Criteria for Location, Design, Signing and User Facilities

Note: The USDA Forest Service, as the lead agency for the Pacific Crest National Scenic Trail, was responsible for developing the Comprehensive Management Plan, in which one finds the criteria for the trail's location, design, signing and user facilities. They are reprinted here so that trail users and volunteers may have a better understanding of the basis for on which operational decisions are made.

General Location Criteria

These directions for the location of the trail are intended to assure that it "fits" the land, provides high scenic quality, presents opportunities for quality construction and easy maintenance, has low impact on fragile resources, and does not damage the environment.

The trail, generally, will be located along the higher portions of the land but, in many instances, it may have to be lower to avoid unnecessary elevation gain, unusually rough or hazardous topography, otherwise unnecessary condemnation action, or severe snow conditions. It should provide travel opportunities for hikers, horsemen, and other non-mechanized travelers.

The traveler may encounter diverse climatic and topographic conditions while traveling over relatively short segments of the trail. These, and other environmental factors, must be considered prior to locating the trail to assure the safety and enjoyment of the traveler. For example, the top of a very high mountain may afford a visitor a rare experience, but to locate the trail over this mountain would expose all travelers to the additional climb and more severe temperatures. In this instance, the main trail could be located around the mountain, with a loop trail located over the mountain top for those wanting to add an extra dimension to their trip. The reverse situation could apply if a spectacular river or stream were considerably below the general trail location. The most desirable location will avoid proximity to roads, power lines, commercial and industrial developments, fences, and other features where they may be incompatible with the traveler's enjoyment of the trail.

Where the trail passes developments, it should be located to minimize adverse effects on, or avoid conflict with, the purpose of the development. Natural vegetation, topography, or plantings of local species may be used, where possible, to screen objectionable features from the view of the trail user.

Many valley bottoms, or areas adjacent to streams and lakes, are used for camping, fishing, and other recreational pursuits. If the trail is located on the hillside above these heavily used areas, it will afford a pleasant view and help prevent additional congestion in the heavily used areas by leading the travelers past them. Where topography makes it necessary for the trail to pass near campgrounds, or other places of concentrated recreational use, native vegetative screening shall be provided, where possible, between the recreational site and the trail.

Protection of the natural vegetative cover and the basic resources of land and water must be fully recognized when considering trail location. Marshes, areas of thin or unstable soil, small lakes, meadows, and other fragile areas are particularly susceptible to damage if used heavily. The trail should bypass these areas, if at all possible. A secondary trail, for hikers only, could be provided nearer to these fragile areas if such use would not be damaging.

The depth and melting pattern of snow along general trail location will require close study. There are many places in the high mountain country where stringers of snow remain until late summer. Because many of these are hazardous or impassable to horses, it may be necessary to route the trail around the snowfield.

This location would discourage hikers by causing unnecessary elevation changes; if safe to do so, a loop trail for them could be provided through the snow. Over-snow hiking would add another feature to the hiker's experience.

The aspect of the trail may be an important consideration, depending upon the general conditions of climate and soil. Where most of the travel occurs during the heat of the day in summer, it may be desirable to locate the trail on the shady side of a ridge or canyon.

The shady location may provide a more stable and moist path with less dust. However, such a location could also have a later snow melt date or unstable soil conditions because of greater soil moisture. Therefore, the terrain, soil type, and moisture conditions must be carefully evaluated to determine the best route. Experience and good judgment will be required in making such decisions.

Usually, the best location for a trail is on a side slope that ranges from 10 to 70 percent. Trails on flat ground or side slopes less than 10 percent often present drainage problems, while trails located on slopes of more than 70 percent require greater excavation causing additional scarring of the landscape, larger retaining walls, increased costs, and more problems of slope stabilization.

A location that generally avoids switchbacks is preferable, but in steep terrain some may be necessary. When they are needed, they should be located to utilize natural topography and vegetative screening. The lengths of the segments between switchbacks can be varied to introduce variety. Repeated and intervisible switchbacks create excessive disturbance of vegetation and soil, and severely scar the landscape. They also introduce monotony by repeatedly presenting the view to the user.

Specific Location Criteria

General Situation. The trail should be located to:

- be continuous from Canada to Mexico;
- "fit" the land in such a manner that the trail and the natural environment tend to complement each other;
- give the feeling that land mass is below the traveler rather than above it. The trail should follow the "crest" where feasible;
- prevent monotony by curving with the land rather than cutting across the land, and have a gently undulating grade as opposed to a long uniform grade;
- complement the current or planned use of the land, and harmonize with the environment;
- generally avoid, if possible, crossing any watershed of immediate importance for domestic water supply;
- provide for maximum outdoor recreational potential;
- give consideration to the total cost of providing and operating the trail;
- provide opportunities for interpretation of interesting natural phenomena, resource management, and natural and human history along the trail corridor;
- when possible, avoid situations where other human activity is potentially dangerous to the trail user; and
- generally avoid, or protect cultural resources.

