



Designing Access Into the Outdoor Environment

This part of the guidebook explains how to incorporate the Forest Service Outdoor Recreation Accessibility Guidelines (FSORAG), the Forest Service Trail Accessibility Guidelines (FSTAG), and the applicable sections of the Americans with Disabilities Act/Architectural Barriers Act Accessibility Guidelines (ADA/ABAAG) into the outdoor recreation environment. The portion of ADA/ABAAG that applies to Federal agencies is also known as the Architectural Barriers Act Accessibility Standards (ABAAS) and is available at <http://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-aba-standards/aba-standards>.

Suppose you are assigned a project to reconstruct portions of a picnic area or to design a trail, but the work doesn't include any buildings. Based on previous information in this guidebook, you know to use FSORAG and FSTAG, rather than ABAAS, because FSORAG and FSTAG include accessibility provisions for all the features that will be part of the project. As you read through FSORAG and FSTAG, however, you may have questions about how to apply all the technical requirements, exceptions to the technical provisions, and conditions that allow for an exception. This part of the guidebook will help designers understand the rationale behind each of the provisions and how to apply the guidelines.

Terminology

Some phrases and words as used in the context of FSTAG and FSORAG may not be familiar. Examples include:

Conditions for an exception from a technical requirement are circumstances found in natural environments, construction practices, or certain laws that may make compliance with the requirements difficult.

Exceptions to the requirements are allowed under certain circumstances and are identified in paragraphs labeled *exception* in FSTAG and FSORAG.

Practicable means work that can be completed within the limits of the applicable *conditions for exception* and results in a useful improvement for all.

Provisions are the sections of accessibility guidelines and standards that explain what is required for specific situations and facilities (parking, picnic tables, trails, and so forth).

Scoping means figuring out when, how much, and where the guidelines apply.

Technical requirements state the specific numbers, conditions, and measurements that are required (percent that must comply, dimensions, reach ranges, grades, trail width, and so forth).

Specific phrases and words include:

Construction is building a new trail, recreation site, or facility where there was none before.

An **alteration of a trail** is a change in the purpose, intent, or function of the trail.

An **alteration of a recreation site, building, or facility** is a change to a portion of a recreation site, building, or facility that is addressed by the accessibility guidelines and that affects the usability of the site, building, or facility.

Maintenance means routine or periodic repair of existing trails, recreation sites, or facilities. Maintenance doesn't change the original purpose, intent, or function of a facility. Maintenance isn't covered by FSORAG or FSTAG. Maintenance includes but isn't limited to:

- Repairing or replacing deteriorated, damaged, or vandalized trails, facilities, or components, such as repainting, removing graffiti, and repairing or replacing components of facilities with new components similar to the original ones. Components can be sections of bridges or boardwalks, signs, fencing and railings, siding, windows, and roofing.
- Removing debris and vegetation, such as fallen trees or broken branches; clearing encroaching vegetation from trails, pathways, lawns, or landscaped areas; and removing rock slides.



- Maintaining trail tread and access routes, such as filling ruts, reshaping a trail bed, replacing or reshaping surfacing material, repairing washouts, installing riprap to retain cut and fill slopes, constructing retaining walls or cribbing to support trail tread, and repairing concrete or asphalt paving.
- Performing erosion control and drainage work, such as replacing or installing drainage dips or culverts and realigning sections of trail to reduce erosion or avoid boggy areas.

While FSORAG and FSTAG don't apply to maintenance, it is Forest Service policy to improve accessibility wherever the opportunity arises. Where practicable, resource managers are encouraged to improve accessibility through maintenance and repair activities as explained in MAINTENANCE TIP—Improve accessibility through maintenance.

The word “reconstruction” isn't used in Federal accessibility guidelines or FSORAG and FSTAG, even though it is frequently used in the recreation and trails communities. For the purposes of FSORAG and FSTAG, actions are categorized as *construction*, *alteration*, or *maintenance*.

The Purpose of FSORAG and FSTAG

FSORAG and FSTAG provide guidance for maximizing accessibility while recognizing and protecting natural settings, which can be challenging. Some basic assumptions:

- Accessibility is to be considered up front, not as an afterthought.
- The Forest Service policy of universal design is integrated into FSORAG and FSTAG.
- All new construction and alterations for Forest Service outdoor recreation facilities and trails must meet the requirements of FSORAG and FSTAG.
- FSORAG and FSTAG incorporate ABAAS sections that are applicable to outdoor developed areas.
- Compliance with FSORAG and FSTAG does not mean that all recreation areas and trails will be accessible to all persons with disabilities; in some locations, the natural environment will prevent full compliance with some of the technical requirements.

FSORAG and FSTAG have sections explaining when, where, and how much of the recreation area or trail is included (scoping); what has to comply with the guidelines; definitions of terms; and technical requirements defining the physical characteristics of accessible features, such as width, height, slope, length, surface conditions, and so forth. The building blocks for accessible design are based mostly on wheelchair dimensions, clear space, maneuvering room, and reach ranges found in ABAAS because the dimensions, multiple moving surface contact points, and wheels of a wheelchair are the most difficult to accommodate. If someone in a wheelchair can use an area, most other people can too.

Each section of FSORAG is explained in practical terms, followed by a similar explanation of FSTAG.





Applying the Forest Service Outdoor Recreation Accessibility Guidelines

The first step in applying Forest Service Outdoor Recreation Accessibility Guidelines (FSORAG) is to know when and where compliance is required. Section 1.0 “Application” states that newly constructed and altered camping facilities, picnic areas, constructed features, beach access routes, and outdoor recreation access routes under Forest Service jurisdiction must comply with FSORAG. When we build something, we need to build it for everybody (figure 33). FSORAG, however, doesn’t require the installation of any particular feature. For example, if we build a raised tent platform, it must comply with FSORAG requirements, but FSORAG doesn’t require providing raised tent platforms.



Figure 33— This water fountain works for most people.

Using the Conditions for an Exception in FSORAG

FSORAG is based on the realities of the outdoor environment. It recognizes that accessibility isn’t possible everywhere because of the limitations imposed by natural terrain, existing vegetation, or other constraints. To ensure that the

unique characteristics of the outdoor environment and recreation opportunity at a site aren’t compromised or fundamentally altered, FSORAG section 1.1 requires achieving compliance with the technical accessibility requirements only to the extent practicable where certain circumstances (conditions for an exception) apply. These conditions apply only where an exception is specifically allowed in the technical requirement sections for a particular recreation feature.



Budget Tip

Extra cost is not an excuse.

If making a new or renovated recreation area accessible adds to the cost, the increase cannot be seen as an “undue financial burden.”

When a Federal agency, such as the Forest Service, is funding a project, cost cannot be used as the reason for failing to make the project accessible, unless the cost of doing the work required by the accessibility guidelines would have a significant adverse impact on the agency’s entire budget.

Conditions for an exception are not a blanket exemption from the technical requirements. Thoroughly explore all other design options that comply with the technical requirements and maintain the nature of the setting and experience before using deviations. When one or more of the following conditions for an exception exists in an outdoor recreation area, you may use a deviation from a specific technical requirement, but only where that condition exists. If that condition exists only on part of the feature or location, the technical requirement must be met for the rest of the feature or location. All the other technical requirements that are not affected by the condition for an exception still apply as well.

The following four conditions allow for deviations from specific technical requirements where exceptions are provided in the guidelines. Examples are provided to explain the intent of the conditions for each exception.



Condition for an Exception 1: Where compliance with the technical requirement is not practicable due to terrain.

The phrase “is not practicable” in this condition for exception refers to something that isn’t reasonable, rather than to something that is technically not possible. The intent of this condition is that the effort and resources required to comply shouldn’t be disproportionately high relative to the level of access established.

Condition for an Exception 2: Where compliance with the technical requirement cannot be accomplished with the prevailing construction practices.

This condition for an exception may apply where construction methods that would be needed to comply with a technical requirement would require the use of equipment or methods other than those typically used in that setting. For instance, in an area where small equipment is normally used to minimize impact on a sensitive adjacent stream, blasting



Terminology Tip

What’s practicable?

Using heavy construction equipment may make it possible to provide an outdoor recreation access route that is in compliance with the technical requirements for running slope in an area of steep terrain. However, extensive cuts or fills may be required, and that would cause drainage and erosion problems in highly susceptible soils. If compliance with the technical requirements would require building something that would be difficult, if not impossible, to construct or maintain properly, it is not practicable.

might be necessary to remove a rock outcrop to meet the technical requirement for width of an outdoor recreation access route. Because blasting typically would not be used in this situation, this condition for an exception would apply. If the work could be done using small equipment, the condition for an exception wouldn’t apply.



Design Tip

Determine where the conditions for an exception apply.

The following provides a good example of how designers may decide where a condition for an exception applies and where it might not. A renovation project at San Antonio Campground in the Santa Fe National Forest in the Southwestern Region includes a walk-in camping unit where a portion of the outdoor recreation access route is located on extremely steep ground, and there’s no way to relocate the route to flatter land. The terrain makes it impossible to meet the technical requirement for running slope without severe cuts or fills.

Using the definitions in Forest Service Outdoor Recreation Accessibility Guidelines (FSORAG), the project is an alteration. Section 2.1 General Exception 2 of FSORAG allows a deviation from the slope requirement at existing recreation sites that are being altered, where a condition for an exception exists. A review of section 1.1 “Conditions for an Exception From the Technical Requirements” indicates that Condition for an Exception 1 applies to the section of the outdoor recreation access route that is on steep ground because compliance with the technical requirement for slope (grade) is not practicable due to terrain.

A deviation from the running slope requirement is permitted for the steep section of the outdoor recreation access route. However, all other technical requirements for the route, such as width, surfacing, and cross slope, must be met. Where the terrain is flatter and the cuts and fills aren’t an issue, the technical provision for slope must be met. The exception to the slope requirement for the outdoor recreation access route to this particular walk-in campsite doesn’t apply to other campsites at this campground. The outdoor recreation access route to each campsite must be examined individually to determine if a condition exists that would permit an exception to any requirement.



This condition for an exception isn't intended to exempt an area from the technical requirements simply because of a preferred construction practice. A contractor may prefer to use a large mechanical roller for efficiency rather than a smaller vibrating plate or impact-type compactor. A contractor's or designer's preference for the larger equipment doesn't by itself trigger the condition for an exception. A deviation from a specific technical requirement only is allowed if the equipment is essential to complete construction and if the work cannot be completed using the prevailing construction practices from similar locations.

Condition for an Exception 3: Where compliance with the technical requirement would fundamentally alter the function or purpose of the facility or the setting.

Public lands provide a wide variety of recreational settings, from highly developed campgrounds with plenty of opportunities for relaxing with family and friends to wilderness areas that provide opportunities to experience primitive and challenging conditions (figure 34). FSORAG recognizes the value of a wide array of recreation opportunities by allowing deviations from the technical requirements when compliance would unacceptably change the nature of recreation opportunities or conflict with the land and resource management plan for the area.



Figure 34—People like these rafters who recreate in primitive areas may be looking for challenge.



Design Tip

Look at the full range of issues.

Designers and managers need to examine the larger context and intent of the project to determine whether this condition for exception applies. Consider the full range of management and design issues during planning and continue throughout all stages of design development.

