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# TRAIL PLANNING

## CHAPTER

## Trail Planning



**Figure 12-1.** The needs of a broad range of trail users should be addressed during the planning stages of trail projects.

Trails provide a wide variety of transportation and recreational experiences, ranging from a casual afternoon stroll in the local park, to a daily commute to work, to a demanding wilderness expedition. People with and without disabilities should have access to the full range of transportation and recreational experiences provided by trails. Therefore, the design of a new trail or trail network, as well as the alteration

network, must always include provisions for accessibility.

The recommendations provided within the Trail Development chapters are intended to promote the accessibility of trails for all potential trail users. Trails that are developed in accordance with these recommendations will provide access to a large proportion of the population. However, since every individual has unique abilities and interests, there is no one specific trail design that will meet every user's desired experiences. Providing signage with objective information about the actual, on-trail conditions can help ensure that each user will be aware of existing trail conditions before they find themselves in frustrating or potentially hazardous situations.

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### Case Study 12-1

Built on the historic trail to Herring Cove in Sitka, Alaska, Whale Park provides access to the attractions of the community. Its accessible design has directly increased the number of visitors, length of their stay, and is an economic benefit for the community.

### 12.1 Commitment to universal design

For user safety and satisfaction, the skills and abilities required to negotiate a trail must match the user's interests and expectations. All trail users, both with and without disabilities, tend to select experiences that suit their interests and abilities. Factors that influence the match between an individual and a particular trail include:

- The desired trail experience;
- The individual's abilities, skills, and expertise;
- The availability of equipment or assistive technology needed to use the trail;
- The availability of additional expertise such as guides; and
- Whether the individual will be alone or with companions.

Many trail users seek experiences that are beyond the capabilities of most people.

There are trails within existing trail systems that provide more than a significant challenge to such users. The challenge is to design trails that provide a unique experience without unique challenges.

The ability to plan, design, construct, and maintain trail experiences that match user needs for access is based on a strong commitment to integrate universal design strategies into every aspect of the trail development process. Focusing on only one aspect, such as the trail tread, is not sufficient. Every aspect of the trail experience must be considered, including the trail corridor, trailhead, and built facilities or amenities.

When planning trails, land management agencies should strive to create environments and experiences that are inclusive of people with and without disabilities. In some instances, this may require looking at the trail from another person's perspective. Designers should consider whether they would be able to enjoy the trail and benefit from all aspects of the trail experience if they were:

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- Unable to hear;
- Using crutches;
- Unable to see;
- Using a wheelchair for mobility;
- Using a powered scooter for mobility;
- 90 years old;
- Lacking in energy;
- Not physically fit;
- 8 years old;
- Unable to concentrate; or
- Unable to read or not able to read the local language.

For newly constructed trails, the commitment to address accessibility issues should begin during the planning stages of the trail development process. For example, if sufficient right-of-way is not allocated to a trail during the initial

stages of development, it is harder for designers to construct a trail that is safe for users traveling at different speeds. When access improvements are made to existing trails, designers should prioritize resources and try to make the most significant changes possible with the resources that are available.

### 12.2 Key players in trail design

Trails are designed, built, and managed by a variety of entities. There are trails managed by Federal, State, or local agencies and organizations that may be government, nonprofit, or private. Trail planners and designers should be aware of regulations or guidelines that impact trail design. It is imperative that all involved in the trail project are knowledgeable of the design criteria that will provide access to all people.

### 12.3 Types of trails

There are many types of trails and each provides different experiences for

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different users. Trails may lead along a mountain ridge, coastline, metropolitan district, or along a historic route that crosses several States. Trails may be used for a variety of reasons including exercise, transportation, recreation, or education. Trail users may include hikers, cyclists, skaters, equestrians, or pedestrians. Trails that are designed to provide a transportation function while supporting multiple users are called shared-use paths. Trails that are designed primarily for a recreational experience are recreation trails. Designing trails to meet the various needs of all user groups and types of experiences desired is a challenge but can be achieved with planning.

In this document, the term trails includes both shared-use paths and recreation trails. For the most part, the information presented will apply to both types of trails. If information is specific to either shared-use paths or recreation trails, the text will identify the specific application. For example, Chapter 14 contains design recommendations that are specific to shared-use paths.

## 12.4 Long-range planning

The use of a trail is a matter of individual choice. Some individuals, with or without disabilities, will choose not to use any type of trail, regardless of its design. Other individuals will choose to use a variety of trails. Shared-use path or recreation trail use means that the individual has made a choice to leave the roads and sidewalks behind.

### 12.4.1 Trails versus the built environment

Traditionally, much of the focus on trails for people with disabilities has been on building or providing an accessible trail with “accessibility” defined in terms of the Americans with Disabilities Act Accessibility Guidelines (ADAAG) for access routes in the built environment. Accessibility recommendations specific to pedestrian use trails are only now being developed.

The direct application to trails of the ADAAG provisions for access routes is inappropriate in most environments.

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Often, a primary goal in choosing to use a trail is the opportunity to experience a different, and usually more natural or less developed environment. Even a highly developed shared-use path in an urban area presents a “less developed” environment in that the presence of motorized vehicles is limited. Limiting the development of trails only to those that can fully comply with ADAAG regulations for built environments is neither feasible for the range of conditions found in the natural environment, nor desirable in terms of the broad spectrum of interests and desires among trail users.

#### **12.4.2 Developing accessibility standards for trails**

The U.S. Access Board recognizes that the planning, design, construction, and maintenance of outdoor, natural environments differ considerably from that appropriate to the indoor, built environment. Since passage of the ADA, the U.S. Access Board, which is responsible for developing accessibility

guidelines, has been moving in the direction of providing specific accessibility guidelines for outdoor facilities. Ultimately, the construction or alteration of outdoor recreation facilities will be governed by specific regulations designed to maximize accessibility in outdoor environments. In the interim, planners are encouraged to become knowledgeable about the proposed regulations and to use the proposed design standards to maximize the accessibility of the trails and facilities that they create.