Scenic Considerations. The trail should be located to:

- display a great variety of natural beauty and expanse of panoramic scenery from a position of height;
- blend with the terrain by taking full advantage of the natural topography and vegetation;
- present distant views by extending along ridge tops, through sparsely timbered areas, and alongside natural openings;
- encounter a variety of vegetative types;
- provide occasional views of the mountain crest, when the trail is located a considerable distance from the crest; and
- provide the most favorable and impressive approach to special scenic attractions.

Archaeological Considerations. The trail should be located to:

- avoid archaeological sites and districts to the extent practical; and
- mitigate adverse effects prior to construction, then proceed with the trail where archaeological sites or districts must be crossed.

Cultural Features. The trail should be located to:
- retain cultural representation in harmonious blend to promote understanding of total resources management and its importance to the Nation by providing views and sounds of man's activities, *when appropriate*, such as harvesting timber, mining, raising and harvesting crops, livestock ranching, industry, urban areas, and transportation facilities, without conflicting with these activities;
- have a natural or planned screen such as topography or vegetation, protecting the user from viewing aesthetically objectionable activities;➢ route the trail through new vegetative growth in areas where extensive timber harvesting contiguous to the trail has been necessary because of existing conditions. Temporary relocation of the trail may be necessary during the cutting period. After the cutting is completed, restore the trail within a year or two, to its original or other suitable location; and
- temporarily, route the trail around active operations where safety may be a factor.

River, Highway, Railroad Crossings. The trail should be located to:
- provide safe crossings by means of bridges or underpasses, except at low volume roads or railroads that can be safely crossed on grade. Special attention should be given to the safety problem that traffic noise can create for equestrians;
- provide adequate visibility when roads or railroads of low traffic volume are crossed at grade;
- take advantage of natural or existing features to afford an easy and quick crossing without breaking the continuity of the trail;
- utilize, where practical, existing crossings of multi-landed freeways or major rivers (such as the Columbia River), where the cost of providing an exclusive crossing would be prohibitive. Plans should be coordinated with future highway construction to make the crossings as aesthetically pleasing as possible, and also to effect economics through joint planning;
- cross man-made features such as roads, aqueducts and power transmission lines at right angles to avoid prolonged visual contact with them; and
- provide parking areas, campgrounds, stock handling facilities and access where the trail crosses roads or other transportation facilities, as determined by analysis of resource capability and user demand.

Provisions For User Facilities. The trail should be located to:
- provide access at varying distances along the trail so users can choose different trips of varying lengths;
- take advantage of opportunities to provide drinking water for users as well as stock;
- provide areas where stock may be controlled away from camping sites;
- take advantage of nearby areas where parking areas, campgrounds, stock handling, or other trailhead facilities could be located;
- allow space for horse tie rails, near the trail, so riders can secure their mounts at rest stops and scenic places; and
- be near areas where adequate sanitary facilities can be provided along the more heavily used portions of the trail.

Special Situations. Private land, National Parks, State Parks, and units of the Wilderness Preservation System present special situations requiring consideration of factors in addition to the general specific location criteria.

Private Land. Section 7(a) of the 1968 Act requires "full consideration be given to minimizing the adverse effects upon the adjacent landowner or user and his operations." Management agencies must strive through cooperative effort with private landowners to agree on a trail location that *satisfies* the location criteria and *reduces* adverse effects on private landowners. In situations where controversy develops, the selected location will, in all probability, contain some compromises on both sides. It will not necessarily be the location that reduces adverse effects to zero. Management agencies should keep in mind that the purpose of the trail across private land is one of providing continuity and safe passage, rather than one of providing a recreation experience, yet the trail must be provided a reasonable level of protection for future generations.
State Parks, National Parks, Units of Wilderness Preservation System. These are special areas created by

Acts of Congress and State Legislatures. They have specific policies and objectives. The location of the trail through these areas will meet the specific policies and objectives of the area. The purpose of the trail remains the same, but special management measures may be needed to protect the resources in these areas.

General Design Criteria

The design of the Pacific Crest Trail should be in keeping with the nature and purpose of the trail. As a National Scenic Trail, it should exhibit high quality, permanence, and minimized disturbance to the environment. It should be designed, on a segment-by-segment basis, to accommodate, in a safe and enjoyable manner, the volume and types of traffic planned. Segments, where anticipated use is light, primarily through traffic of long-distance hikers and equestrians (for example, 100 in a 100-day season), could be designed to a minimum width and to reduce impacts on the environment.