Consider existing and desired levels of development and site modification as identified in ROS classifications, visitor expectations, customer service, and so forth. Take into account how the site will be used. Will it be a jumping off point to a wilderness area where campers bring lightweight, compact equipment? Will it be a social gathering place where visitors bring a good portion of their worldly possessions and expect to have a place to set them up?

This condition for an exception would apply differently for a setting that has little or no human-influenced modifications than for a setting that has already been moderately or heavily modified, such as a highly developed recreation site.

Campers in a primitive setting experience the outdoor environment in a nearly natural state. These campers generally desire more challenge so they can rely on their outdoor survival skills. Manufactured building materials or engineered construction techniques that are used to comply with accessibility requirements could change the natural or undeveloped nature of the setting. You are not required to change the character of the setting and, therefore, change the nature of the recreation opportunity itself solely for the purpose of accessibility.

Condition for an Exception 4. Where compliance is precluded because the cultural, historic, or significant natural features are protected or are eligible for protection under Federal, State, or local law by:

- Endangered Species Act (16 U.S.C. 1531 et seq.)
- National Environmental Policy Act (42 U.S.C. 4321 et seq.)



- National Historic Preservation Act (16 U.S.C. 470 et seq.)
- Wilderness Act (16 U.S.C. 1131 et seq.)
- Other Federal, State, or local laws that preserve threatened or endangered species, the environment, or archaeological, cultural, historical, or other significant natural features

Cultural features include archeological sites such as burial grounds and cemeteries, traditional cultural properties, tribal protected sites, and other properties considered sacred by an organized religion. Historic features are properties listed or eligible for listing on the National Register of Historic Places or other places of recognized historic value. Significant natural features are objects such as a large boulder or rocky outcrop, body of water, or unique vegetation that are regarded as distinctive or important locally, regionally, or nationally and, therefore, have been placed under legal protection (figure 35). This includes wilderness areas designated by Congress and areas protected under Federal or State laws, such as habitat for threatened or endangered species or designated wetlands.



Figure 35—Properly developed recreation features don't harm unique vegetation; ancient trees are carefully protected.



Design Tip

Determine the extent of impact.

Only consider the additional impact of increasing the size, relocating the recreation feature, or implementing other changes to provide accessibility. For example, a proposed campsite may require that a number of trees of an uncommon species be removed. Removal would cause substantial harm to the tree grove. This condition for exception wouldn't apply if 15 trees must be removed to make way for a campsite that is not accessible and only three more trees must be removed to provide for one that is. The majority of the proposed damage to the grove is due to construction of the campsite, not due to compliance with accessibility requirements. In this case, an alternate location should be selected for the campsite.

Examples of situations in which this exception may apply include:

- In wilderness areas designated by Congress, if work necessary to comply with a technical requirement can't be accomplished using handtools (use of mechanized equipment is prohibited by law)
- Areas where imported materials, such as soil stabilizers, are prohibited to maintain the integrity of the natural ecosystem or historic resources
- Designated wetlands or coastal areas where construction methods and materials are strictly limited
- Tribal sacred sites where the undisturbed physical condition of the land is an important part of the sacred observance
- Areas where water crossings are restricted to safeguard aquatic features or species protected under Federal or State laws





Documenting Exceptions

Recording and retaining documentation of determinations of the basis for exceptions for any outdoor recreation feature is a good practice. These records will become very valuable accounts of decisions and rationale when future changes are required or the public inquires about conditions.

Documentation is especially important for exceptions taken due to Condition 4. Federal laws and applicable State or local laws specified in Condition 4 prescribe certain activities or require certain analyses or procedures to be followed when planning to construct or alter facilities that may affect the cultural, historic, or natural features or species protected by that law. When work necessary to meet the technical requirements would directly or indirectly substantially harm the protected aspect, document the reason for the determination and then apply the exception. The documentation also may need to be included in the analysis or procedure records if required by specific laws.

Documentation of the basis for exceptions is required only when a condition for an exception prohibits full compliance with technical requirements on a portion of a *trail* or *beach access route*. An explanation of the condition that resulted in the determination that full compliance could not be achieved, the date the decision was made, and the name of the individuals who made the decision must be recorded and the documentation must be retained with the records for the construction or alteration project.

For *trails* or *beach access routes* only, if the entire trail or route must be exempted from the technical requirements because extreme or numerous conditions for exemptions make it impractical to provide a trail or route that meets the requirements, documentation must be sent to the U.S. Access Board. More information about this requirement is available in “Notifying the U.S. Access Board About Exemptions” and in “Documenting Exceptions and Notifying the U.S. Access Board About Exemptions” of this guidebook. Contact information for the U.S. Access Board is available at <http://www.access-board.gov>.



Getting From Here to There—Outdoor Recreation Access Routes

Providing accessibility in developed areas requires that people be able to get to features intended for public use. Outdoor recreation access routes are pedestrian routes that allow almost everybody to move around in a recreation area independently. Section 1.2 of FSORAG defines an outdoor recreation access route as “a continuous, unobstructed path designed for pedestrian use that connects constructed features in a campground, camping unit, picnic area, trailhead, or other recreation site where modifications are provided for visitor convenience and comfort.” Figure 36 shows an outdoor recreation access route connecting a parking lot and scenic overlook. Section 2.0 of FSORAG contains the technical requirements for outdoor recreation access routes.

Outdoor recreation access routes are not required when camping facilities, picnic facilities, viewing areas, or outdoor constructed features are provided on trails. The routes connecting those facilities are to comply with the technical requirements for trails.



Figure 36—All people must be able to get from the parking area to the viewing area for the Mendenhall Glacier in Alaska; the same is true for other recreation sites in the National Forest System.



Outdoor recreation access routes ensure that visitors can move independently from their car or their camping or picnic spot to the other constructed features provided at a recreation area. When individual elements or constructed features are altered or replaced at existing recreation areas, Forest Service policy requires that they be accessible. However, if the ground under the element isn't changed as part of that renovation or replacement project, this work doesn't trigger the requirement for outdoor recreation access routes.

Design outdoor recreation access routes to meet technical requirements for running and cross slopes, resting intervals, surface, clear tread width, passing spaces, tread obstacles, protruding objects, and openings. If a condition for an exception prevents full compliance with a specific technical requirement on a portion of an outdoor recreation access route that is part of an alteration project, that portion of the outdoor recreation access route only has to comply with the specific technical requirements to the extent practicable. This deviation is **not** allowed for new construction; outdoor recreation access routes are required. When planning for a new outdoor recreation area or viewing area, the natural terrain and the general accessibility of the natural environment should be part of the site selection criteria.

Because individuals usually arrive at recreational vehicle (RV) dump stations by vehicle, there is an exception to the outdoor recreation access route connection requirement. A connecting outdoor recreation access route isn't required if an accessible vehicle pullup space is provided at the RV dump station.

The outdoor recreation access route may be provided within a roadway if the roadway is the only general circulation path for pedestrians at a recreation site. The outdoor recreation access route in the roadway isn't required to comply with outdoor recreation access route technical requirements for grade, resting, or passing intervals, but clear passage of 32 inches is required around or through speed restriction devices, gates, or other barriers.

Surfaces for Outdoor Recreation Access Routes

The surface of an outdoor recreation access route and the surface surrounding constructed features must be firm and stable. No exceptions are allowed. Slip resistance is not required because leaves and needles, dirt, ice, snow, and other surface debris and weather conditions are components of the natural environment and would be difficult, if not impossible, to avoid.

- A firm surface resists deformation by indentations.
- A stable surface is not permanently affected by expected weather conditions and can sustain normal wear and tear from the expected use(s) of the area between planned maintenance cycles.

Firm and stable surfaces prevent assistive devices from sinking into the surface. Surfaces that are not firm and stable make travel difficult for a person using crutches, a cane, a wheelchair, or other assistive device. In the accessibility guidelines, the standard assistive device is the wheelchair because its dimensions, multiple moving surface contact points and four wheels often are difficult to accommodate. If a person using a wheelchair can use an area, most other people also can use that area.

During the planning process, potential surface materials should be evaluated for noticeable distortion or compression during the season(s) of managed use and for stability under normal weather conditions and expected uses. If the surface won't remain firm and stable, another surface material should be used.

If the natural soils won't provide a firm and stable surface, soil stabilizer or artificial surfacing will be needed. The Forest Service technology and development report, "Soil Stabilizers on Universally Accessible Trails," contains information about the effectiveness of soil stabilizers. It is available at <http://www.fs.fed.us/eng/pubs/pdf/00231202.pdf> or <http://www.fhwa.dot.gov/environment/fspubs/00231202/>.



Design Tip

Use a rule of thumb to estimate firmness and stability.

What sort of surface is firm and stable? If the answer to both of the following questions is yes, the surface is probably firm and stable.

Could a person ride a narrow-tired bicycle across the surface easily without making imprints? (Bicycle tires are similar to the large rear wheels of a wheelchair.)

Could a folding stroller with small, narrow plastic wheels containing a 3-year-old be pushed easily across the surface without making imprints? (A stroller's wheels are similar to the front wheels of a wheelchair.)

While this method for determining firmness and stability isn't scientifically accurate, it has proven to be effective.



Construction Tip

Use better surface materials.

Generally, the following materials are more likely to provide firm and stable surfaces:

- Crushed rock (rather than uncrushed gravel)
- Rock with broken faces (rather than rounded rocks)
- A rock mixture containing a full spectrum of sieve sizes, including fine material (rather than a single size)
- Hard rock (rather than soft rock that breaks down easily)
- Rock that passes through a ½-inch (13-millimeter) screen (rather than larger rocks)
- Rock material that has been compacted into 3- to 4-inch (75- to 100-millimeter) -thick layers (rather than thicker layers)
- Material that is moist (not soggy) before it is compacted (rather than material that is compacted when it is dry)
- Material that is compacted with a vibrating plate compactor, roller, or by hand tamping (rather than material that is laid loose and compacted by use)



Design Tip

Provide appropriate walking surfaces for the setting.

A firm and stable surface does not always mean concrete and asphalt. The provision states that surface material should be appropriate to the setting and level of development. Some natural soils can be compacted so they are firm and stable. Other soils can be treated with stabilizers without drastically changing their appearance. Many surface materials that appear natural and that meet the firm and stable requirements also are available on the market. Investigate these options and use surface materials that are consistent with the site's level of development and that require as little maintenance as possible.





Slopes and Resting Intervals for Outdoor Recreation Access Routes

Running slope is the lengthwise slope of an outdoor recreation access route, parallel to the direction of travel. Outdoor recreation access route sections of any length may have a running slope ratio of up to 1:20, a 5-percent grade (figure 37). Steeper terrain may make this difficult to achieve. Many visitors can negotiate steeper slopes for short distances, so short segments of outdoor recreation access routes may be steeper, as shown in table 2, but the slope of an outdoor recreation access route may never exceed 1:10, a 10-percent grade. In this guidebook, the terms running slope and grade often are used interchangeably.

Cross slopes—the side-to-side slope of an outdoor recreation access route—must not exceed 1:33 (3 percent), as shown by figure 37. However, if the surface of the outdoor recreation access route is paved or built with boards, the cross slope must not be steeper than 1:48 (2 percent).