Initially, the U.S. Access Board’s report, *Recommendations of Accessibility Guidelines: Recreational Facilities and Outdoor Developed Areas* for trails was issued as part of an Advanced Notice of Proposed Rulemaking and made available for public comment (U.S. Access Board, 1994). Due to a lack of consensus in the feedback received, the U.S. Access Board created a Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas to address this issue in more detail. This committee represented various interest groups

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that would be affected by the guidelines including people with disabilities; facility owners and operators; Federal, State, and local land management agencies; designers, and trails groups. The committee began its work in 1997 and met for two years. Their conclusions were published in a report that will be used by the U.S. Access Board to develop a proposed rule for the ADA Accessibility Guidelines that will be published for public comment.

A summary of the committee's work and information on the status of regulations for accessibility in outdoor areas is available through the U.S. Access Board. The proposed guidelines provide design standards for the construction of new facilities and the alteration of existing facilities. They also identify trail maintenance activities that should be used to incorporate accessibility whenever possible but will not trigger a legal requirement for accessibility modifications. As such, a thorough knowledge of the proposed guidelines and the status of their implementation is essential to the effective design of trails, both now and in the future.

### 12.4.3 New construction

The needs of people with disabilities should be considered in every aspect of trail design, development, and maintenance. Expanding trail access for people with disabilities also provides a wider variety of opportunities for all users. Although this is true for all types of trail construction alterations and some maintenance activities, it is particularly important during new construction. In new construction, the opportunity to optimize trail access is maximized because there are no, or very few, pre-existing constraints due to existing facilities.

Trail managers should adhere to the following design principles when planning, designing, and maintaining their facilities:

- Incorporate and address accessibility concerns in all planning, design, construction, and maintenance activities;
- Provide facilities and trails that are accessible in highly developed areas;

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- Ensure that accessible designs are always used for recreation amenities. For example, fire grills should be designed with sufficient clear space for wheelchair users;
- Ensure that access routes are provided that connect facilities such as restrooms and parking;
- Actively seek opportunities to enhance the accessibility of existing trails and facilities through alterations and maintenance activities; and
- Ensure that construction/reconstruction of a portion of a trail incorporates accessible design criteria whenever feasible.

#### 12.4.4 Alterations

Activities that change the original purpose, usability, intent, or design of the trail or fundamentally alter the experience or amenities are considered an alteration

rather than maintenance. In these situations, the trail should be designed to incorporate accessibility to the greatest extent feasible.

Developing trails that provide access to people with disabilities should also be a priority for all work on existing trails and in areas with multiple trails. It is recommended that when an existing trail is altered or reconstructed, design and construction should follow the recommendations for accessible trails and new construction contained in Chapters 14 and 15. The Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas identified the following examples as actions that would be considered alterations or reconstruction:

- Installation of a new trail tread surface;
- Creating new elements, such as bridges, boardwalks, railings or safety barriers, signage, and/or puncheons;

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- Construction on or reconstruction of a new trail;
- Remodeling or reconstruction of built features, such as restrooms, picnic areas, gates, benches, and/or steps;
- Installing hardening materials on a trail surface; and
- Rerouting or widening a significant portion of an existing trail (U.S. Access Board, 1999b).

Incorporating accessible features during alterations may be a lower priority when:

- There are specific conditions, such as a designated historic property, that allow for some departures from the recommendations (see Section 12.5.1);
- Work to be done on the trail is limited to routine or periodic maintenance, such as erosion control, and the incorporation

of accessible design features would require alteration or reconstruction of the trail; and

- The section of trail to be altered is not connected to a trailhead or accessible trail, and it is very unlikely that those connecting sections of the trail will be reconstructed in the future. Such a trail segment would effectively be “in the middle of nowhere,” and the effort and resources used in making such a remote segment accessible would be much more effectively spent in areas where there is a reasonable expectation of increasing the overall trail access.

### 12.4.5 Routine maintenance

Routine maintenance that is designed to return the trail to its previous condition does not require the full implementation of accessible trail designs. However, maintenance and repair activities should be carefully considered to identify those activities that have a potential for



enhancing accessibility. For example, if a crew is clearing the vegetative growth from a trail, the opportunity to clear the trail to provide a 915 mm (36 in) clear tread width should be considered.

Maintenance and repair activities include:

- Removing debris or vegetation, such as downed trees or broken branches on the trail, clearing the trail of encroaching brush or grasses, and removing rock slides;
- Maintaining the trail tread, such as filling of ruts and entrenchments, reshaping the trail bed, repairing the trail surface and washouts, installing rip rap, and constructing retaining walls or cribbing to support the tread;
- Erosion control and drainage, replacing or installing necessary drainage structures (e.g., drainage dips, water bars, or culverts), and realigning sections of trail to deter erosion or avoid boggy or marshy areas;

- Repairing the structures on the trail, such as replacing deteriorated, damaged, or vandalized parts of bridges, boardwalks, fencing or railings, painting existing structures, and removing graffiti and anything that affects the usability of the trail.

#### 12.4.6 Long-range planning for multiple trail systems

Land managers responsible for large networks of trails should consider the overall reason(s) for the site's existence and the programmatic nature of the site when planning the trail opportunities that will be provided. Does the site have historical, cultural, or natural features? Does it offer multiple opportunities to experience diverse environments such as rainforests, mountains, or deserts? If so, is there an accessible trail opportunity for each of these key features or programs?

Priority should be given to making access improvements on trails or trail segments to areas such as:

- Prominent or outstanding features;

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- Popular or higher usage areas;
- Shorter, day-use trails and trails designed for inexperienced or unskilled trail users; and
- Trails that represent the range of trail experiences available at the site.

