trail (Mel's):** Potential for separating pedestrian and cycling to single-use parallel trails. When presented to the public at the second Open House, 66.3% of respondents supported this option.
- South Side Trails:** Designate trails on the southern slopes as pedestrian-only or cycle-only to separate pedestrians and mountain bikers in this high-use area. When presented to the public at the second Open House, 54.6% of respondents supported this option.

7.6 Design Parameters

7.6.1 Design Parameters for Trails

The majority of trails included in the Concept Plan are on existing trails that are designated for specific user groups and improved to meet the demand of that use. A few new trails are proposed for one of two reasons:

- to create a link in a loop system; or
- to parallel an existing trail to have a pedestrian only / cycling only pair.

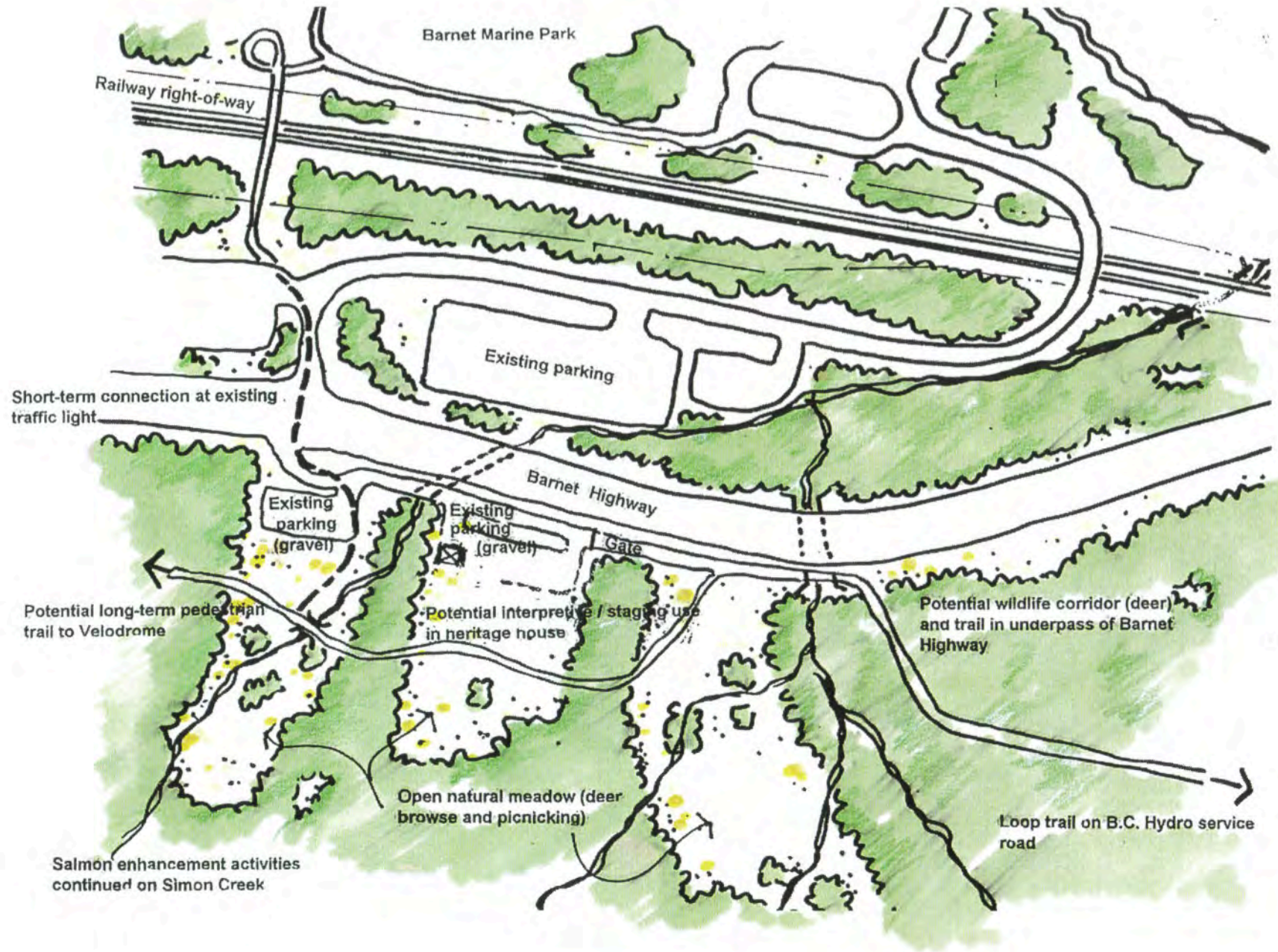
The Trail Concept Plan identifies trails in five categories, varying by user group and site conditions. Each is illustrated in Figure 7-5. Possible design techniques for signage and trails are presented in Figures 7-6 and 7-7 respectively.

7.6.1.1 Multi-Use Pedestrian / Cycling / Equestrian Trails

These multi-use trails are typically on compacted gravel service roads within the conservation area and are generally 4 metres wide and without obstacles, such as logs or steps, to accommodate vehicular access for service purposes. Watercourse crossings require bridges sufficiently wide to permit a service vehicle to use them. A height clearance of 3 to 3.5 metres is needed to permit equestrian use.