Resting intervals are relatively level areas that provide an opportunity for people to catch their breath before continuing along the outdoor recreation access route. These intervals are required between each outdoor recreation access route

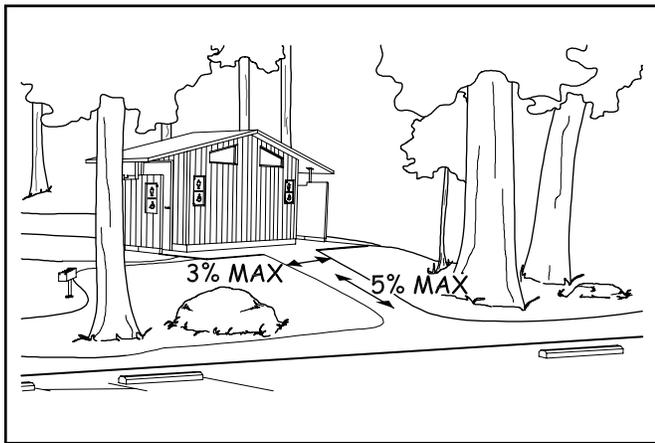


Figure 37—The basic slope requirements for outdoor recreation access routes and beach access routes.



Design Tip

The cross slope requirement depends on what material is used.

Those who use a mobility device know that as cross slope increases, travel becomes more difficult. This is because working against the sideways pull of the cross slope can double the effort needed to make forward progress. However, in an outdoor environment, the cross slope has to be steep enough that water won't accumulate on the travel surface. While slope and drainage can be precisely controlled on surfaces that are paved (asphalt, concrete, paving blocks, and so forth) or built with boards (wood planks, heavy timber, concrete, fiberglass, or other manufactured material), it's more difficult to ensure drainage on natural or gravel surfaces. When water accumulates on natural or gravel surfaces, they often become muddy and impassible. That's why the cross slope is allowed to be steeper on natural or gravel surfaces than on surfaces that are paved or built with boards.

segment any time the running slope ratio exceeds 1:20 (5 percent) as shown on table 2. A resting interval must be at least 60 inches (1,525 millimeters) long and at least as wide as the widest segment of the outdoor recreation access route leading into it, if the resting interval is within the outdoor recreation access route. If the resting interval is beside the outdoor recreation access route, it has to be at least 60 inches (1,525 millimeters) long and at least 36 inches (915 millimeters) wide. Depending on the design and location, the intersection of two outdoor recreation access routes may act as a resting interval.

The slopes of a resting interval may not exceed a ratio of 1:33 (3 percent) in any direction (figure 39). However, if

Table 2—Outdoor recreation access route (ORAR) running slope and segment length.

Running Slopes on ORARs		Maximum Length of Segment Between Resting Intervals
Steeper than	But not Steeper than	
1:20 (5 percent)	1:12 (8.33 percent)	50 feet (15 meters)
1:12 (8.33 percent)	1:10 (10 percent)	30 feet (9 meters)



Construction Tip

Slope and grade terminology.

Slopes are often described as a ratio of vertical distance to horizontal distance, or rise to run. For instance, a slope ratio of 1:20 means that for every 1 foot of vertical rise, there are 20 feet of horizontal distance; for every meter of vertical rise, there are 20 meters of horizontal distance (figure 38). When the slope ratio is stated as a percent, it is referred to as the grade. A 1:20 slope stated as a percent would be a 5-percent grade.

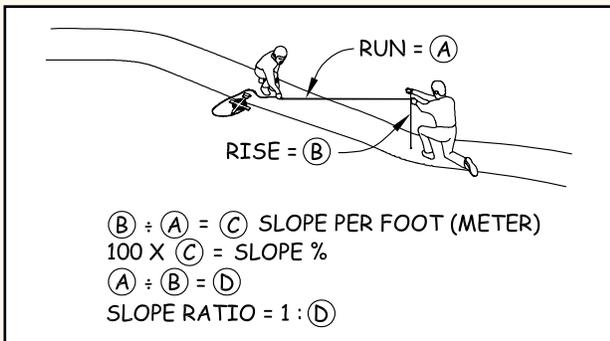


Figure 38—Determining the slope ratio.

the surface is paved or is built with boards, the slope can't be steeper than 1:48 (2 percent) in any direction.

Grade requirements for an outdoor recreation access route may be more difficult to meet when altering an existing site than during new construction. Accessibility was seldom

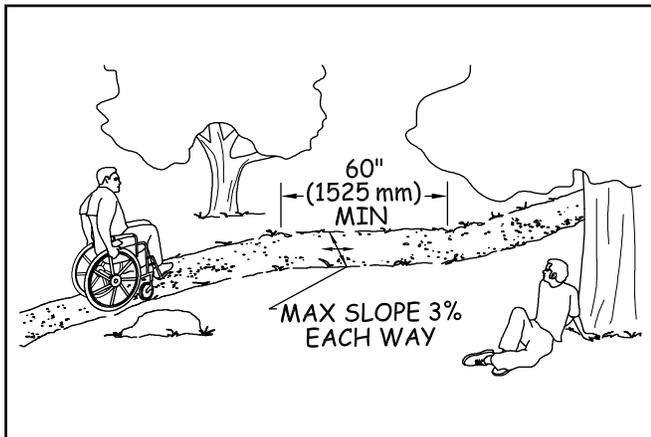


Figure 39—The basic resting interval requirements for outdoor recreation access routes.

considered when older recreation sites were designed. Many campgrounds and picnic areas were located in spectacularly scenic settings, but on steep terrain. Complying with the grade requirement in these areas may be difficult without a fundamental change to the recreation environment. A deviation is allowed for alteration projects where a condition for an exception exists.

In *alterations* only, if a condition for an exception prevents full compliance with a specific technical requirement on a portion of an outdoor recreation access route at camping and picnic facilities and at trailheads, that portion of the outdoor recreation access route is required to comply with the specific technical requirement only to the extent practicable.

This deviation from the technical requirement is *not* allowed to be used for new construction at camping and picnic facilities or at trailheads. When planning for a new outdoor recreation area, the natural terrain and the general accessibility of the natural environment should be part of the site selection criteria because compliance with outdoor recreation access route requirements is required for new construction.

Clear Tread Width and Passing Spaces for Outdoor Recreation Access Routes

Clear tread width means the width of the traveled surface on the ground and also above the ground between obstacles (figure 40). The minimum clear tread width of an outdoor recreation access route is 36 inches (915 millimeters), which is wide enough to allow unobstructed passage by a wheelchair. When a condition for an exception exists, such as where an

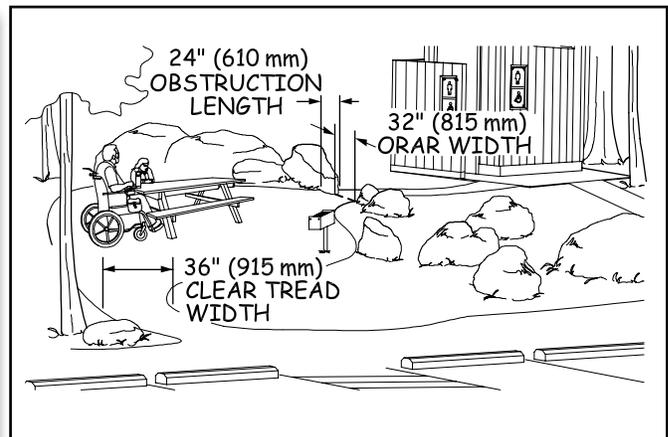


Figure 40—The clear tread width is the unobstructed width of the traveling surface.



outdoor recreation access route must be routed between two large boulders that can't be removed, then the clear tread width may be reduced to not less than 32 inches (815 millimeters) or the maximum width that can be achieved.

All outdoor recreation access routes in a recreation site don't necessarily have to be the same width. Consider the number of people who will use the route at the same time and how they will want to use it—single file or walking and talking side by side—and design accordingly. For example, a 60-inch (1,525-millimeter) -wide main route may be designed to connect a group of campsites to important constructed features, such as a rustic outdoor amphitheater, toilet buildings, or water hydrants. Secondary routes, such as a spur from the main route to a quiet, intimate path along a stream, may be only 36 inches (915 millimeters) wide.

Two people using wheelchairs need a 60-inch (1,525-millimeter) -clear tread width to pass comfortably and safely on an outdoor recreation access route. However, this width isn't always appropriate or required. Where the clear tread width of a route is less than 60 inches (1,525 millimeters), passing spaces are required at least every 200 feet (61 meters). Passing spaces must be at least 60 inches (1,525 millimeters) wide (including the route width) by 60 inches (1,525 millimeters) long (figure 41).

Another option allows a T-intersection of two outdoor recreation access routes or other walking surfaces to be a passing space (figure 42) provided that the arms and stem of the T-shaped space extend at least 48 inches (1,220 millimeters) beyond the intersection. Either configuration would

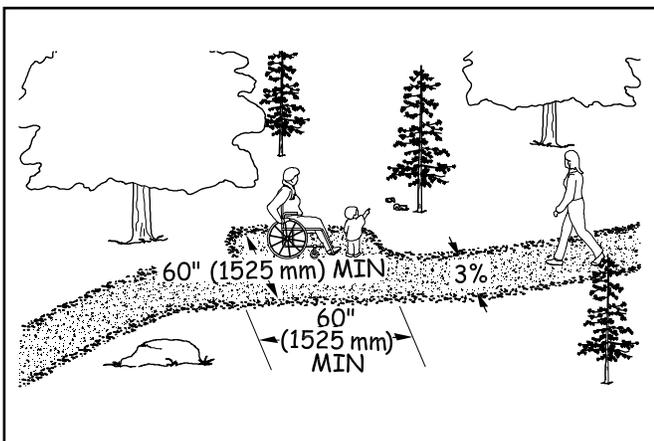


Figure 41—Minimum required dimensions for a passing space for an outdoor recreation access route or a beach access route.



Design Tip

Access route width may vary.

The 36-inch (915-millimeter) minimum clear tread width is just that—a minimum. To determine how wide the outdoor recreation access routes in a project should be, look at the level of development of the site and how the site will be used. In a more highly developed area, a 48- or 60-inch (1,220- or 1,525-millimeter) -wide route may be appropriate, while a 36-inch (915-millimeter) -wide tread may be a better fit in a less developed site.

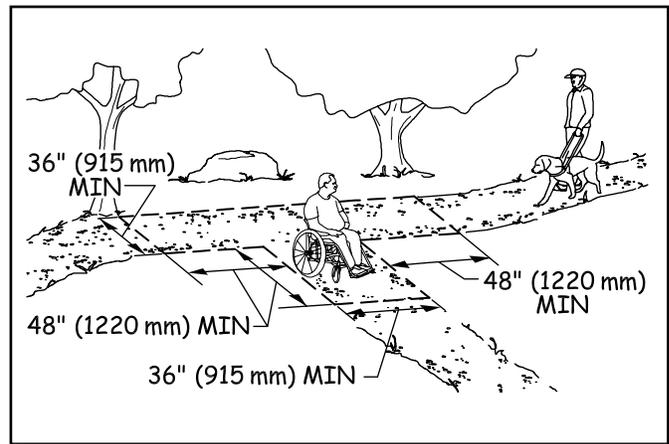


Figure 42—A T-intersection may be used as a passing space on an outdoor recreation access route or a beach access route if it has dimensions as shown, or larger.

provide enough room for a person to move to the side and let an oncoming person pass along the route. The cross slope of a passing space must not exceed 1:33 (3 percent). Where the surface is paved or is built with boards, the slope must not be steeper than 1:48 (2 percent) in any direction.