As part of their transition plan, land managers should document the range of trail experiences provided and the conditions of the trails that provide those experiences. At a minimum, trail planners should provide one trail that meets all of the recommendations to provide access for people with disabilities for each type of experience within the site. For example, consider a site that has:

- One trail that leads to the bottom of a river valley, providing access to the river for fishing;
- Another trail that loops away from the river through a variety of forest ecosystems; and

- A third trail that climbs to an open ridge overlooking the entire valley.

If the trail along the river and the trail to the open ridge already provide access to people with disabilities, priority should be given to enhancing access on the trail through the forest ecosystems. In this way, each type of trail experience can be made available. If the accessibility on all of the trails is very limited, priority should be given to the trail with the highest use or that leads to a significant feature. In this situation, ensuring that accessible trails were provided for all three opportunities should be the priority over the creation of any new trails that would have limited or no accessible elements.

### **12.5 Providing access and preserving the environment**

People, with and without disabilities, use trails for a wide variety of reasons. One of the most common reasons is the opportunity to enjoy the outdoors. Enhancing access to a wide variety of

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outdoor environments enables all individuals to have the same opportunity to enjoy the benefits that they provide. However, it is equally important to protect the outdoor environment and the experience it provides. In most situations, designing a trail that provides greater access for people with disabilities can be achieved without any or only minimal additional impact on the natural resources beyond that which results from the presence of any trail. The recommendations presented in this section are intended to give guidance regarding trail planning for those relatively unusual situations when designing an accessible trail may have a negative impact on the preservation or protection of the outdoor environment.

When trail designers encounter any of these situations, it is very important that people with disabilities be included in the planning process (Section 3.8). Solutions will be easier to reach if people with disabilities are part of the planning process. The meaningful involvement of people with disabilities in the planning process requires that their feedback be

sought as early as possible (i.e., as soon as the potential limitation is recognized) and as often as necessary (i.e., at each step of the planning process).

### **12.5.1 Potential conflicts between access and preservation**

Outdoor environments vary tremendously in terms of their need for preservation or protection. A green space in the center of a large city is unlikely to represent a truly “natural” (i.e., unaltered by development) environment. Yesterday’s parking lot may be tomorrow’s city park. In these situations, creating trails that provide access to people with disabilities is rarely difficult. For example, if heavy equipment is used to create a paved trail there is virtually no difference in the environmental impact that will result from a 1.220 m (48 in) or 1.525 m (60 in) width. However unlike the 1.220 m (48 in) width, the 1.525 m (60 in) width provides a trail where two individuals using assistive devices can easily pass one another.

In contrast to highly developed urban environments, the creation of any type of

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trail can have a significant impact on the preservation of federally designated Wilderness Areas. Highly urban areas and designated Wilderness Areas represent the extremes on a continuum of outdoor environments. While decisions regarding trail design and development are usually quite clear within these extreme environments, the most appropriate way to balance concerns about accessibility and protection is often more ambiguous. Some of the conditions that are found in outdoor environments that make it difficult to build accessible trails are:

- The presence of cultural, historic, religious, or significant natural features or characteristics (Section 12.5.1.1);
- The nature of the setting or purpose of the trail (Section 12.5.1.2);
- Limitations or prohibitions in land ownership or use agreements, or Federal, State, or local regulations or statutes (Section 12.5.1.3); and

- Terrain conditions or prevailing construction practices (Section 12.5.1.4).

Any of these conditions may or may not impact the ability to develop a specific trail within a particular environment. Therefore, the impact of each of these factors must be considered in terms of the site being developed. Most trails pass through a variety of environments from the trailhead to the destination. The ability to provide an accessible trail should be evaluated separately for each trail section or environment.

#### **12.5.1.1 Cultural, historic, religious, or significant natural features**

Preserving our heritage is a high priority for all individuals. Therefore, it is important that the trail planning process consider the potential impact of the trail on cultural, historic, religious, or significant natural features or characteristics of the trail environment. In most situations, it is inappropriate to develop a trail in such a

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way that the natural, cultural, historic, or religious heritage of the environment may be threatened or destroyed.

For example, a trail is being designed to enable visitors to experience an important archeological site. The most valued features within the site are located away from the site entrance and therefore cannot be accessed from a trail that leads only to the edge of the site. Therefore, the trail through the site may have to be narrower than 815 mm (32 in) in areas where the archeological features are located close together.

Another example would be the use of an unused, historic bridge for a shared-use path. If the bridge was originally designed with a high center arch to allow the free passage of boats underneath, the grade in the center arch may exceed accessibility recommendations. The historic designation of the bridge does not allow the center arch to be rebuilt, so the grade of the shared-use path will have to exceed the recommendations for an accessible trail.

Significant cultural features can include archaeological sites, sacred lands,

burial grounds and cemeteries, or Indian tribal protected sites. Significant historical features include properties such as those on or eligible for the National Register of Historic Places or other places of recognized historic value. Significant religious features can include Indian sacred sites and other properties designated or held sacred by an organized religion or church.

Significant natural features include areas such as those protected under Federal or State laws, areas with threatened or endangered species, or designated wetlands that could be threatened or destroyed. It also includes natural habitat or vegetation areas, as well as specific natural features that are particularly important to the heritage of the environment or area, such as a very high waterfall.

#### **12.5.1.2 Nature of the setting or purpose of the trail**

Nature of the setting refers to the type of experience and environment that can be accessed from the trail. For example, if a trail is planned to provide a rustic, back

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country experience, the development of a 4.57 m (15 ft) wide, paved shared-use path would not be compatible with the intended experience.

The purpose of the trail is similar to the nature of the setting but refers primarily to the intended use and/or user groups for the trail. For example, if the desire is to create a recreational trail for off-highway vehicle users, it would be inappropriate to provide a firm and stable surface, with less than a 5 percent running grade and obstacles less than 51 mm (2 in) in height.