7.6.1.2 Pedestrian / Cycling / Trans-Canada Trail

The Trans-Canada Trail is designed for pedestrian and cyclist use with a typical width of 3 metres. Short sections could be narrower than the typical width to avoid removal of significant vegetation or need for expensive engineering interventions such as retaining walls. The surface is crushed limestone without steps to facilitate cycling access. Good drainage, slope retention, and bridges at watercourse crossings are necessary. A height clearance of 3 metres is needed to permit cyclist use.



7.6.1.3 Pedestrian /Cycling Trail

Pedestrian / cycling trails which are less important in the trail hierarchy than the Trans-Canada Trail are typically 1.0 to 2.0 metres wide. Variable widths respond to topography and site features, permitting trails to meander around trees and narrow in areas with steeper side slopes. A range of trail construction and stabilization details are possible including steps and boardwalks in wet area or where root protection is required (see Figure 7-7).

7.6.1.4 Pedestrian Only Trail

Pedestrian trails that exclude cyclist use are typically 1 metre wide and may include sections of steps where slopes are steep. Widths may be further reduced to 0.75 metres for short sections to avoid impacts to vegetation or topography.

7.6.1.5 Cycling Only Trail

Cycling trails which parallel pedestrian trails are designated for cyclist only use in several locations in the conservation area. These trails range in width from .75 to 2.0 metres with 1.0 to 1.5 metres being more typical. These trails will use switchbacks rather than steps in steep topography. A vertical clearance of 3.0 metres and shoulder clearance of .45 metres on the trail sides is recommended for cyclist use.

7.7 Design Parameters for Signage

A hierarchy of signage is also recommended for use throughout the conservation area. Types of signs appropriate for use on Burnaby Mountain include entry and orientation signs, trail signs and maps and interpretive signage.

7.7.1.1 Entry Signage

Entry points should be marked by signage stating 'Burnaby Mountain Conservation Area' and indicating availability of parking and other amenities.

7.7.1.2 Park Orientation Maps

Key entry points such as in the Centennial Pavilion area and at the former target range site should be provided with trail maps and related information to facilitate use of the conservation area, including trail categories, distances and typical times, interpretive information, trail etiquette, and special announcements. This signage is typically a display case in vandal proof materials such as Lexan and heavy wood that can be locked once a display is put in place.

7.7.1.3 Trail Signs

Trailhead signs are used at trail entry points and at major trail intersections. These are typically a family of related signs on either wood (typically 15 cm) or metal posts with information on plaques of enamel paint on metal. Signs can name the trail (e.g., Mel's Trail), classify the permitted user groups (e.g., Pedestrian Only), indicate degree of difficulty (e.g., Cycling Trail for Experienced Mountain Bikers),

note points of interest (e.g., Trail to View over Port Moody), and provide rules for use (e.g., Cyclists should Yield to Pedestrians).

7.7.1.4 Interpretive Signage

Ground level signs, as well as those on posts, can be used to provide interpretive information such as names of unusual tree species or locations where one can spot a nest in the trees overhead. Sometimes small signs are used to provide a reference (e.g., Site #6) to a printed brochure to provide a self-guided tour of a conservation area in a manner which minimizes the clutter of signage on site for other users.