Tread Obstacles on Outdoor Recreation Access Routes

A tread obstacle is anything that interrupts the evenness of the tread surface. On outdoor recreation access routes, an obstacle may occur where a tree root or rock protrudes above the surface or where two different surfaces abut, such as when a concrete path joins an asphalt path. If they are pronounced,



tread obstacles can pose a serious tripping hazard. Where tread obstacles exist along an outdoor recreation access route, they must not be more than 1 inch (25 millimeters) high. Where the surface is paved or is built with boards, obstacles must not be more than ½ inch (13 millimeters) high.



Design Tip

Avoid the use of stairs on outdoor recreation access routes.

In new construction, stairs aren't allowed on outdoor recreation access routes except at viewing areas where there is a condition for an exception. For new recreation sites, select locations that will not require the use of stairs.

Avoid the use of outdoor stairs wherever possible. Sometimes, an alteration project at an existing recreation site includes an area where stairs can't be avoided. When stairs are unavoidable, they should generally meet the requirements for stairs in Architectural Barriers Act Accessibility Standards. Although these requirements are not mandatory for stairs that aren't part of a means of egress for a building, compliance will ensure the stairs are safe and comfortable to use.

The accessibility guidelines for outdoor recreation areas do not require handrails for stairs. Consider the safety of the people using the stairs and the setting when deciding whether handrails are appropriate. What is the expected amount of use? How can the appearance of overdevelopment be avoided while providing for safe use of the stairs? When deciding whether handrails are necessary on outdoor stairs, also consider how many should be provided. For example, a few steps at an individual campsite may not need a handrail. Where a handrail would be helpful, one handrail in the center may accommodate low-volume, two-way traffic. Treads that are just wide enough for one-way traffic could have a handrail on one side. Two handrails may be needed if stairs are provided in high-traffic areas.

Openings in Outdoor Recreation Access Route Surfaces

Openings are gaps in the surface of an outdoor recreation access route. Gaps include spaces between the planks on a boardwalk or in a drainage grate. Openings that are big enough to allow wheels, cane or crutch tips, or shoe heels to drop through or get stuck are hazards that shouldn't occur in pedestrian routes (figure 43). Openings up to a half of an inch (13 millimeters) wide are permitted. Place elongated openings that are more than a quarter of an inch wide with the long dimension perpendicular or diagonal to the primary direction of travel (figure 44).

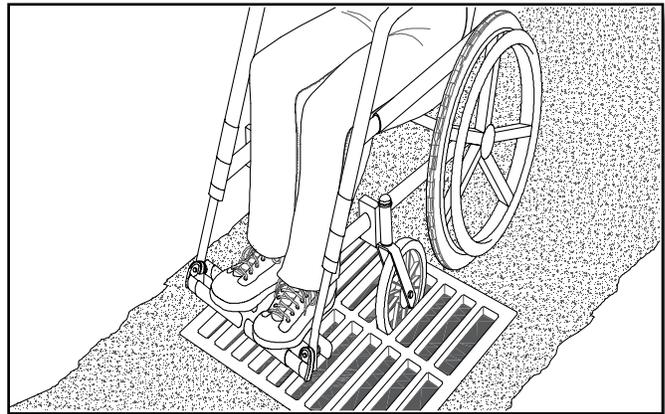


Figure 43—Big openings in outdoor recreation access route surfaces create problems.

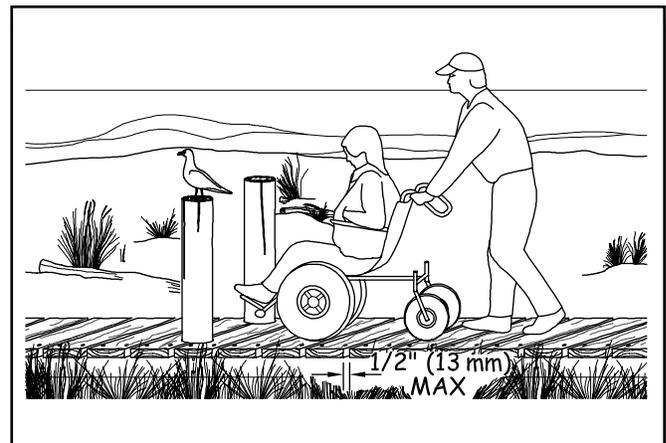


Figure 44—Elongated openings must be perpendicular to the direction of travel.



Protruding Objects and Outdoor Recreation Access Routes

Objects that extend into the travel way of an outdoor recreation access route from the side or from overhead can be hazardous to people who are paying more attention to their companions than the travel route, as well as to people who are blind or have low vision. Protruding objects are defined as constructed features (such as signs) that extend into the clear width area of an outdoor recreation access route, resting interval, or passing space and that are between 27 inches (685 millimeters) and 80 inches (2,030 millimeters) above the travel surface. Do not allow constructed features to extend into the clear width area more than 4 inches (100 millimeters, figure 45).

Accessibility guidelines do not consider natural elements (such as tree branches and rock formations) to be protruding objects. Provide and maintain clearance from natural elements around outdoor recreation access routes in accordance with your unit's standards, keeping in mind overhanging hazards to people who are blind or have low vision, or are not focused on the route ahead.

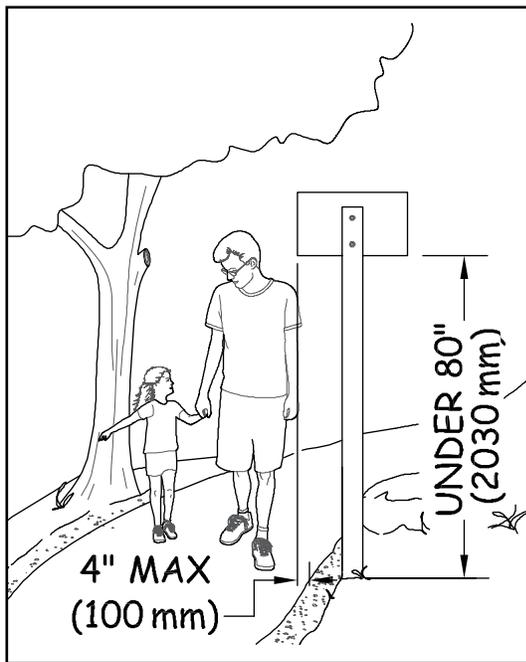


Figure 45—Constructed features can't extend into the clear width area more than 4 inches if they are between 27 and 80 inches (685 to 2,030 millimeters) above the walking surface.



Design Tip

Edge protection may be used for outdoor recreation access routes.

Edge protection is a raised curb, wall, railing, or other structure that defines the edge of a travel surface and may help keep people on the travel surface. Edge protection is not required for accessibility on outdoor recreation access routes, and it is not usually desirable in outdoor environments because it isn't as easy to see or detect objects near the ground. However, edge protection may be desirable for safety or other reasons. Edge protection curbs (figure 46) in an outdoor environment are required to be at least 3 inches (75 millimeters) high.

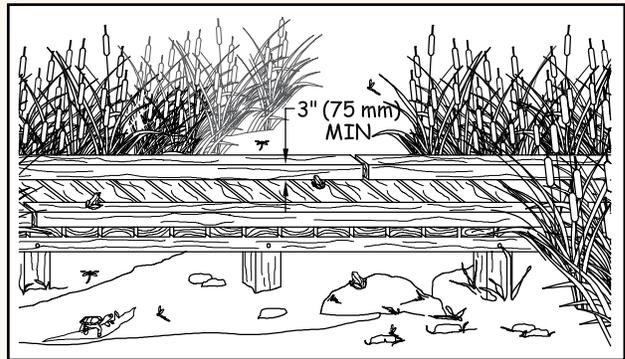


Figure 46—Edge protection is optional on an outdoor recreation access route, but if present, edge protection must be at least 3 inches high.

Gates and Barriers

If gates or barriers are constructed to control access to outdoor recreation access routes, beach access routes, or trails, include openings wide enough to allow hiker passage (figures 47 and 48) that complies with ODAAG, section 1017.3 Clear Travel Width. That section requires 36 inches (915 millimeters) of clear width. However there may be areas where Condition for an Exemption 3 applies (for instance, where providing a 36-inch-wide opening would allow the entrance of motorized vehicles that are not permitted behind the barrier). In such circumstances, 32 inches (815 millimeters) clearance, the same as is required for an interior door, will provide pedestrian access to the recreation



Figure 47—The winding configuration of this rustic chicane where the Appalachian Trail crosses Tennessee Highway 91 and the Osborne farm allows pedestrians to pass through the fence to use the trail but keeps motorized users out and horses inside the farm fence.



Figure 48—A steel kissing gate on the Prescott National Forest prevents passage by motor vehicles. The design balances the principles of the Built Environment Image Guide with the needs for access control. Sturdy, vandal-resistant materials were needed to discourage determined off-road vehicle users.

opportunity without permitting motorized access behind the gate or barrier. Be sure to document all exceptions. If there is a gate, measure the clear opening width with the gate open 90 degrees. As required in ABAAS, section 307.2, do not allow projections into the clear opening width between the trail surface and 27 inches (685 millimeters) above the trail surface. Projections of more than 4 inches (100 millimeters) aren't allowed between 27 inches (685 millimeters) and 80 inches (2,030 millimeters) above the trail surface. ABAAS, section 404.2.3 also contains allowances for projections of closers and stops that aren't likely to apply to trail barriers or

gates. Examples of blockage by and passage around barriers are shown in figures 21 and 22. The clear opening width is the key. The travel surface must meet the same requirements as the adjacent outdoor recreation access route, beach access route, or trail.

Gate hardware must comply with ABAAS, section 404.2.7. This section refers to the requirement in ABAAS, section 309, that controls and operating mechanisms have to be operable with one hand without tight grasping, pinching, or wrist twisting, using a force no greater than 5 pounds (2.2 newtons), as explained in "Reach Ranges and Operability Requirements." It also requires that operable parts of latches must be located between 34 inches (865 millimeters) and 48 inches (1,220 millimeters) above the trail surface. The operating hardware for sliding gates must be exposed and usable from both sides. In alterations, a projection of five-eighths of an inch (16 millimeters) into the clear width is allowed for the gate latch stop.

Designs for several accessible gates (figure 49) are available in the Forest Service publication "Accessible Gates for Trails and Roads" at http://www.fs.fed.us/php/library_card.php?p_num=0623%202340. The publication includes drawings for gates that can be used to close roads and trails to motor vehicle access while still providing 36-inch-wide (915-millimeters-wide) passage for pedestrians and devices that meet the definition of a wheelchair (see figures 6 through 11), as well as other gate designs that allow pedestrian and equestrian passage while prohibiting motor vehicle access.

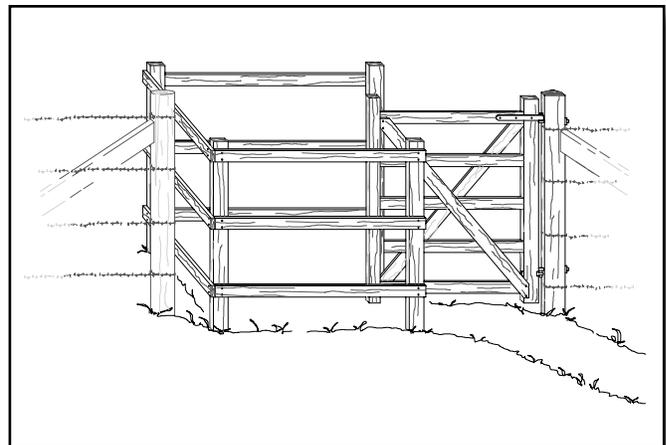


Figure 49—This timber kissing gate is one of the designs available in the Forest Service publication Accessible Gates for Trails and Roads.