Understanding the nature of the setting and the intended purpose of the trail is one of the first steps in the trail planning process. Equal consideration must be given to how the setting and purpose of the trail can be provided to all potential trail users. It is not appropriate to make decisions regarding the setting or purpose of the trail without considering the impact of those decisions on trail users with different abilities. Consideration of the needs of all potential trail users throughout the trail planning process is

the most effective way to ensure that all potential trail users can enjoy a range of trail experiences.

### **12.5.1.3 Federal, State, or local regulations or statutes**

It may appear self-evident that trails are required to comply with legal restrictions affecting the trail and its environment. However, in terms of trail accessibility and the right of people with disabilities to have equal access to trail opportunities under the ADA, there is often some confusion over which laws take precedence. In some instances restrictions to protect or address environmental concerns imposed by Federal, State, or local statutes may require departure from one or more of the components of accessible design. For example, it may not be possible to create a firm and stable surface if a local conservation easement program prohibits the use of imported surfaces. However, local regulations or statutes should never be developed with the sole intention of preventing access by

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people with disabilities. For example, it would be unacceptable to initiate a new regulation that “arbitrarily restricts trail width to a dimension that would not allow passage of wheelchairs or other mobility devices” (U.S. Access Board, 1999b).

Potential legal restrictions for land use within the trail corridor should be identified during the earliest stages of the planning process. Early recognition of potential conflicts between various regulations enables designers to consider alternative trail locations or innovative design solutions so that an accessible trail can be created. In general, most regulations or statutes on land or trail use or construction will not affect the ability to provide trails that are accessible to people with disabilities. However, in cases where there are specific legal restrictions that impact designing an accessible trail, efforts should be made to provide access to people with disabilities where feasible.



**Figure 12-2.** Trails in designated wilderness areas must be maintained and improved without using powered tools.

### 12.5.1.3.1 The Wilderness Act

In 1964, Congress passed the Wilderness Act to ensure the protection

of federally owned lands that would remain undeveloped, and preserve natural conditions that could be used for the benefit of present and future generations. Such wilderness lands were identified by Congress and designated the National Wilderness Preservation System (NWPS). The Wilderness Act does not apply to non-Federal lands.

The effect of the Wilderness Act on accessibility is often misunderstood. As described more fully in Section 1.3.3 of Part I of this guideline, when taken together with Section 507(c) of the ADA, the Wilderness Act permits wheelchairs or scooters suitable for indoor use to enter wilderness areas while it prohibits the use of motorcycles, all-terrain vehicles, off-highway vehicles, and other vehicles with internal combustion engines. In addition, under these laws, land management agencies are not required to construct facilities, such as toilets, to facilitate use by persons with disabilities, but they are encouraged to use accessible designs when modifications (such as the addition of toilets) are made.

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The accessibility of a trail for all potential users should always be considered during the planning, design, and construction stages for trails within a wilderness area. Consideration of trail accessibility throughout the development process will provide the greatest opportunity to ensure that people with disabilities have access to wilderness experiences. However, since the ability to develop a fully accessible trail may be limited in wilderness areas, providing accurate information at the trailhead about existing trail conditions is crucial.

#### ***12.5.1.4 Terrain, conditions, or prevailing construction practices***

The terrain in some environments will limit the ability of trail designers to develop a trail that is accessible to some people with disabilities. For example, reducing running slope in areas of steep terrain may require extensive cuts or fills that would be difficult to construct and maintain, or cause drainage or erosion problems. Also, in order to construct a

trail on some steep slopes, the trail may become significantly longer causing a much greater impact on the environment. Another potential condition is that certain soils are highly susceptible to erosion. Other soils expand and contract along with water content. If compliance requires techniques that conflict with the natural drainage or existing soil, the trail would be difficult, if not impossible, to maintain. While trail designers and land managers should strive to maximize all opportunities for enhancing trail access, they are not expected to implement designs that are not reasonable.

This condition may also apply where construction methods for particularly difficult terrain or for an obstacle that would require the use of equipment other than that typically used throughout the length of the trail. Trail construction practices vary greatly, from the use of volunteer labor with hand tools to professional construction with heavy, mechanized equipment. The responsibility for enhancing trail accessibility does not require the use of construction practices



that may be above and beyond what is commonly used. For alterations to an existing trail, the prevailing construction practices are defined as the methods typically used for construction or maintenance of the trail. The intent of this conditional departure is to ensure that compliance with the technical provisions does not require the use of construction practices that are above and beyond the skills and resources of the trail building organization. It is not intended to automatically exempt organizations from the technical provisions simply because of a particular construction practice (e.g. the use of hand tools) or to suggest that these practices should be used to avoid compliance when more expedient methods and resources are available. In new construction, trail designers should consider the trail construction practices when they plan and design the trail route. By knowing the construction and maintenance practices that will be employed, trail designers can ensure that the selected route will be suitable for the creation of an accessible trail using these practices.

The intent of this conditional departure is to recognize that the effort and resources required to comply would not be disproportionately high relative to the level of access created. Although technically feasible to achieve these efforts, the effort and resources required are not reasonable.

#### **12.5.2 Priorities for access to extreme environments**

There are two extreme conditions where the development of an accessible trail is not recommended or should have the lowest priority. These conditions occur most frequently on recreation trails rather than shared-use paths. These extreme conditions are only considered to exclude the possibility of an accessible trail when there is no alternative option (e.g., reroute trail, use different construction practices, or allow different trail users) that could be used to avoid such extreme conditions. The two extreme conditions are:

- Where one section of the trail has such extreme conditions that access

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beyond the restriction would be severely limited; and

- Where more than 15 percent of the total trail length cannot be built as an accessible trail.

When either of these conditions occurs, the trail beyond the first point that is not accessible does not need to be of an accessible design. Although making the remainder of the trail accessible is a low priority, trail designers are strongly encouraged to continue to provide design characteristics throughout the trail that enhance trail accessibility and can be readily incorporated into the trail. For example, a trail through an open meadow could easily be built with a 915 mm (36 in) minimum clear width.