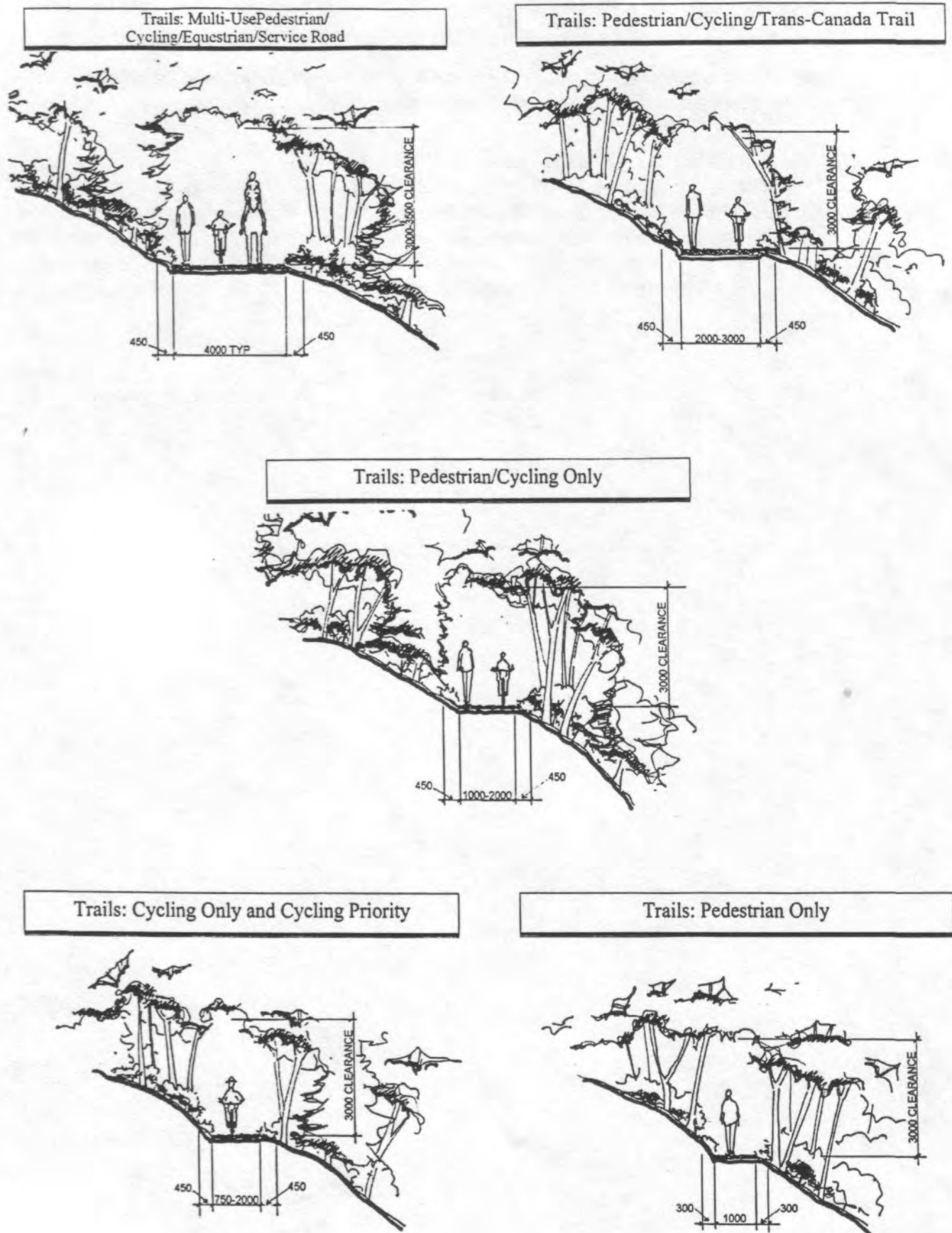
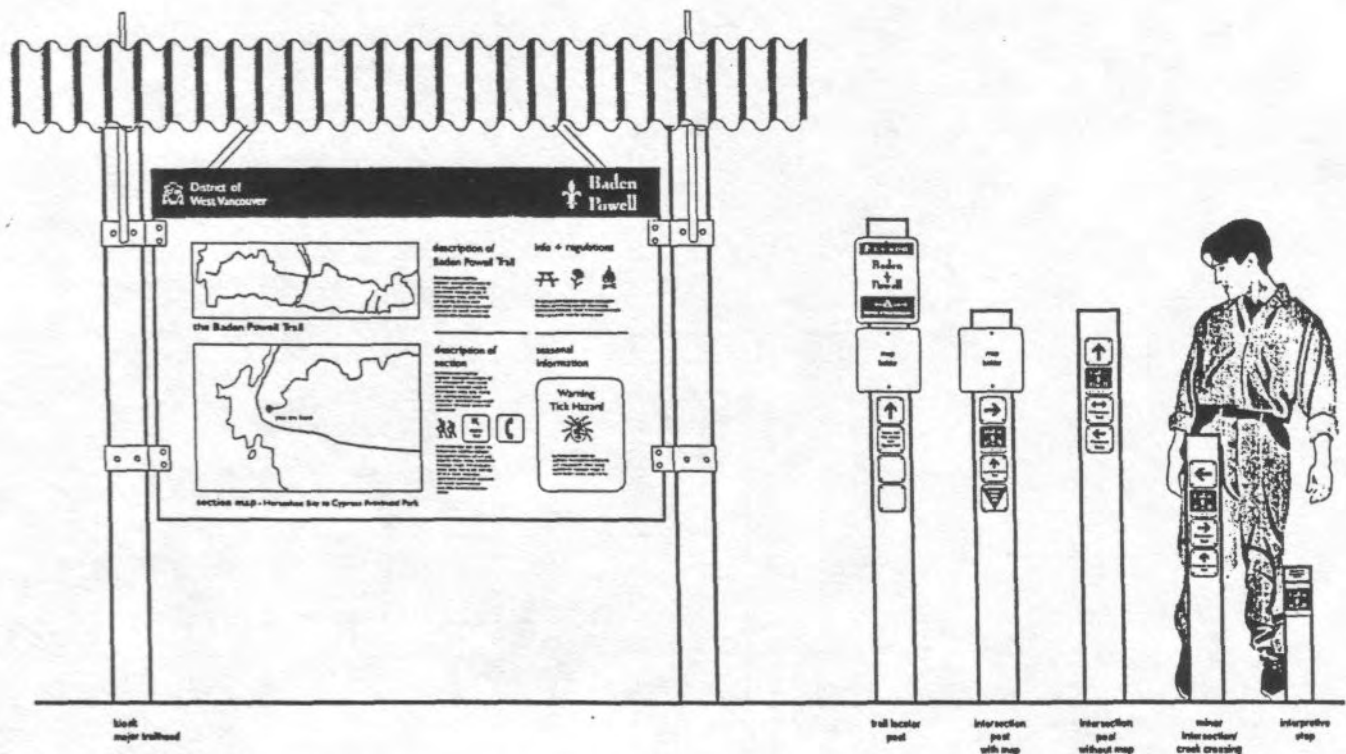


Figure 7-5: Trail Hierarchy Sketches

SIGNAGE TYPES FOR PARK AND TRAIL MANAGEMENT:

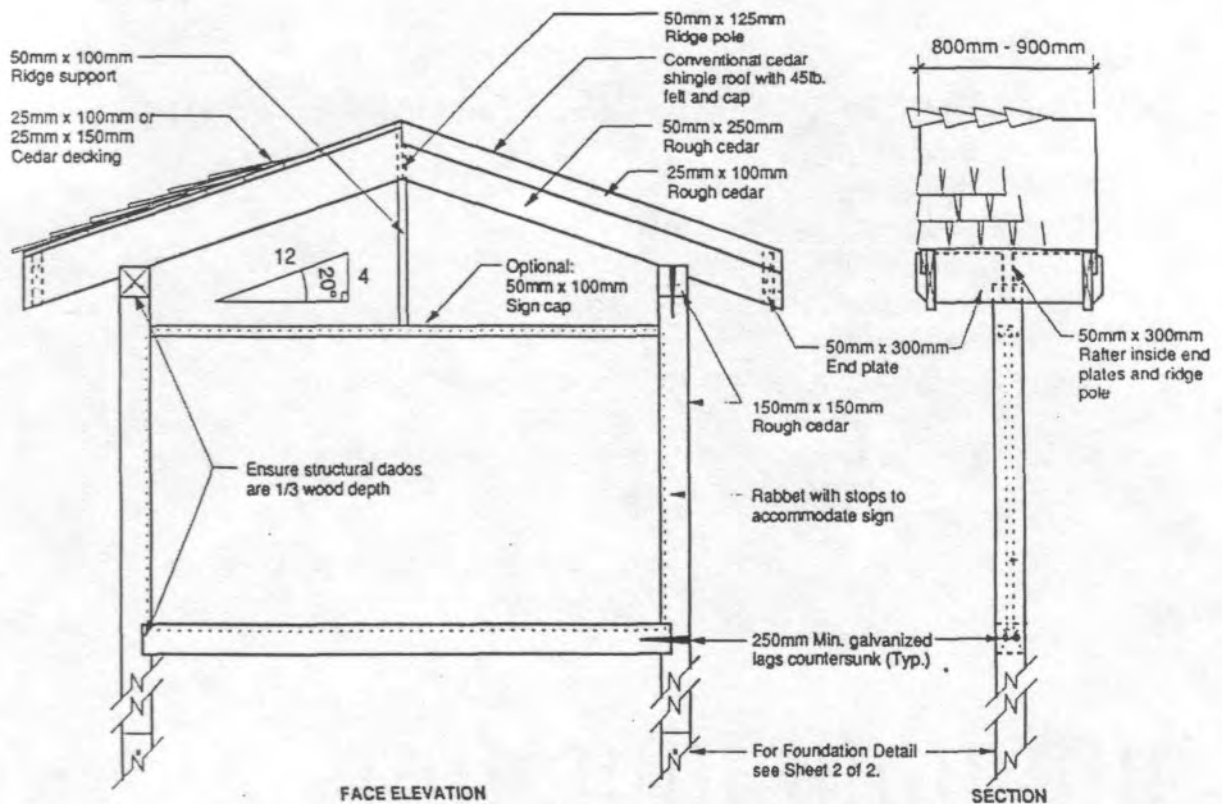
- Park orientation maps
- Park entry signage
- Trail classification by user group
- Trail classification by degree of difficulty
- Trail and watercourse name signage
- Interpretive signage
- Signage keyed to a self-guided tour brochure

The following are examples of trail signage from other parks in B.C.