The other end of the design spectrum could be a segment carrying a high volume of day-use traffic to a popular swimming and picnicking site. In order to provide safety for all users, the design might have to include increased width and hardening of the tread (for example, 48" wide with crushed rock). The design should fit the objectives established for the segment of trail. The design should also keep in mind the long-term maintenance cost of the trail and minimize this, wherever possible.

Dimensions. Generally, the trail tread will be from 18 to 24 inches wide. Eighteen inches will be the minimum width at all locations. Twenty-four inches should be the maximum width unless additional width is required for safety. Along a precipice, or hazardous area, the trail should be at least 48 inches wide in order to provide safety to the traveler, and allow horses to pass without difficulty.

Special trail sections, such as fords through small streams or built-up sections across flat areas, should have usable tread of at least 36 inches wide. At switchback landings, graded trails should be 8 feet wide. Switchbacks should be designed to minimize the amount of excavation and cut-bank exposure. The specific details of the trail's dimensions are shown above.

Alignment. The ideal alignment will "fit" the trail to the ground, and afford the user the best views from the trail. The alignment should follow the contours of the land and be genially curvilinear. Sharp angular turns and long straight stretches should be avoided.

If a switchback is necessary, it should be constructed as shown in (the latest USFS trail construction manual). The most desirable alignment for a switchback utilizes a topographic feature as a turning point so that it does not appear to be "carved" out of the hillside. Provisions for screening and protecting the switchbacks with trees or brush should be incorporated in the design when it cannot be constructed around a natural topographic feature.

The alignment should angle across the natural slope of the hillside, rather than take a route directly up or down the slope which affords little opportunity to drain water away and can cause severe erosion.

Grade. As a general rule, the trail should not be steeper than 15 percent (15-foot rise in 100 linear feet). Grades may exceed 15 percent if the steeper grade does not impair serviceability, safety, preservation, and trailside esthetics. No grade should be so steep that erosion is a problem.

Long stretches of a given grade should be avoided. The grade should undulate gently to provide natural drainage to eliminate monotonous level stretches and long steady grades that are tiring to the traveler.

Grade should be lessened at approaches to switchbacks and the turns should be as nearly level as practicable.

A loop trail, designed especially for hikers, may incorporate short sections of steps or steeper grades if these will not cause undue disturbance, and adequate drainage can be provided to prevent erosion.

Clearing. As a general rule, all projecting limbs, brush, downed logs, debris, and sapling trees will be cleared to a minimum width of 8 feet above 3 feet from the surface. If trees larger than 10 inches in diameter cannot be avoided, they shall be cut in order to provide a minimum cleared width of 6 feet. The overhead clearance shall be a minimum of 10 feet above the trail tread.

A loop trail, designed for hikers only, will be cleared of all small trees, brush, limbs, down logs and debris to a minimum width of four feet. Generally, trees larger than 10 inches in diameter should not be cut. The trail should be routed around them. The overhead clearance shall be a minimum of eight feet above the trail tread. All stumps within the trail clearing width shall be cut flush, as practical, with the ground.

Clearing, beyond that necessary for adequate room along the trail, may be desirable to provide openings so that the traveler can enjoy a particular scene. These clearings should be planned to give the appearance of a natural opening.

Additional clearing width may be needed through areas of high fire hazard, such as the brush fields of southern California and the heavy-forested areas along the trail.

Remove “hazard” trees which would endanger trail users.

Structures. Materials used for structures generally should be of a quality to permit long life. Structures should be built to the standard currently in use by the agency administering that land area, and be designed to harmonize with the surrounding environment. Raised section, puncheon, retaining walls and foot bridges may be built of suitable native materials if they are available near the site. When native materials are used, the site from which they were removed should be left with a natural appearance.

In designated wilderness, structures should be limited to those necessary to provide safety to the user, be built from native materials, when possible, and conform to the requirements of the Wilderness Act. A site that requires a structure should be avoided if a relocation of the trail can make the structure unnecessary.

Where a bridge for horses is not necessary, stepping stone or a foot log with hand railing may be provided for hikers.

The crossing of major rivers or highways will require special designs. Considerable savings can be made by working with other agencies, such as state highway departments, to incorporate the trail into the design of the highway or roadway bridges, or by cautionary signing.

Drainage. Provide surface drainage by undulating the grade and outsloping the surface, or by installing water bards. Use metal or wood culverts or open rock drains to provide cross drainage when needed.

Trail Surface. Tread surfacing material which will blend with and preserve the natural environment will be provided where native soil cannot support the traffic, or as necessary to prevent severe conditions of erosion, dust or mud.

Signing and Marking the Trail

The Uniform Marker. As required by Section 7(c) of the Act, the Secretary of Agriculture has established the uniform marker (symbol) and blazer for use on the Pacific Crest National Scenic Trail

Purpose and Placement of the Marker (Symbol) and Blazer. The purpose of the 18 inch and 9 inch markers is to identify the location of the Pacific Crest Trail to the motoring public. The markers should be placed so as to be readily seen from a moving vehicle approaching from either direction. The placement of

the markers may require approval of appropriate State or County authorities. It is recommended that two 18 inch markers appear at each state and federal highway crossing and two 9 inch markers appear at each county and forest road crossing.