Providing Comforts and Conveniences—Constructed Features

Constructed features are the site furnishings and other elements provided in picnic areas, campgrounds, and other recreation sites. The requirements for constructed features are addressed in sections 3, 4, and 5 of FSORAG. Section 3 “Recreation Sites” addresses the layout of recreation sites, including vehicle parking, camping and picnic units, viewing areas, and use of the international symbol of accessibility and other signs. Section 4 “Constructed Features in Recreation Sites” addresses individual site amenities, including picnic tables; fire rings; fire grills; fireplaces; wood stoves; tent pads and platforms; trash, recycling, and other essential containers; telescopes and periscopes; utilities; water hydrants; utility sinks; and outdoor rinsing showers. Section 5 “Buildings in Recreation Sites” addresses requirements for buildings that are not included in ABAAS, such as camp shelters and pit toilets. These subjects will be addressed in the same order in this document.

Construct, purchase, and install only elements and constructed features that comply with the accessibility guidelines, as directed by the Forest Service policy of universal

design. For example, even if steep terrain or other conditions in an alteration project at a recreation site preclude complying with the slope requirements for the outdoor recreation access route to a picnic table or camping unit, all the components and furnishings still must comply with the relevant sections of FSORAG. Individuals can select the location where they want to picnic or camp without being limited by the location of accessible features of the picnic or camping unit. This requirement includes all picnic tables, pedestal grills, and other features in a picnic area or campground if they are purchased or constructed by or on behalf of the Forest Service. The few exceptions to this general rule are explained in the section for each feature.

When individual elements and constructed features wear out or are damaged and must be replaced, the Forest Service requires that the renovated or replaced elements or features be accessible. However, if the ground under the element isn’t changed, this work doesn’t trigger the surface and slope requirements for clear floor and ground space.

FSORAG doesn’t require that any particular constructed feature be provided in a picnic area or campground. If there were no plans to provide outdoor rinsing showers, utility sinks, or utility hookups at a campground, FSORAG wouldn’t require them to be installed. However, if a feature is provided, FSORAG must be met.



Construction Tip

Determine if features are really accessible

Manufacturers don’t necessarily understand accessibility requirements. Some manufacturers advertise their products as “accessible” or “Americans with Disabilities Act compliant,” even though they aren’t. Accessible means a product is in compliance with the applicable accessibility requirements. Compare the dimensions of the product to the applicable Architectural Barriers Act Accessibility Standards or Forest Service Outdoor Recreation Accessibility Guidelines requirements to make sure that a product, such as a picnic table or fire ring, is truly accessible. Ask the manufacturer for the shop drawings or for the location of a retailer or campground near you where you can examine the product.



Construction Tip

Fix it while you’re there.

Bringing the surface and slope of the ground under an individually replaced element or constructed feature up to new construction standards isn’t required. However, you may be able to save time and money over the long haul by shaping and smoothing the surface before putting in the new table. If you integrate logical improvements every time you replace a component, accessibility may be achieved without a large construction project.





Design Tip

How to design features that are not addressed in Forest Service Outdoor Recreation Accessibility Guidelines.

If you want to provide a constructed feature that isn't addressed in Forest Service Outdoor Recreation Accessibility Guidelines (FSORAG), design it using the basic building blocks of accessible design, including clear space dimension requirements for a wheelchair and reach ranges found in Architectural Barriers Act Accessibility Standards (ABAAS).

For example, lantern hooks are sometimes provided in campgrounds, but FSORAG doesn't address them. Using the information in ABAAS and the principles of universal design, design the hooks to be usable by the greatest number of campers. The hooks should be placed within the reach of a person who is seated, as well as a person who is standing.

Use a hinged device to adjust the height of the hook or install two hooks at different heights. Consider safety when designing a post with multiple or adjustable hooks. Ensure the lantern hook has appropriate clear space to allow a person in a wheelchair to approach it from the front or the side, and place the hook where it will not create an obstacle to people moving around the campsite. The clear space for the lantern hook shouldn't overlap the outdoor recreation access route.

Clear floor or ground space is required around the usable sides of each constructed feature, but the size of the clear space varies with the feature. The differences are based on how each feature is used and whether users need to approach just one side of the feature or all sides of it. For instance, users may only need to get to the front of a pedestal grill that doesn't rotate or to the front and sides of a water hydrant, but they need to get to all sides of a picnic table or fire ring.

When several constructed features are grouped together, such as in a camp living area or picnic unit, their clear spaces may overlap. For example, the 48-inch (1,220-millimeter) clear space around a picnic table may overlap the 48-inch

(1,220-millimeter) clear space around a pedestal grill. Do not allow the clear space at a constructed feature within a camp living area or picnic unit to overlap the outdoor recreation access route that connects the camp living area or picnic unit to the rest of the recreation site. Also, do not allow the clear space to overlap any outdoor recreation access route that is adjacent to the camp living area or picnic unit but leads to a common use feature, such as a water hydrant.

Ensure that individual constructed features, such as water hydrants, are connected by outdoor recreation access routes in developed recreation sites, by beach access routes on beaches, and by trails when features are located along a trail. More information about connectivity requirements is provided in the parts of the guidebook on recreation site layout and constructed features.

Within individual camp living areas or picnic units, the slope, surface, and size of the required clear spaces of individual constructed features usually provide the required connectivity and eliminate the need for separate outdoor recreation access routes. The overlapping or adjacent clear spaces function as the outdoor recreation access routes, beach access routes, or trails. Sometimes features are spread apart to limit the amount of change to the natural setting, and the clear spaces for individual features are not adjacent or overlapping. In these cases, provide the appropriate outdoor recreation access routes, beach access routes, or trails to connect the features.

Reach Ranges and Operability Requirements

In this guidebook, you will see the provision "Controls and operating mechanisms must comply with the requirements for reach ranges and operability specified in ABAAS, sections 308 and 309" whenever a site feature has buttons, knobs, handles, or other controls or operating devices. One of the basic principles of universal design and accessibility is to provide controls that most people can reach and use.

ABAAS, section 309 requires that controls and operating mechanisms be operable with one hand without tight grasping, pinching, or wrist twisting, using a force no greater than 5 pounds (2.2 newtons). To test a control, try operating it by applying light force with one closed fist, without bending your wrist.



Section 308 of ABAAS identifies the following reach requirements:

- **Unobstructed Reaches**—When a forward or side reach is unobstructed, the object to be reached must be no higher than 48 inches (1,220 millimeters) and no lower than 15 inches (380 millimeters) above the floor or ground (figures 50 and 51). For side reaches only, an object that is below the object to be reached and isn't more than 10 inches (255 millimeters) wide doesn't count as an obstruction.
- **Obstructed Forward Reach**—When an object must be reached over an obstruction, the clear floor space must extend beneath the obstruction for at least as far as the reach depth over the obstruction. The object to be reached is not allowed to be under the obstruction. If the obstruction is 20 inches (510 millimeters) deep or less, the object to be reached must be between the top of the obstruction and 48 inches (1,220

millimeters) above the floor or ground (figure 52). If the obstruction is more than 20 inches (510 millimeters) deep, the object to be reached must be between the top of the obstruction and 44 inches (1,120 millimeters) above the ground or floor (figure 53). The obstruction must not be more than 25 inches (635 millimeters) deep.

- **Obstructed Side Reach**—For side reaches, obstructions must not be more than 34 inches (865 millimeters) high or 24 inches (610 millimeters) deep. The object to be reached is not allowed to be under the obstruction. If the reach depth is 10 inches (255 millimeters) or less, the object to be reached must be 48 inches (1,220 millimeters) or less above the ground or floor (figure 54). If the reach depth is between 10 and 24 inches (255 and 610 millimeters), the object to be reached must not be more than 46 inches (1,170 millimeters) above the floor or ground (figure 55).



Design Tip

Understand forward reach and side reach terminology.

When the phrases “forward reach” and “side reach” are used in the context of accessibility, they don't refer to the object a person is trying to reach. They refer to the position of the person doing the reaching. A forward reach means that the person is facing the object and reaching forward toward it (figure 50). A side reach means that the person's side is closest to the object, and the person is reaching either to their right or left towards the object (figure 51). People using wheelchairs can't reach as far forward over their laps as they can reach to the side. They also need correctly sized spaces to position their wheelchairs to be able to reach objects from the front and from the side. That is why there are different height and clear floor space requirements for forward and side reaches.

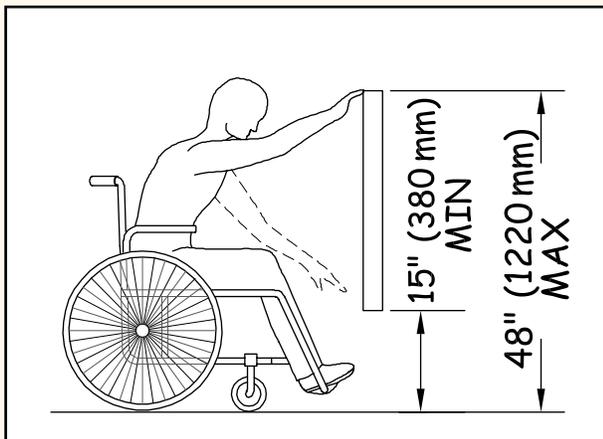


Figure 50—The requirements for unobstructed forward reach.

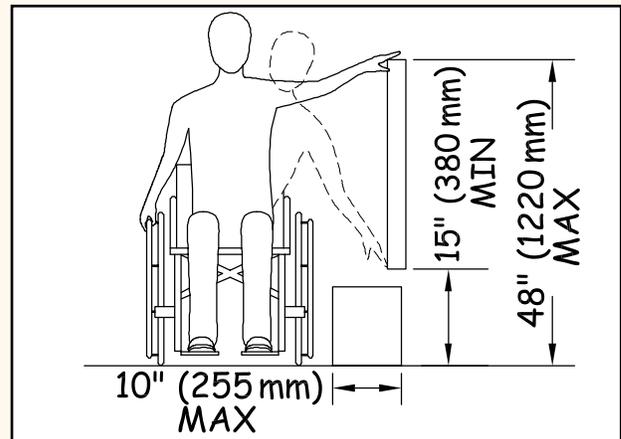


Figure 51—The requirements for unobstructed side reach.

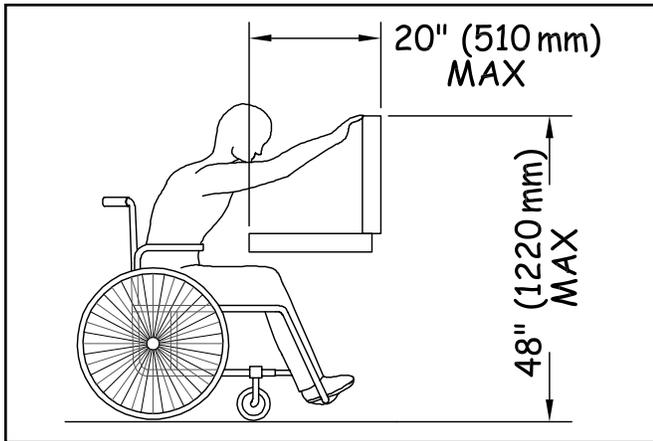


Figure 52—The requirements for obstructed high forward reach, narrower obstacles.