The trail segment from each trailhead to the first inaccessible point should be accessible. The lack of an accessible trail design from the trailhead should only be a low priority when that segment is less than 152.4 m (500 ft) in length and does not lead to a destination or prominent feature.

For loop trails or trails with multiple trailheads, the trail should be accessible from each trailhead to the first inaccessible section of trail in each direction of travel.

#### **12.5.2.1 Single extreme condition limits access**

When there are single features or conditions that are extremely difficult, it is not essential to design the sections of trail beyond the extreme conditions with accessible features. The allocation of resources to the creation of an accessible trail beyond these extreme conditions is considered to be a low priority. This exception is based on two factors:

- If an individual has the capability to negotiate such extreme conditions, they are unlikely to require the benefits of a trail that is designed to be accessible over the balance of the trail; and
- The resources required to create an accessible trail beyond the extreme conditions would be better

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spent in other areas where a higher proportion of people with varying abilities would benefit.

The Regulatory Negotiation Committee for Outdoor Developed Areas (U.S. Access Board, 1999b) identified four extreme features or conditions that, if they cannot be avoided, may trigger the provision for a low priority for the design of an accessible trail. The extreme conditions are:

- A segment of trail where the total of the grade and cross slope measurements exceeds 40 percent for 6.10 m (20 ft) or more;
- An obstacle 760 mm (30 in) in height or higher that extends across the full tread width;
- A section of soft or unstable surface which continues for 13.72 m (45 ft) or more; and
- A tread width that is less than 305 mm (12 in) for 7.62 m (25 ft) or more.

For example, 305 m (1000 ft) from the trailhead, a trail leads diagonally up a steep slope. The best possible alignment of the trail tread results in a section of trail that has a grade of 25 percent and a cross slope of 20 percent and these conditions continue for a distance of 15.25 m (50 ft). Since the total grade and cross slope exceeds 40 percent (25 percent plus 20 percent equals 45 percent) and the length of the section exceeds 6.10 m (20 ft), the trail beyond this point would be a low priority for accessible design. However, designers are encouraged to continue to provide accessible conditions wherever they can be readily achieved. In addition, the first 305 m (1000 ft) of the trail should be designed and built to provide access to people with disabilities.

A second example is a trail that goes up over a 1.525 m (60 in) high rock ledge that is located 137 m (450 ft) from the trailhead. There is no way to re-align the trail to avoid going over the ledge. Again, designing the trail to be accessible beyond the rock ledge would be a low priority, but accessible designs should be incorporated

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wherever feasible. Since the ledge is located less than 152.4 m (500 ft) from the trailhead, the priority for making the first 137 m (450 ft) of the trail accessible would depend on whether there was a destination or prominent feature within that section of the trail. If there were no prominent features within the first 137 m (450 ft) of trail, the section from the trailhead to the rock ledge would also be a low priority for accessible design. In this case, the resources that would be required to make the first 137 m (450 ft) of trail accessible would be better applied to designing another trail that could provide access to a meaningful trail experience for people with disabilities. However, if there was a prominent feature or destination within the first section of the trail, such as a waterfall 76 m (250 ft) from the trailhead, the portion of the trail from the trailhead to that feature should be accessible.

#### **12.5.2.2 Cumulative conditions limit access**

Each trail should be designed so that the opportunities for access are

maximized. Alternative routes, construction techniques, and permitted user groups are just a few of the factors that should be considered in order to maximize the opportunities for an accessible trail. However, after all of these options have been considered, if sections of the trail cannot be made accessible, because of the conditions described in Section 12.5.1, the length of each inaccessible section should be determined. If the total length of all of the inaccessible sections is greater than 15 percent of the total trail length, the overall trail environment is considered to be so difficult that the development of an accessible trail is considered a low priority. However, accessibility features should continue to be incorporated throughout the trail wherever it is reasonable to do so. The segment from the trailhead to the first segment of inaccessible trail should still be designed to be accessible, unless the segment is less than 152.4 m (500 ft) in length and does not provide access to a destination or prominent feature.

For example, an interpretive trail is 457 m (1500 ft) in length from the

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trailhead to the destination. On the trail there are:

- Two 15.25 m (50 ft) sections of trail where the tread width is 760 mm (30 in);
- A 22.86 m (75 ft) section of the trail that has a cross slope of 10 percent;
- A 15.25 m (50 ft) section of the trail with a grade of 15 percent; and
- Obstacles which are 152 mm (6 in) in height over a 22.86 m (75 ft) section of the trail.

In this example, these conditions have occurred even though every possible alternative design was considered. Therefore, the relatively large proportion of the trail that cannot be built as accessible [91.4 m (300 ft) or 20 percent of the total trail length] makes the creation of accessible conditions on the remainder of the trail a low priority. The first section of the trail, from each trailhead to the first area that could not be made accessible

would continue to be designed as accessible. The first section(s) of trail would only be considered a low priority for an accessible design if it was less than 152.4 m (500 feet) in length and did not contain a destination or prominent feature.

### 12.6 Trail components

A variety of design features combine to create trail experiences, including:

- The trailhead;
- The trail corridor; and
- Trail elements.

Those designing and building trails should address each trail component as part of a unified system because each component is critical to the recreation experience. Considering accessibility for the entire trail system will help to avoid design and construction practices that inadvertently limit the opportunities provided.

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### 12.6.1 Trail corridor

The trail corridor is defined as the entire design width and height of the trail right-of-way. It extends from the trail entrance to the destination. The key to providing access within the trail corridor is to remember that it is not defined only by the trail tread. Accessibility within the entire area on, over, or beside the trail tread must be planned with the needs of all potential users in mind.

Although many factors impact the accessibility of the trail corridor, the following characteristics are most directly related to access for people with disabilities:

- Surface;
- Grade;
- Cross slope;
- Clear tread width;
- Protruding objects; and
- Vertical clearance.