The purpose of the 3 1/2 inch marker is to identify the trail to the person on the trail or approaching from a side trail. It is to be used only on the Pacific Crest Trail at common access junctions; at intersections with other trails; and where needed as a reassurance sign if other land use activities or game trails make the trail location uncertain to the traveler. The 3 1/2 inch marker is not intended to be used as a trail blazer. The 3 1/2 inch metal or plastic marker is preferred; however, in areas subject to vandalism, the brand (of identical dimensions) may be more practical. Use of the 3 1/2 inch marker shall be held to the minimum necessary to meet the purpose.

The blazer eliminates the need for the traditional tree ax-blaze for identifying the tread location. Like the ax-blaze, its presence identifies the trail location when snow covers the trail or when the trail tread does not exist, or where a trail tread cannot be maintained. Selecting locations for blazers should be done carefully with an objective of being conservative and posting only that number of locations necessary to keep the traveler on course. The blazer is to be displayed approximately 7 feet above the ground on both sides of the tree or post. The blazers will not be used on sections of the trail within units of the Wilderness Preservation System.

Directional, Information, Interpretive and Regulatory Signs. These signs will be placed along the trail, on side trails, at trailheads, etc., to meet the needs of the user and management, or to add to the enjoyment of the user by pointing out or interpreting resources and land uses. Insofar as possible, agencies will strive for standardization of sign design.

Signs on the Pacific Crest Trail will not have the identifying words “Pacific Crest National Scenic Trail” or the acronym “PCNST”. The uniform marker is for this purpose. Signing on side trails, access routes, parking areas, etc., directing people to the Pacific Crest Trail will be done only with lettered signs.

Signing Within Wilderness, National Parks, and State Parks. Other than use of the uniform marker, signing within these areas will conform to the objectives and standards established for each area.

Signing and Marking on Lands Other Than Federal. The placement and maintenance of markers and signs on these lands will be authorized through appropriate language in memorandums of understandings, agreements, right-of-way instruments, etc., with state and county highway departments, railroad companies, municipalities, and private landowners. Signing of private land in addition to identifying the route, will have objectives of educating the trail user to the concerns of landowners; interpreting appropriate management or development activities if the landowner desires; and building a positive relationship between the trail and owners of the land.

Maintenance of Signing and Marking**.** The designation of the Pacific Crest Trail as a National Scenic Trail mandates the maintenance of a high standard of signing. Managing agencies should give high priority to timely repair and/or replacement of missing or damaged markers and signs.

User Facilities

Trailheads. A trailhead is defined as a facility provided solely for the trail user to transfer from motorized highway travel to non-motorized trail travel. A trailhead is not intended as a site for picnicking or overnight camping, and the design should discourage such use.

The frequency, location, design, and facilities provided will be determined after careful consideration of:

- The objectives of the Recreation Opportunity Class for the area;
- The number and mix of user types (equestrian, hiker, skier, day use, long distance use, etc.);
- The carrying capacity of other trailheads serving the area; and

- The need to mitigate conflicts between foot traffic and pack and saddle stock.

Major trailheads will normally be located near primary highways and be designed and constructed to a higher level of development than minor trailheads on forest roads. Major trailheads might include such amenities as paved roads, landscaping, flush toilets, corral and daily custodial care by agency personnel.

Minor trailheads could be a simple as a 3-5 car parking area, chemical toilet, garbage can, bulletin board, and only infrequent attention by agency personnel.

The basic items in trailhead site design are:

- parking
- sanitation
- water within a reasonable distance by trail
- stock facilities
- access to the main trail

When possible, trailheads should be sited away from the main trail and accessed by short feeder trails. When trailheads are constructed in conjunction with a developed campground or picnic area, there needs to be a clear separation between the two facilities.

Campsites. Generally, on public land, unless otherwise regulated, camping location is at the discretion of the user. Obviously, camping tends to concentrate in the vicinity of surface water.

Trail camps, if designated, will generally be of very simple design which is appropriate to the Recreation Opportunity Class for the area. In wilderness, it may simply be a camp spot with no facilities. Outside of wilderness, campsites may be provided with fire rings, toilets, and a means for separating hikers and stock. In areas that are roaded, the camps may have road access and be provided with stockholding facilities, vault toilets, etc. Where possible, campsites should be designed to separate equestrian and hiker groups.

Information services to persons planning trips on the Pacific Crest National Scenic Trail shall describe the camping facilities available and will emphasize any limitations or regulations concerning forage availability and setbacks from water courses or lakes.