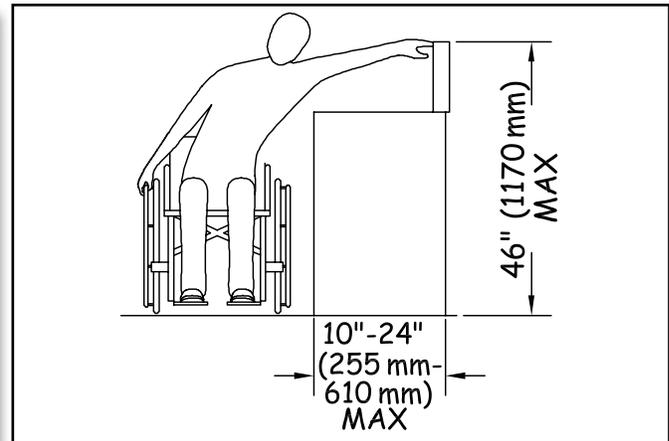


Figure 55—The requirements for obstructed high side reach, wider obstacles.

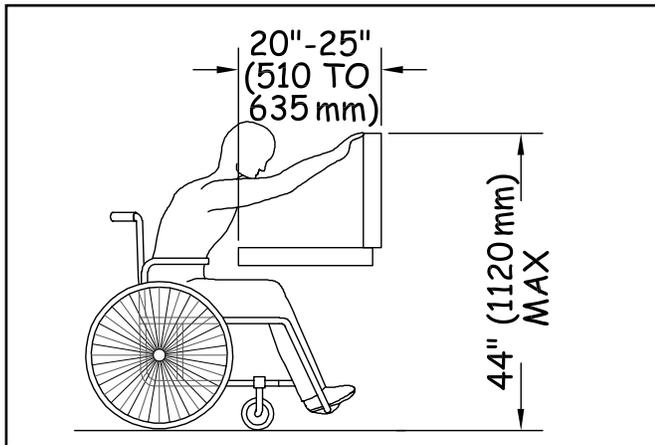


Figure 53—The requirements for obstructed high forward reach, wider obstacles.

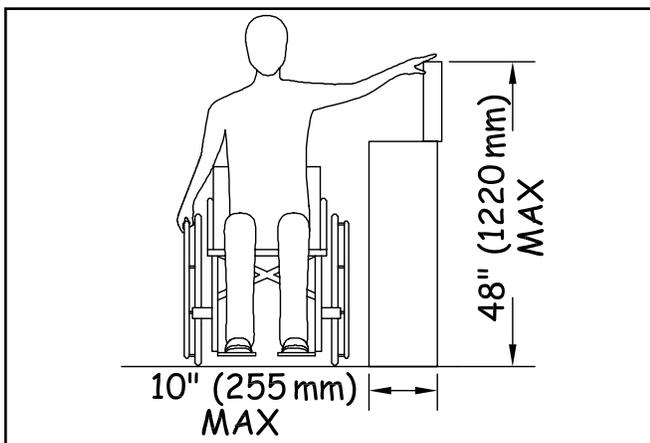


Figure 54—The requirements for obstructed high side reach, narrower obstacles.

Grab Bars

Grab bars are usually provided in buildings to provide stability and allow people to use their arms to assist in movement over short distances. The most common location for grab bars is in restrooms. Grab bars must comply with the reach range requirements of ABAAS, section 308, as explained in “Reach Ranges and Operability Requirements.” They must also comply with the size, strength, finish, and position requirements in ABAAS, section 609 as follows:

- Grab bars with circular cross sections must have a diameter no less than 1¼ inches (32 millimeters) and no more than 2 inches (51 millimeters). Grab bars with noncircular cross sections must not be more than 2 inches (51 millimeters) across and must be 4 to 4.8 inches (100 to 120 millimeters) around. Figure 56 shows how this is measured.

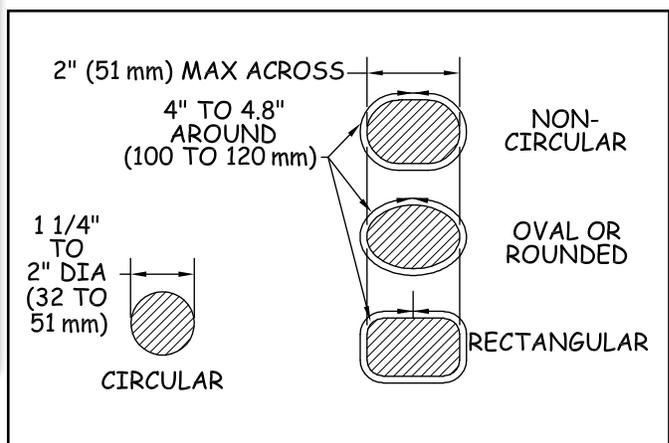


Figure 56—The requirements for the diameter and circumference of grab bars.



- Grab bars and any wall or other surfaces adjacent to grab bars must have rounded edges and are not allowed to have sharp or abrasive surfaces.
- Grab bars must be installed so they don't rotate within their fittings.
- Grab bars have to be strong enough to support 250 pounds (1,112 newtons) of pressure at any point on the grab bar, fastener, mounting device, and supporting structure.
- The space between the wall and the grab bar must be 1½ inches (38 millimeters). There must also be a space of 1½ inches (38 millimeters) between the grab bar and any projecting objects below or at the ends of the grab bar. There must be at least 12 inches (305 millimeters) between the grab bar and any projecting objects above it, except multiple grab bars only have to be 1½ inches (38 millimeters) apart.

Recreation Site Layout

Designing an attractive and functional recreation site is an art as well as a science. Accessibility is, of course, one of the many design parameters for any recreation site.

Vehicle Parking

Within recreation areas, vehicle parking is normally either concentrated into parking lots for more than two vehicles at group areas or distributed into parking spurs designed to hold one or two vehicles or trailers at an individual picnic or camping unit. Vehicle parking lots and other parking spaces that aren't associated with an individual camping or picnic unit must comply with the same requirements as vehicle parking lots for buildings. These requirements can be found in ABAAS, sections 208 and 502. However, slip resistance is not required for parking in recreation areas because leaves and needles, dirt, ice, snow, and other surface debris and weather conditions are components of the natural environment that would be difficult, if not impossible, to avoid.

Parking spurs for one or two vehicles, recreational vehicles (RVs), or trailers at individual picnic or camping units or

at parking spaces for RV dump stations must comply with the requirements in section 3.1 of FSORAG. Parking spurs have two components; driveways and parking areas. The driveway is primarily a vehicle travel way that functions as an extension of the recreation site roadway. It provides vehicular access and a transition between the recreation site road and a vehicle parking area. The vehicle parking area is the section of the parking spur where vehicles (cars, vans, recreational vehicles, trucks, trailers, and so forth) are parked. These definitions are important because the scoping and technical requirements vary based on the specific part of the parking spur being addressed. Figure 57 shows the parts of a parking spur.

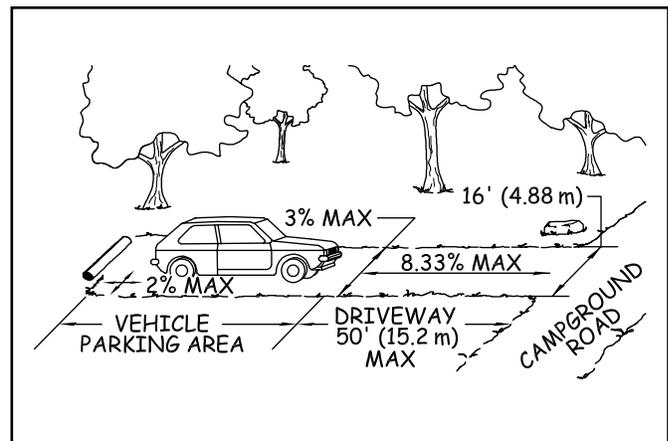


Figure 57—The components of a campground parking spur.

Because people use the parking spur to get to and from their vehicle and to get around the recreation site, ensure that the surface of the entire parking spur is firm and stable as explained in “Surfaces for Outdoor Recreation Access Routes” of this guidebook.

Ensure each vehicle parking area that is adjacent to a camp living area is at least 16 feet (4.88 meters) wide. The 16-foot (4.88-meter) width is the same as the standard width for an accessible parking stall for vans.

Sometimes, a single parking area for a double camping unit accommodates two vehicles side-by-side. In these parking areas, the space between the two vehicles can be used to access both vehicles, so you can reduce the total width of the two non-RV parking areas from 32 feet (9.76 meters) to 24 feet (7.32 meters).



Design Tip

Determine parking requirements for walk-in camping units.

For walk-in camping units, the required parking area width depends on whether the parking area is part of the camping unit or in a group parking lot. If the walk-in unit has its own parking spur, then it falls under Forest Service Outdoor Recreation Accessibility Guidelines parking spur requirements and the parking area should be 16 feet (4.88 meters) wide (as required by the vehicle parking area provision), or less if a condition for an exception applies. If the parking space is part of a group parking area such as a 10-car parking lot that is provided for eight walk-in units, the whole parking lot must meet the requirements of Architectural Barriers Act Accessibility Standards, sections F208 and 502. In such a 10-car parking lot, 9 parking spaces would be standard width and 1 would be 16 feet (4.88 meters) wide to comply with the van-accessible specifications of an 8-foot (2.44-meter) -wide parking space and an adjoining 8-foot (2.44-meter) -wide access aisle.

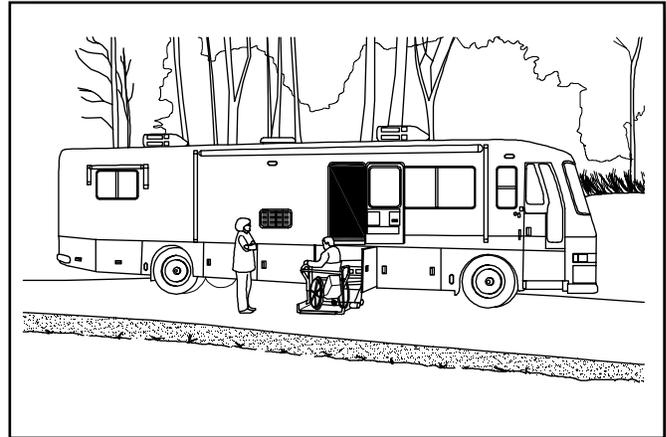


Figure 58— An accessible recreational vehicle with a wheelchair lift.

Provide enough width for full size accessible RVs and trailers in campgrounds that are designed to accommodate them (figure 58). A 16-foot (4.88-meter) -wide parking area will accommodate cars, vans, and the majority of RVs and trailers. However, a vehicle parking area that is 20 feet (6 meters) wide is required to accommodate lifts, ramps, and other assistive equipment that allow RV owners to enter, exit, and move

around all sides of larger accessible RVs and trailers. The dimensions are based on an 8-foot (2.44-meter) -wide vehicle, an 8-foot (2.44-meter) -wide space on the passenger side for operation of the lift or ramp with room to maneuver and a 4-foot (1.22-meter) -wide clear space along the driver’s side.