The information provided at the trailhead is an extremely important factor in trail access. Each trail user is unique and has different abilities depending on personal fitness, endurance, and the suitability of any adaptive equipment being used to access the trail. It is essential that all trail users have accurate information about the conditions that they will encounter on the trail in order to identify trails that best suit their needs.

### 12.6.2 Trail element access

The accessibility of the trail experience depends not only on the conditions encountered on the trail itself but also the accessibility and availability of trail elements. Trail elements are the facilities and features that are found along a trail, in addition to the trail itself. Examples of trail elements include:

- Trail destinations such as waterfalls, lakes, and meadows;
- Campsites with picnic tables, fire rings, and tent pads;

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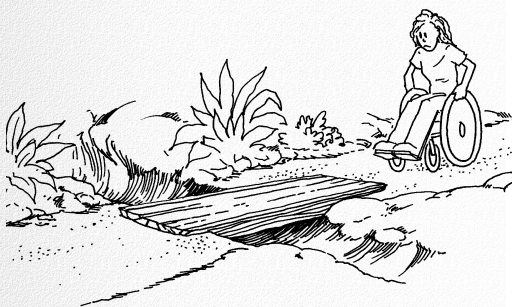
- Scenic viewpoints;
- Interpretive information displays;
- Built facilities, such as restrooms, shelters, cooking facilities, and bicycle racks; and
- Water access or supply points.

The scope and design of constructed or altered trail elements should be planned to correspond with the on-trail conditions, user needs and expectations, and the desired trail experience. The overall trail experience may be compromised if the accessibility of the trail elements does not match the accessibility provided by the trail itself. The lack of accessible elements such as camping or toilet facilities can be especially frustrating to users who have invested time and energy in reaching a particular destination. This is particularly true if the trail created the expectation of an environment that would provide access to people with disabilities.

For example, most people negotiating a paved, level trail would expect to use a

bridge, not wade through the water, in order to cross a stream. The frustration of the user who reaches this type of crossing and then has to turn back before reaching the destination impacts the enjoyment of the trail experience. If the frustration leads the individual to attempt a crossing for which he/she is unprepared, the safety of the trail user may be jeopardized.

The ADA Accessibility Guidelines Sections 1 through 9 provide design standards for numerous elements normally found in a trail environment, such as drinking fountains, restrooms, parking areas, and assembly areas that are found in the built environment. When these elements are located in an outdoor environment their design should follow the same design principles. On a highly developed, shared-use path, the elements should meet all of the ADAAG requirements for the built environment. In very rustic, undeveloped areas, every attempt should be made to, at a minimum, maintain the clear space required around the element and provide a surface that is firm and stable. It is also recognized that in outdoor



**Figure 12-3. PROBLEM:** The design of a trail crossing should be consistent with the trail leading up to it. In this illustration, a split log crossing is provided, but a bridge would be more appropriate.

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environments additional ground slope may be required, depending on the terrain and surface material, to provide adequate drainage.

In addition to the standards for the built environment, design standards have been recommended to the Access Board by the Regulatory Negotiation Committee for Outdoor Developed Areas to address the following elements when they are located in outdoor recreation areas:

- Picnic tables;
- Fire rings;
- Cooking surfaces, grills, and pedestal grills;
- Trash and recycling containers;
- Wood stoves and fireplaces;
- Overlooks and viewing areas;
- Telescopes and periscopes;
- Benches;

- Utility sinks;
- Storage facilities;
- Pit toilets;
- Utilities;
- Camping facilities;
- Warming huts; and
- Outdoor rinsing showers.

In the absence of applicable regulations, the committee's recommendations provide helpful guidance for the design of outdoor facilities. For more information about the committee report, contact the U.S. Access Board (listed in Appendix C).

When designing elements that are not specifically addressed in the outdoor recreation guidelines, use the best available information for similar elements that have outdoor recreation guidelines or obtain guidelines for the element within a built environment and then adapt the design guidelines accordingly.



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#### **12.6.3 Trailhead access**

A trailhead is any point, designated by a land management agency, at which a trail user can enter or exit from a shared-use path or a recreation trail. Designated trailheads may also include elements such as parking, restrooms, kiosks, and other built facilities. Gates, bollards, or other trail entrance designs may be used to prevent access of motorized trail users, but they should not prevent access to wheelchair users or handcycle riders. These elements should be designed so that access to the pedestrian trail is not compromised. For recreation trails, an outdoor recreation access route should connect accessible elements, such as camping areas or picnic areas, to designated trailheads.

##### ***12.6.3.1 Facilities and amenities at the trailhead***

It is important that designers recognize that people with disabilities enjoy all types of trails including trails that are not intended for pedestrian access.

They participate in all types of trail activities at a wide range of skill levels, and may be a member of any user group. For example, a person with a mobility impairment may be an advanced equestrian, drive a motorized device such as an off-highway vehicle (OHV), or ride a hand-powered or tandem bicycle. Therefore, it is recommended that the built facilities and amenities, such as restrooms and parking lots, at all trailheads and on all trails be constructed using accessible designs. Someone who rides a horse to a beautiful lake may still need the benefits of an accessible dock, picnic table, or restroom once they arrive.

The needs of all potential user groups should be addressed during the planning, design, and construction of the trailhead area to ensure that adequate amenities are available. Different types of users have distinct needs for trailhead amenities whether or not they have a disability. For example, bicyclists may need bike racks that are easy to use and secure. Equestrians need staging and rest areas large enough to accommodate the movements of a horse. Off-highway vehicle users require

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a testing circle, or “landing,” at the trailhead to determine if their equipment is operating correctly. People with and without disabilities may be included in each of the trail user groups, and therefore amenities should be designed for the needs of all users.

### **12.6.3.2 Directing trailhead traffic**

In many situations, trailhead traffic may need to be controlled by restricting the size or configuration of the trailhead area. Situations where restrictions might be needed include:

- Trails that do not permit motorized use;
- Areas where animals, such as cattle, must be contained; and
- Trails where some uses are permitted but others prohibited.