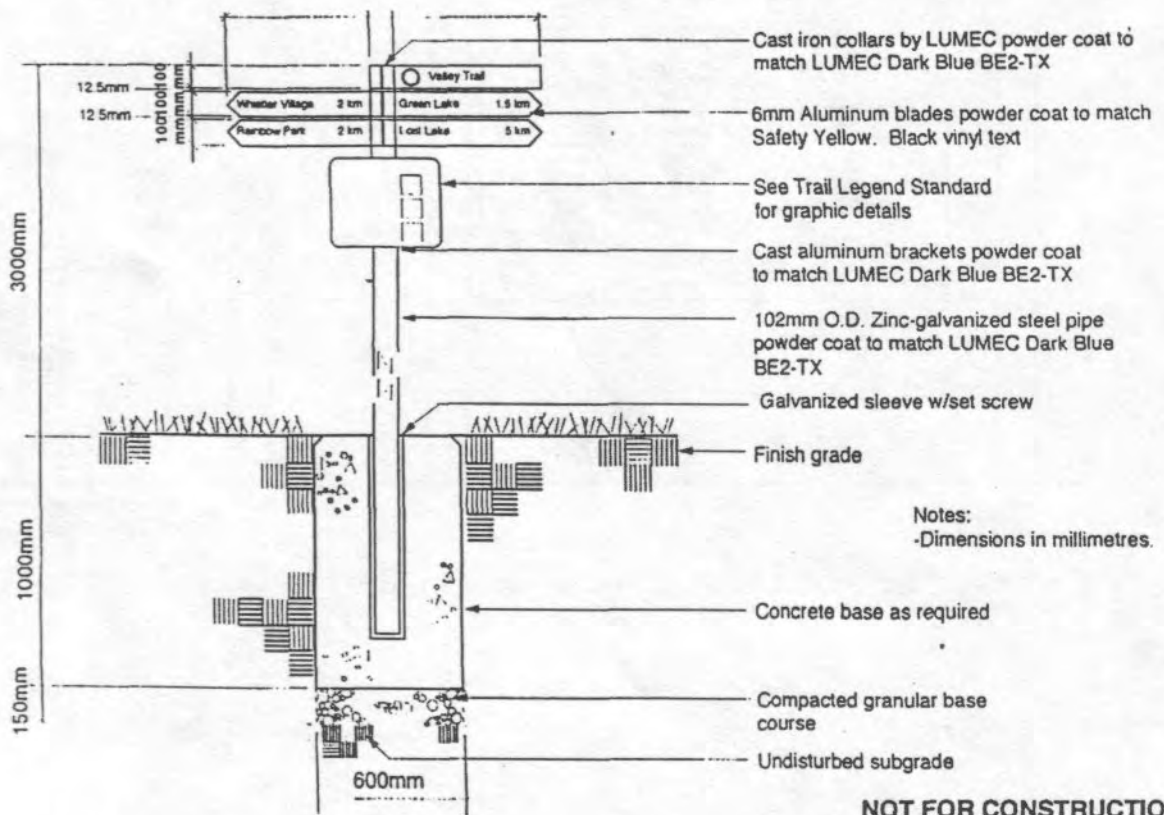


Overview of Sign Types, courtesy of the District of West Vancouver

Figure 7-6: Trail Signage



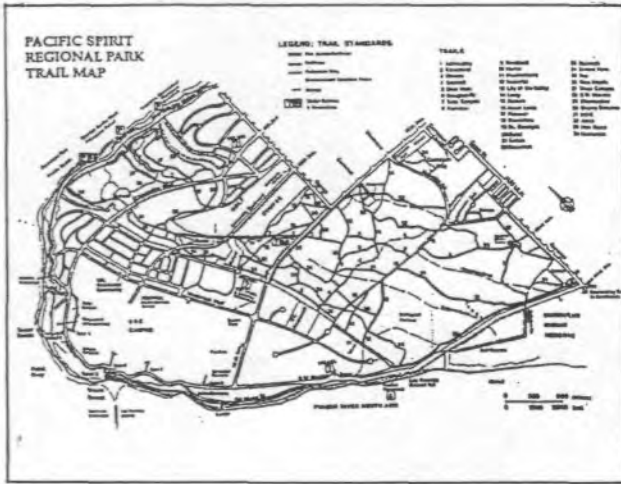
Map Kiosk, courtesy of the Resort Municipality of Whistler