When parking areas for large accessible RVs accommodate two vehicles side-by-side in a parking area serving a double camping unit, the space between the two vehicles can be used to access both vehicles. Less width is required to provide the same access, so you can reduce the total width of the two RV parking areas from 40 feet (12 meters) to 36 feet (11 meters).

To maximize accessibility while protecting the natural environment, only a limited number of vehicle parking areas in campgrounds with RV camping units must be 20 feet (6 meters) wide. The minimum number of required 20-foot (6-meter) -wide vehicle parking areas is based on the total number of camping units provided in the RV campground (table 3).

Recreation Site Layout

Table 3—The number of recreational vehicle (RV) parking areas required to be accessible.

Number of Camping Units	Minimum Number of 20-foot (6-meter) -Wide Vehicle Parking Areas Required in Campgrounds With Units Designed for Large RVs and Trailers
1	1
2 to 25	2
26 to 50	3
51 to 75	4
76 to 100	5
101 to 150	7
151 to 200	8
201 and over	8 plus 2 percent of the number more than 200



Basing the number of required 20-foot (6-meter) -wide RV parking areas on the number of RV camping units is similar to the approach used by ABAAS for accessible hotel rooms. The minimum required number of accessible rooms is proportional to the total number of rooms in the hotel. Similarly, the minimum number of accessible RV parking areas is proportional to the total number of RV camping units in the campground.

For example, in a 50-unit campground that accommodates large RVs and trailers, a minimum of three vehicle parking areas must be 20 feet (6 meters) wide. The vehicle parking areas for the remaining 47 camping units must be at least 16 feet (4.88 meters) wide, with the exceptions previously noted.

When designing a new campground, remember that table 3 shows minimum requirements. Larger RVs and trailers with bump-out sections are increasingly common. Areas where many recreationists use larger RVs and trailers may require providing more camping units with a 20-foot (6-meter) -wide vehicle parking area.

Some national forests have found the 20-foot (6-meter) -wide RV parking area to be an appropriate design standard for use throughout their RV campgrounds.

If there are one or more conditions for an exception that prevent constructing a full-width parking area (at least 16 feet (4.88 meters) wide or 20 feet (6 meters) wide as required by table 3), you can reduce the width to 13 feet (4 meters), the width of an accessible parking space for cars. Because new recreation site locations should be chosen carefully to ensure accessibility requirements can be met, this exception should hardly ever be taken. Even when conditions for exception are numerous and extreme, at least 20 percent of parking areas must be full width. When only one or two non-RV parking areas are provided in a recreation area, no exception is permitted. When three to 10 non-RV parking areas are provided, at least two of the vehicle parking areas must be full width.

There are separate slope requirements for vehicle parking areas and driveways because of the different functions they perform. Do not allow the slope of the vehicle parking area to exceed 1:48 (2 percent) in any direction. However, when the surface is not paved or built with boards, slopes up to 1:33 (3 percent) in any direction are allowed when needed for proper drainage.



Design Tip

Determine how long the parking area should be.

Forest Service Outdoor Recreation Accessibility Guidelines has requirements for parking area or spur width, but not length. Length of parking area spurs depends on the terrain and the type of vehicles that are expected to use the parking area. Ordinary parking lots are normally designed with 20-foot (6-meter) -long parking spaces to accommodate passenger vehicles, so parking areas should be at least 20 feet (6 meters) long. A large trailer with a towing vehicle could be up to 60 feet (18 meters) long and a bus-style recreational vehicle (RV) could be up to 45 feet (14 meters) long.

Some campgrounds include parking spurs of various lengths. This limits campsite choices for campers with larger trailers or RVs, but also minimizes hardened surfaces and ground disturbance, especially on difficult terrain. Provide information online and at the campground regarding the length of parking areas. Campers with larger trailers and RVs will appreciate it.

The running slope of a parking spur driveway may be up to 1:12 (8.33 percent) for 50 feet (15 meters). An exception for areas of steeper terrain permits the running slope to be up to 1:10 (10 percent) for 30 feet (9 meters). In alterations of existing campgrounds only, a second exception permits the running slope to be up to 1:10 (10 percent) for distances up to 50 feet (15 meters) if the first exception can't be met because of a condition for an exception. This second exception does not apply to new construction.

The cross slope of a parking spur driveway must not exceed 1:33 (3 percent). However, the cross slope of driveways may be as steep as 1:20 (5 percent) if needed for proper drainage or to provide a transition from the campground road to the vehicle parking area. For example, if a back-in parking spur is adjacent to an interior campground road that has a running slope steeper than 1:20 (5 percent), the driveway may need a steeper cross slope to make the transition from the running slope of the road to the relatively level vehicle parking area (figure 59).

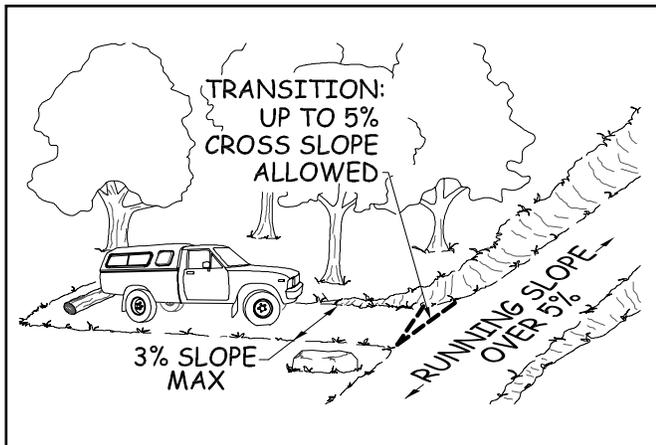


Figure 59—The transition from a parking spur driveway to a campground road.

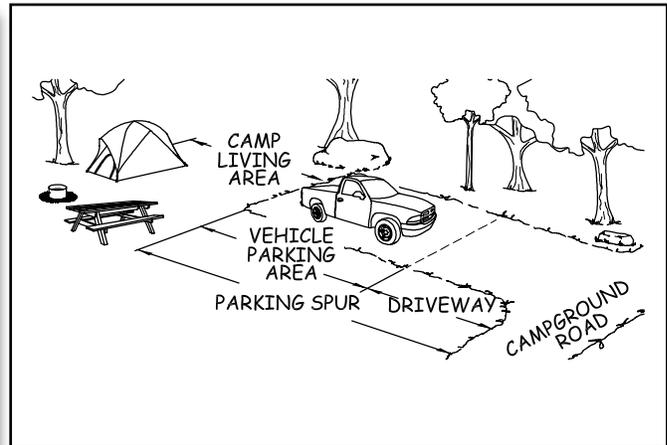


Figure 60—The components of a camping unit.

Design Tip

Allow for pedestrians in the driveway.

Because people move around the vehicle parking areas and along the driveways, parking spurs also have to be able to function as outdoor recreation access routes.

Keep the running and cross slopes of driveways, even in alterations, as gentle as possible so that vehicles and people can easily and safely navigate into and out of the camping unit, erosion is minimized, and road design and construction standards are met.

Camping Units

A camping unit is a part of a campground that is used by an individual or group for camping separate from other parties using the recreation site. A camping unit commonly includes the camp living area, a parking spur, and a space to pitch a tent (figure 60). FSORAG doesn't require a specific number or type of camping units or constructed features, but all camping units and the site furnishings and constructed features in them must meet the applicable FSORAG requirements.

The camp living area is the space where tables, fire rings, and grills are located. This area is often adjacent to the parking spur. The minimum size of a camp living area is determined by the type and number of constructed features

provided and the required clear space around each feature. Ensure the surface of camp living is firm and stable, and that the surface material used is appropriate to the setting and level of development. Do not allow the slope of the ground surface in camp living areas to exceed 1:48 (2 percent) in any direction, except when the surface is unpaved or is not built with boards. In those cases, the slope may be up to 1:33 (3 percent) for necessary drainage.

To meet outdoor recreation access route requirements, a route must connect all the features within each camping unit. Usually, the slope, surface, and size requirements for the overlapping or adjacent clear spaces of the constructed features within camp living areas eliminate the need for separate outdoor recreation access routes within the camp living area. When features are spread apart to limit the amount of change to the natural setting, provide outdoor recreation access routes to connect the features.

There must also be an outdoor recreation access route connecting each camping unit with the common use features that are provided at the campground, such as toilets, showers, water hydrants, garbage receptacles, parking spaces, and beach access. Ensure this outdoor recreation access route does not overlap the clear spaces of the camp living area so that people using the constructed features in the camp living area will not obstruct travel along the outdoor recreation access route.

There are some exceptions to the requirement that outdoor recreation access routes must connect everything.



- When work is done to improve an *existing* camping or picnic facility or a trailhead and a condition for an exception prohibits full compliance with a specific technical requirement on part of an outdoor recreation access route, that part of the outdoor recreation access route only has to meet the technical requirement to the extent practicable.
- When something is changed within an *existing* camping facility, but the circulation path isn't altered, the path doesn't have to be brought up to outdoor recreation access route standards.
- As stated in "Getting From Here to There—Outdoor Recreation Access Routes" of this guidebook, if an accessible vehicle pull-up space is provided at the RV dump station, an outdoor recreation access route is not required to connect the station to the camping units.
- In campgrounds where the roadway is the primary route from the campsites to the restrooms and so forth, a separate outdoor recreation access route to the same facilities is not required. That roadway is not required to meet the specifications for an outdoor recreation access route. However, there must be a minimum of 32 inches of clear passage through or around any constructed obstacles in the roadway, such as speed bumps.

Even when they're not required, the Forest Service commitment to universal design dictates that outdoor recreation access routes connect as many features as is practicable, given the specific natural constraints of the site, the level of development, and other considerations.

When walk-in camping is provided in a campground, ensure an outdoor recreation access route connects the camp living area to the parking spur or parking lot. If the terrain is steep (or there's another condition for an exception) and the work is an alteration to an existing site, compliance with the slope requirements for the outdoor recreation access route to those walk-in units isn't required.

When a camping unit is located near a trail (rather than in a campground accessed by vehicles), the connection between that unit and the trail and the connections between the constructed features within that camping unit must comply with FSTAG requirements for trails, not the outdoor recreation access route requirements.

Picnic Units

A picnic unit is a part of a picnic area that contains one or more constructed features used for picnics by an individual or a group. Each picnic unit may be used separately from other parties using the recreation site. All site furnishings and constructed features that are provided in a picnic unit must meet the applicable FSORAG requirements. The minimum size of a picnic unit is determined by the required clear space around each feature and the type and number of provided constructed features

Ensure all pedestrian routes that are provided in a picnic area meet outdoor recreation access route standards. Use an outdoor recreation access route to connect all features within each picnic unit. Usually, the slope, surface, and size requirements for the overlapping or adjacent clear spaces of the unit's constructed features within a picnic unit eliminate the need for separate outdoor recreation access routes within the unit. When features are spread apart to limit the amount of change to the natural setting, provide an outdoor recreation access route to connect the features.

If a picnic area only has one or two picnic units, connect all units with an outdoor recreation access route to the area's common use features, such as toilets, showers, water hydrants, garbage receptacles, parking spaces, and beach access routes. If a recreation site has more than two picnic units, use an outdoor recreation access route to connect at least 20 percent of the units (but never less than two) to the common use features at the site. For example, in a picnic area with 20 units, all site furnishings (tables, grills, etc.) must be accessible, and a minimum of four picnic units must be connected by an outdoor recreation access route to the area's other common use features.