The need for trailhead restrictions and the optimal designs to be used will depend on a variety of factors, such as the user

groups designated for trail use, ownership of the land, and the acceptable degree of development or modification.

Typically, to restrict access by particular user groups, a barrier is installed that is difficult or impossible for the prohibited users to negotiate. Common barrier types include:

- Intermittent objects, such as vertical posts (bollards) or large rocks;
- Vegetation;
- Fencing; and
- Gates or stiles.

Restricting access by limiting the trail width can effectively prevent most vehicles from entering onto a trail. However, installing gates, barriers, or fencing to prevent trail access by motorcycles, horses, or cyclists often results in the unintentional exclusion of people who use mobility devices, such as a wheelchair, handcycle, scooter, or walking aids. Similarly, stiles, stairs, or ladders may

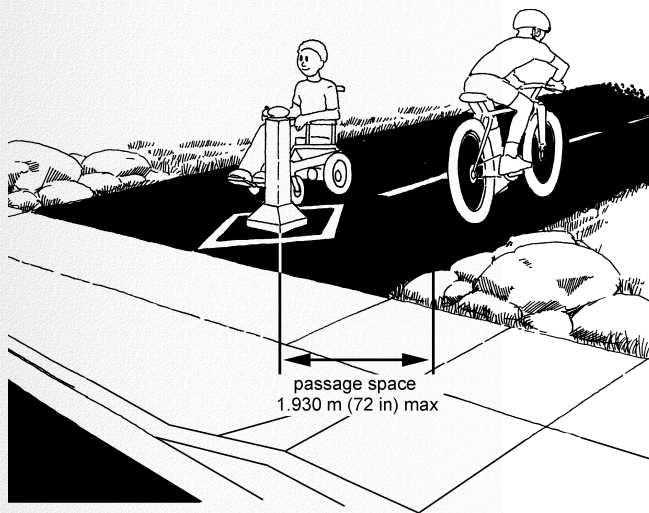
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deter trail use by cyclists or equestrians, but also pose significant barriers to access. Therefore, the devices used to restrict access by specific user groups must be carefully planned and designed to ensure that they do not limit access to pedestrians with disabilities. Further research is needed to determine the best designs or solutions that do not prohibit access by people with disabilities. For example, if the trail crosses a cattle field, the designer

would need to provide a trail entrance that restricted the movement of the cattle but was suitable for all trail users, including people with disabilities.



**Figure 12-4.** Bollards should be at least 915 mm (36 in) apart for pedestrian only trails and at least 1.525 m (60 in) apart for trails that allow bicyclists.

### 12.6.3.2.1 Intermittent barriers

If intermittent barriers, such as bollards, are installed on a shared-use path or a recreation trail that permits bicycles, they should be spaced at least 1.525 m (60 in) apart. This distance is needed to

accommodate the width of any type of bicycle that may be used on the trail. Bicycles with panniers, bicycles pulling trailers, and adult tricycles are examples of bicycles that require a 1.525 m (60 in) width. Barriers installed with this spacing will also accommodate assistive mobility devices, such as a wheelchair, scooter, or walker.

If pedestrians are the only anticipated users of a recreation trail, the minimum passage space between barriers should be 915 mm (36 in). While this width will not prevent all cyclists from accessing the trail, a narrower width is inappropriate because it would be too narrow to permit passage by a person using a wheelchair or walker.

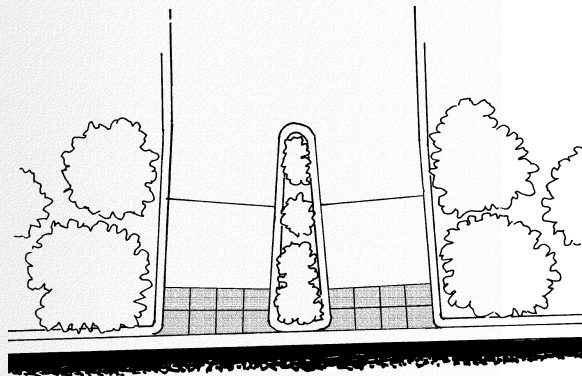
It is recommended that one barrier be installed in the center of the trail. The barrier will divide the tread width in half, and serve to divert traffic flow to one side or the other, creating one-way traffic flow as users move to either side of the bollard. If the trailhead area or trail tread is large and it is necessary to install more than one barrier, installing an odd number of barriers is recommended so that a center

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barrier will be maintained. The flow of traffic on either side of the center barrier will assist in reducing user collisions. When even numbers of barriers are installed, users will tend to travel between the center barriers causing a choking effect and increasing the potential for collisions. If a barrier is needed at the intersection of a trail with a street or another trail, designers should set the barrier back from the intersection so that users do not have to negotiate the barrier at the same time they are negotiating the intersection.



**Figure 12-5.** Providing a center median with low landscaping to restrict the width of the trail entrance is an effective alternative if installing a bollard is not desirable.

### 12.6.3.2.2 Medians

An alternative method for restricting motor vehicle traffic is to split the trail into two sections separated by a median or splitter island. Motor vehicles are less likely to travel on two parallel trails than one wide, continuous trail surface. If the median has a very low height or is paved, emergency or maintenance vehicles can have access to the trail, via the trail tread and median, when needed.

### 12.6.3.2.3 Gates, stiles, and fences

Gates, stiles, and fences are most effective when the purpose is to exclude large vehicles. Gates that comply with ADAAG in terms of size, force to operate, and with a latch mechanism that is considered accessible to users with disabilities should be installed instead of designs that limit access. Trails that do not permit bicycles or equestrians should consider gates with zigzag mazes. Other creative designs might include a maze with maneuvering space for a wheelchair user at lower heights with a narrower passage above the lap height of the wheelchair user.