Directional Signage, courtesy of the Resort Municipality of Whistler

Figure 7-6: Trail Signage

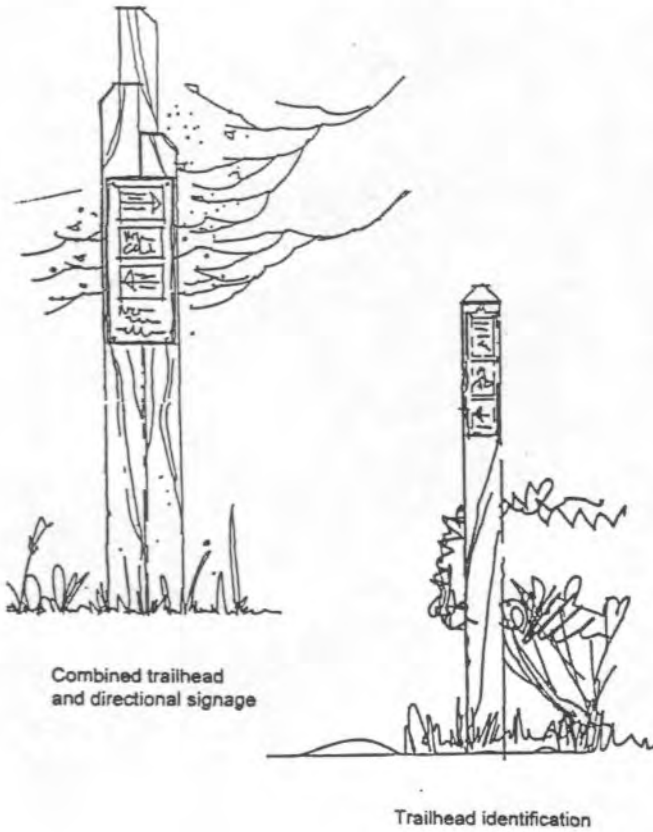
PARK ORIENTATION MAPS



TRAIL CLASSIFICATION BY USER GROUP



TRAILHEAD AND DIRECTIONAL SIGNAGE



TRAIL CLASSIFICATION BY DEGREE OF DIFFICULTY

Symbols similar to those for skiing:
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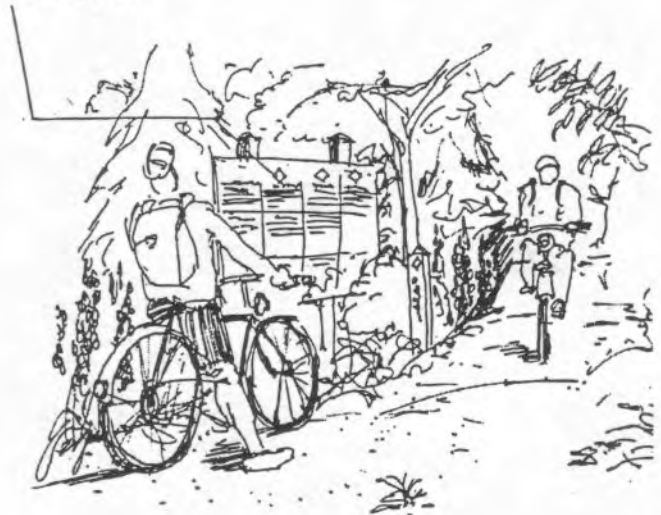
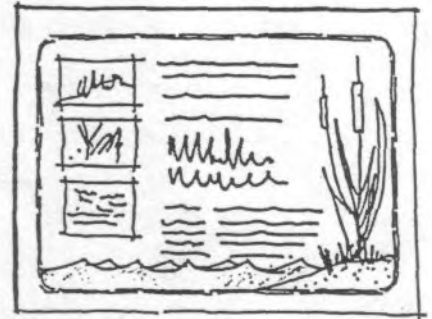
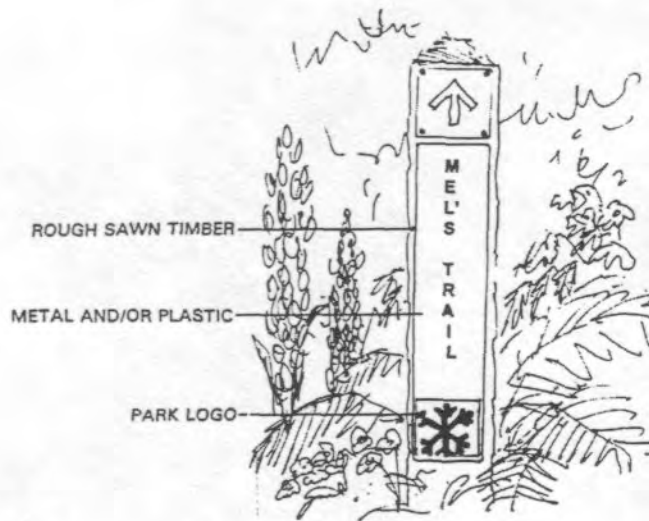


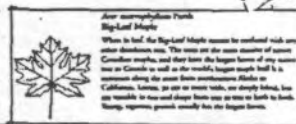
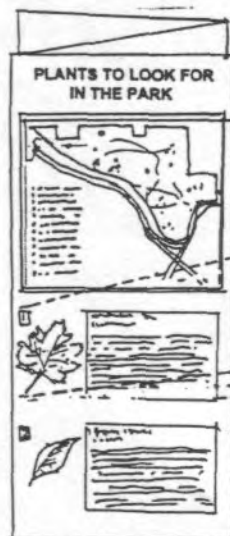
Figure 7-6: Trail Signage



Interpretive plaque on a concrete base



SIGNAGE KEYED TO A SELF-GUIDED TOUR BROCHURE



Plant identification information in a printed guide, keyed to plant identification markers

Figure 7-6: Trail Signage

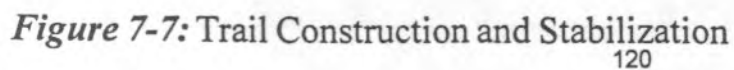
- Drainage improvements
- Root and understorey protection
- Trail stabilization
- Trail relocation
- Fencing of sensitive areas
- Log and boulder barriers along trail edges
- Boardwalk sections over wet areas
- Bridges over watercourses
- Barriers to bicycles
- Logs and other obstacles to slow the speed of cyclists

A hand-drawn sketch of a building facade. On the left, a ramp or staircase is shown with the text "WOOD RAMP" and "SECRET TO PORTING SHOOT L" written on it. The main part of the sketch shows a building with a large, multi-paned window or door. To the right of the building, there is a small structure with the text "SCAM PLANTED GUN" written next to it. The drawing is done in a simple, sketchy style with lines and some shading.

[illegible]

A hand-drawn perspective sketch of a concrete repair assembly. It shows two rectangular layers of concrete. The top layer is labeled "COMPACTED CRUSHED STONE" and contains a layer of aggregate. Below this is another layer of concrete. A rebar is shown passing through both layers, secured by "10 M (#3) REBAR (WARRANTED, 600 LENGTH STAKED THROUGH INTO SURFACE 500 O.C. TYP.)". The rebar is held in place by "SPIKE WARD NUMBERS TOGETHER WITH GUARANTEED METAL SPIKES TYP.". The bottom layer of concrete is also shown with a similar aggregate layer. The entire assembly is labeled "ASSEMBLY" and "KO SKETCH".