When designing picnic areas, remember locating 20 percent of the units on an outdoor recreation access route is only a minimum requirement. Connect as many units with an outdoor recreation access route to the major features of the site as practicable, given the specific natural site constraints, the level of site development, and other considerations.

FSORAG recognizes that the natural terrain often presents a real obstacle in the outdoor recreation environment. At existing sites that are being renovated, you may not be able to provide an outdoor recreation access route for all picnic units without affecting the fundamental nature of the picnic area and the



recreation opportunity. When an *existing* picnic area is altered or reconstructed and a condition for an exception prohibits full compliance with a specific technical requirement on part of an outdoor recreation access route, that part of the outdoor recreation access route only has to meet the technical requirement to the extent practicable. When something is changed within an *existing* picnic facility, but the circulation path isn't altered, the path doesn't have to be brought up to outdoor recreation access route standards. Even though it's not required, these changes almost always provide you the perfect opportunity to bring the paths up to outdoor recreation access route standards and follow the Forest Service policy of universal design.

Viewing Areas

Overlooks and viewing areas are designed and constructed to provide scenic vistas and unobstructed views of points of interest, such as a mountain range, a valley, a waterfall, or a unique geologic formation (figure 61). Because overlooks and viewing areas are destination points, they must be accessible so all visitors can enjoy the viewing opportunities. Ensure that each viewing area at an overlook and all the site furnishings, constructed features, and buildings in it, comply with applicable FSORAG and ABAAS provisions. However, when work is done to improve an *existing* viewing area or overlook and a condition for an exception prohibits full compliance with a specific technical requirement for a clear ground space, unobstructed view, turning space, surface, or slope, you only have to meet the requirement to the extent practicable.



Figure 61—The overlook on the San Juan Skyway, a scenic byway in Colorado, allows all visitors to enjoy the view.

Viewing areas in recreation settings must be located along an outdoor recreation access route that connects to the other major features at the site, including the parking area. There are some exceptions to the requirement to connect everything with outdoor recreation access routes. Sometimes vistas can only be viewed from an area with difficult terrain. If a condition for an exception prohibits full compliance with a specific technical requirement for a portion of an outdoor recreation access route at a viewing area, you only must ensure that portion of the outdoor recreation access route complies with the technical requirement to the extent practicable. When something is changed within an existing overlook or viewing area, but the circulation path isn't altered, you don't have to bring the path up to outdoor recreation access route standards. Even though it's not required, renovations almost always provide you with the perfect opportunity to bring the paths up to outdoor recreation access route standards so that everyone can get to the viewing area or overlook.

Ensure each viewing area that is required to be accessible has a clear ground or floor space that is at least 36 inches (915 millimeters) by 48 inches (1,220 millimeters) and is positioned for either a forward or parallel approach to the viewing location. Each accessible viewing area must also have at least one turning space that is 60 inches (1,525 millimeters) minimum in diameter (figure 62) or is a T-shaped space with a minimum 60- by 36-inch (1,525- by 915-millimeter) arm and a minimum 36-inch (915-millimeter) -wide by 24-inch (610-millimeter) -long base (figure

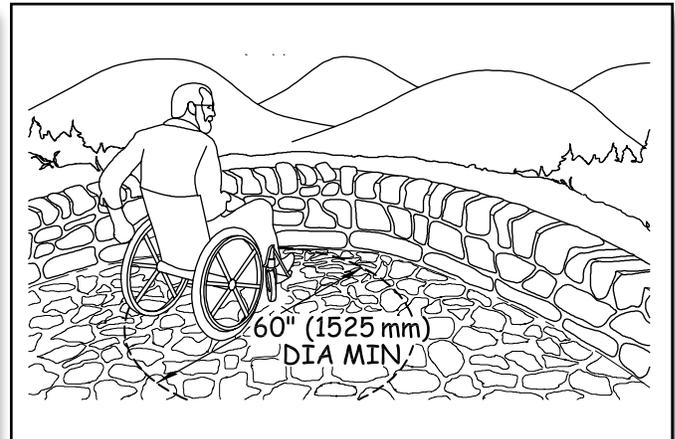


Figure 62—One way to meet the requirements for turning space at a viewing area.



63). The clear ground space and turning space may overlap. The turning space requirement is the same as ABAAS section 304.3. These spaces allow someone using a wheelchair or other assistive device to approach and move about the viewing area.

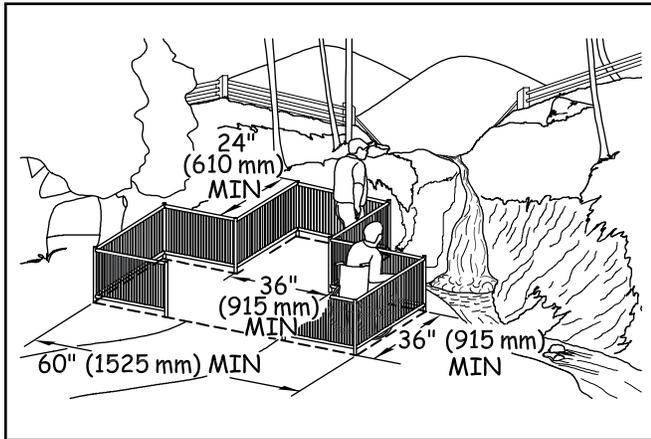


Figure 63—The requirements for a T-shaped turning space at a viewing area.

If there are several viewing areas, provide at least one accessible, unrestricted viewing opportunity for each distinct point of interest. An unrestricted viewing opportunity means a clear field of vision toward the vista or point of interest that extends at least from 32 to 51 inches (815 to 1,295 millimeters) above the entire side of the clear floor or ground space of the viewing area.

Ensure the slope of clear floor or ground spaces and turning spaces does not exceed 1:48 (2 percent) in any direction. When the surface isn't paved or built with boards, allow grades up to 1:33 (3 percent) in any direction if needed for proper drainage. Ensure the surface is firm and stable and of a material that is appropriate to the setting and level of development. Restrict openings in the surface of clear ground spaces and turning spaces to small enough that a 1/2-inch (13-millimeter) -diameter sphere can't get through them. Place elongated openings more than a quarter of an inch wide with the long dimension perpendicular to the primary direction of travel.

Viewing areas often are adjacent to hazardous dropoffs. When there is a dropoff of more than 30 inches (760

millimeters), provide a guardrail or barrier that complies with the height and opening requirements of the International Building Code, sections 1012.2 and 1012.3.

Barriers such as walls, guardrails, or signs installed for safety reasons could restrict views. However, neither accessibility nor safety measures should be ignored. Designers need to consider different ways of providing for safety without blocking the view. For example, narrow vertical rails, see-through panels, or screened openings could be installed, or the designer may be able to build the overlook with a series of tiers or terraces (figure 64). The placement of interpretive signs may also help create a barrier to keep people back from the edge of the overlook without blocking the view (figure 65).

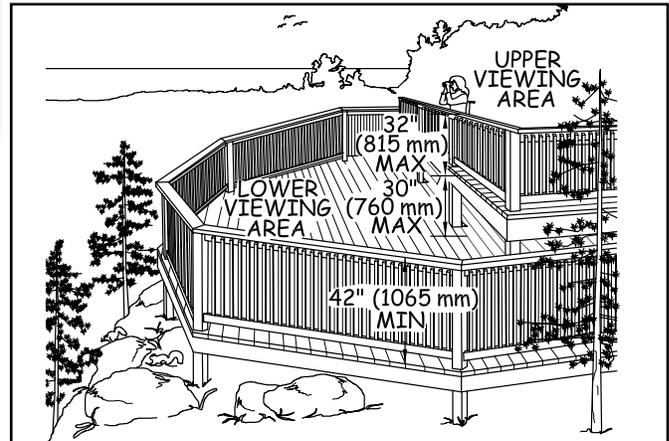


Figure 64—This overlook design has two levels so the railing can be lower at the upper viewing area.

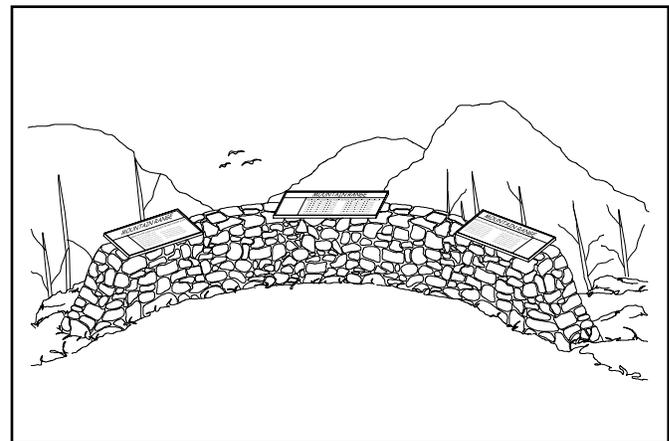


Figure 65—Signs placed to create a barrier at an overlook.



Design Tip

Design guardrails for safety and views.

Providing safety while maximizing viewing opportunities is a challenge for those designing a guardrail or structure adjacent to a dropoff. It's possible to design two viewing levels (see figure 64), where the lower level would be less than 30 inches (760 millimeters) below the upper level.

With this design, a tall guardrail isn't required for the upper level. At the upper level, where the visitors generally approach the viewpoint, a low railing or wall can permit good visibility. The lower viewing level would have a tall guardrail meeting the International Building Code requirements. This lower level provides the "catch" area for the primary level.

If the area or structure doesn't lend itself to a two-level approach, try a see-through 42-inch (1,065-millimeter) -high guardrail (figure 66). Place the vertical rails so that a 4-inch (100-millimeter) sphere can't pass through them. Visibility through this type of guardrail is excellent. The eye level of most adults seated in a wheelchair is above 42 inches (1,065 millimeters), and children sitting on the deck can enjoy the view through the rails.

The importance of vertical rather than horizontal rails can't be overemphasized. When children see horizontal rails, they regard them as an inviting ladder that encourages them to climb. A horizontal rail can't protect them from a fall (figure 67).

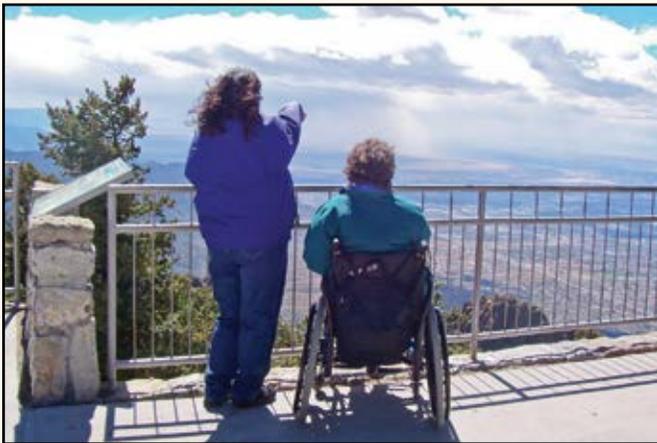


Figure 66—This railing on an overlook at Sandia Crest on the Cibola National Forest is safe, meets code requirements, and provides a great view for people of all heights.



Figure 67—Caution: Railings with horizontal rails make an inviting ladder for small children.