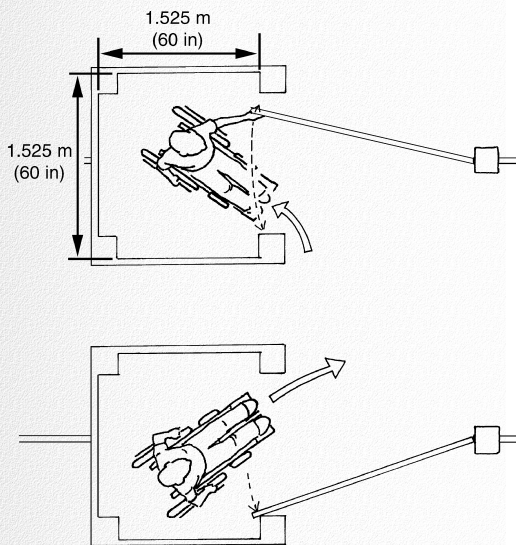
Gates are often used in rural settings on trails that cross private property especially in areas where a trail may cross pastureland. A kissing gate is one solution that can be used by people who use wheelchairs and other pedestrians, but prevents animals from exiting. The design requires the user to push the gate in front of them, enter a small holding area, and then push the gate behind them in order

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to leave the holding area. An animal that entered the holding area will get stuck because it will not have the dexterity or the knowledge to operate the gate. The holding area must be designed to be at least 1.525 m x 1.525 m (60 in x 60 in) to allow maneuvering space for a wheelchair user.



**Figure 12-6. GOOD DESIGN:** The kissing gate allows pedestrian access, but prevents animals from leaving the fenced area. In this design, the user pushes the gate in front of them, enters the holding area, and then swings the gate over to pass through.

### 12.6.3.3 Information at the trailhead

Objective information about the condition of the trail should be available to trail users before they embark on the trail. Usually, the information is conveyed at designated trailheads through signage. However, other information formats (e.g., maps, guidebooks, or large print, audiotape, or Braille trail descriptions) may be preferred depending on the number of users, level of development, and availability of trail personnel. Information that is provided in a written format should also be provided in an audible format. This allows users who are unable to read text, such as those with vision impairments, learning disabilities, or individuals whose first language is not

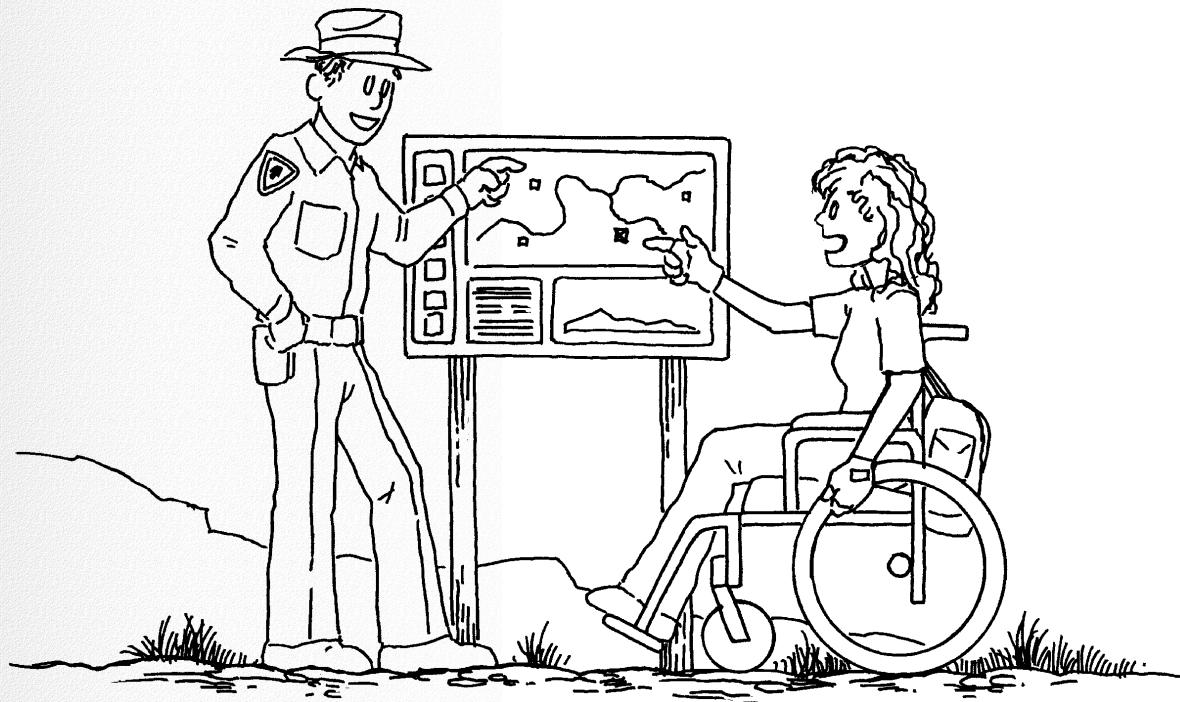
English, to have independent access to the same information provided to other trail users. See Chapters 14 and 15 for a more detailed description of the type of information that is recommended for trail users.

Information about the trail is also conveyed to the user through indirect methods of communication. For example, the trailhead provides users with their first impression of the trail's condition. A wide level trailhead area with a hardened surface and accessible parking and facilities may suggest a highly developed trail environment. If trail conditions become dramatically more challenging a short distance from the entrance, users may find themselves in unsatisfactory or potentially hazardous situations. Conversely, a narrow, undeveloped trailhead may discourage users from attempting to use a trail that does follow accessibility recommendations. When using indirect methods, such as the design of the trailhead, to convey information, it is important to provide the trail information in alternative formats,

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**Figure 12-7.** Signs at the trailhead should provide objective information about the trail conditions.

so a person with an impairment can have access to this practical information.

Ideally, the trailhead should be representative of the conditions provided in the trail environment and in nearby facilities such as picnic areas. When the conditions on the trail and at the trailhead are not consistent, it becomes even more important to provide accurate information about the on-trail conditions, through signs or other direct information sources, at the trailhead.