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TRAIL DRAINAGE IMPROVEMENTS

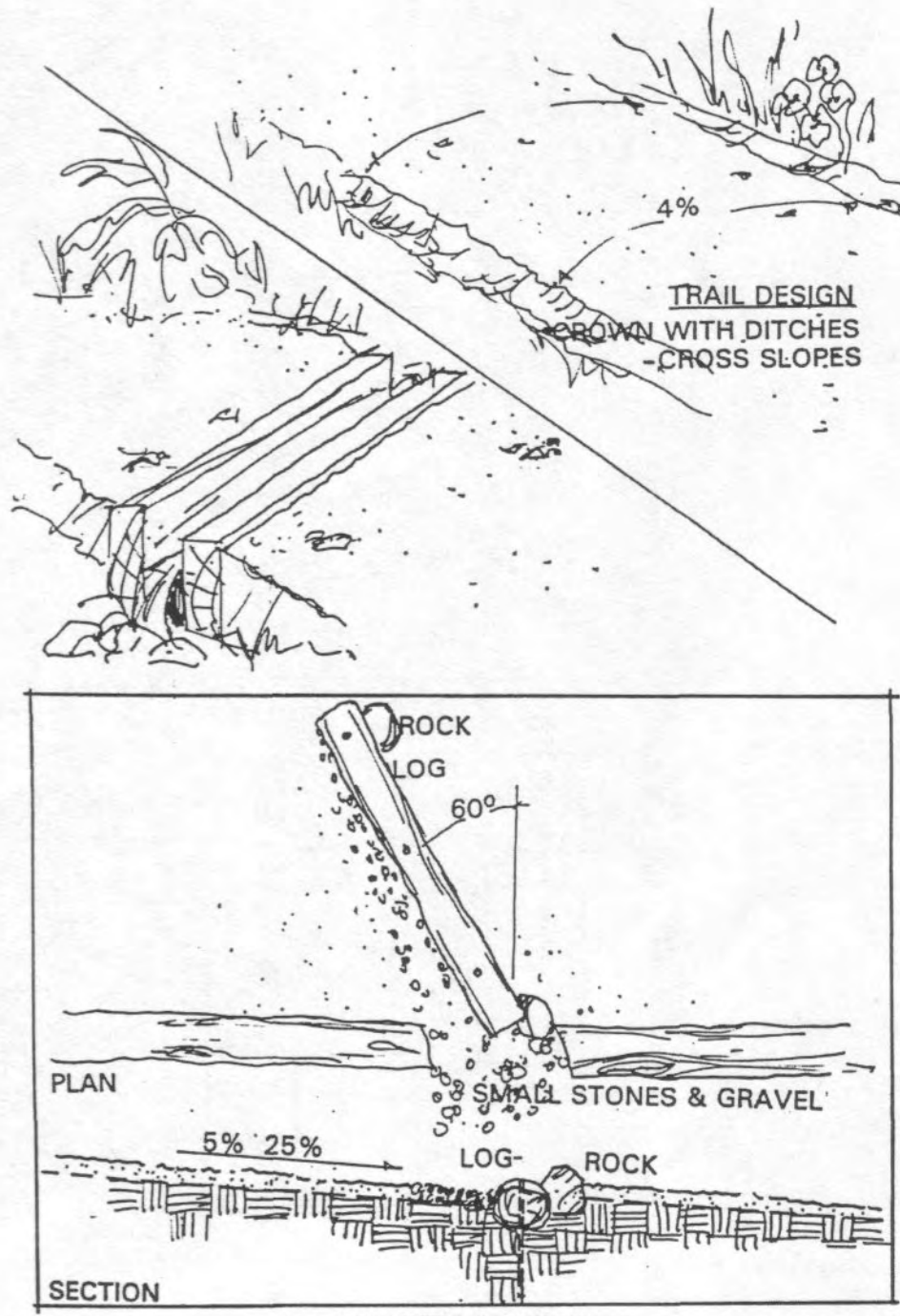


Figure 7-7: Trail Construction and Stabilization

ROOT AND UNDERSTOREY PROTECTION

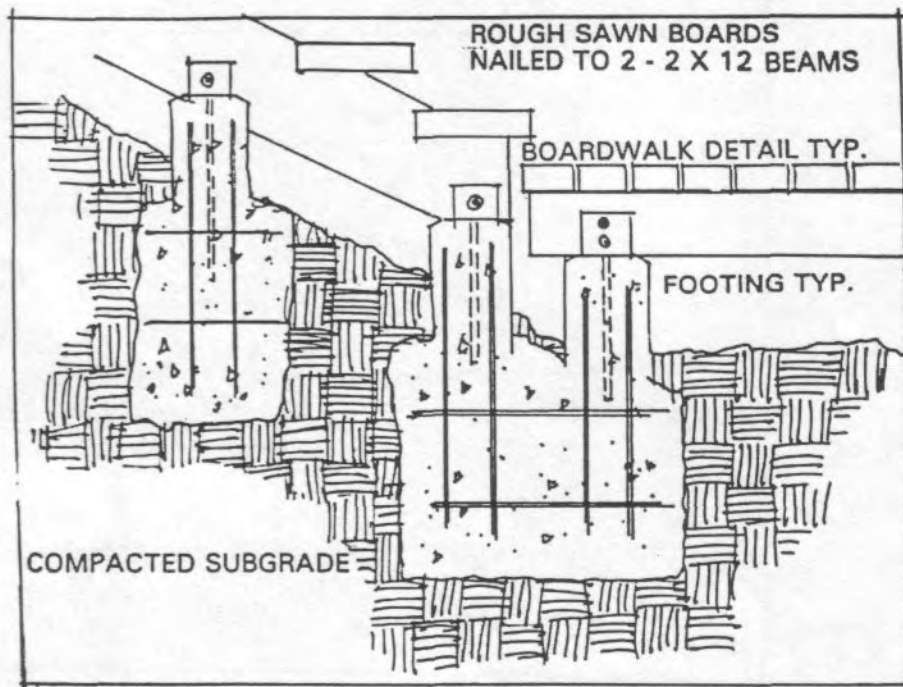
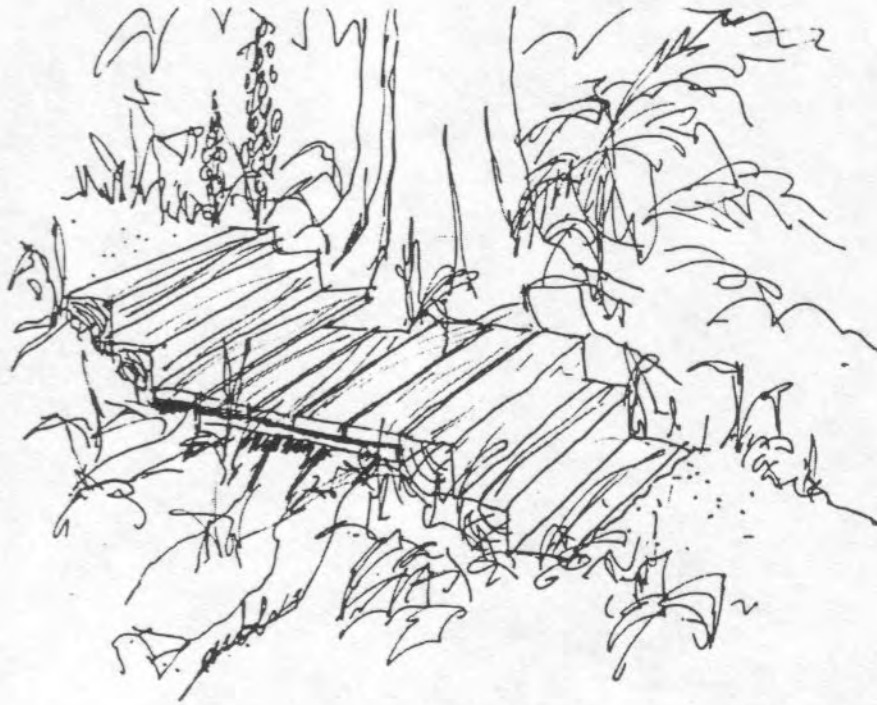


Figure 7-7: Trail Construction and Stabilization

TRAIL STABILIZATION

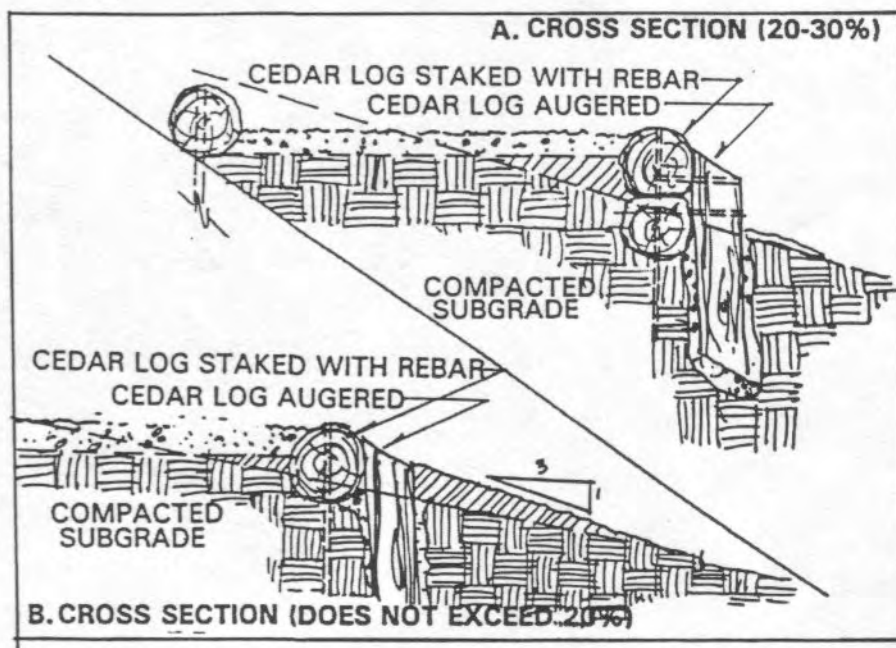
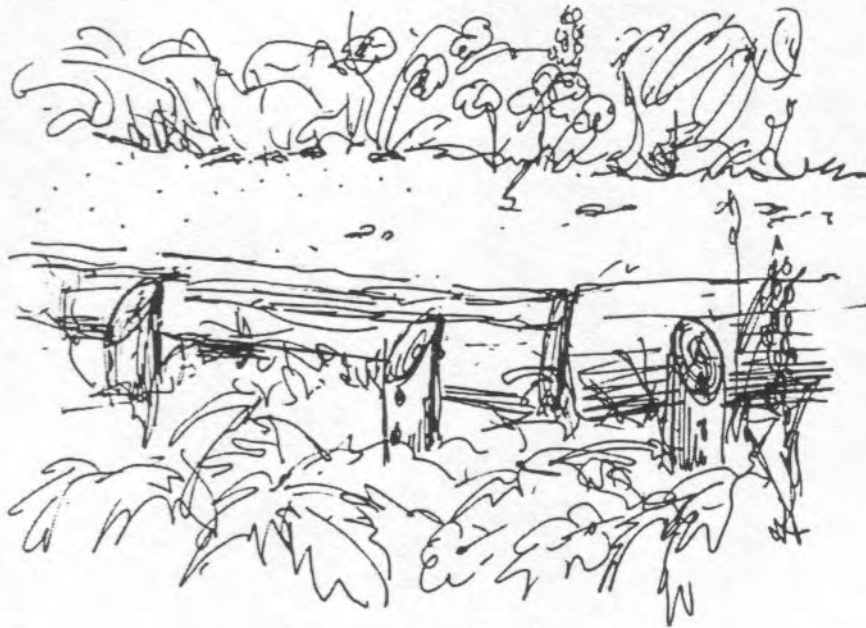


Figure 7-7: Trail Construction and Stabilization

