

TRAIL SYSTEMS

For the most part, trails designed for the Presidio of San Francisco are similar to back country settings and were designed to comply with Federal Access Board (Regulatory Negotiation Committee 1999) guidelines for accessible trail construction and trail rehabilitation, rather than the ADA Accessibility Guidelines (ADAAG) that are applicable to buildings and facilities (see “Connecting Urban and Natural Settings: Presidio Trails and Bikeways”). A major difference is that steeper slopes are allowed because of the constraints posed by the natural environment and different expectations of trail users. Since natural settings often have a dual mission of enhancing access to natural, cultural or historic resources and at the same time protecting those resources, special techniques are often required.

These design guidelines supplement local design standards, such as those published by transportation agencies for bikeways and the Access Board guide-

lines. They are intended for back country, informal, park-like settings where the natural environment predominates in rural, suburban or urban areas. The guidelines provide trail design and construction techniques that promote resource conservation, enhance trail sustainability and maintainability, increase trail safety, and minimize user conflicts. They are not only sound construction practice, they also enhance trail access for people of all abilities.

ACCESSIBLE TRAILS

It is not realistic, or desirable from a visitor experience point of view, to make all trails accessible to all users. Increasing accessibility would not be appropriate if doing so would:

- Cause substantial harm to cultural, historic or significant natural features or characteristics
- Substantially alter the nature of the setting or the purpose of the trail

- Utilize construction methods or materials that are prohibited by law
- Require technically infeasible solutions due to terrain or prevailing construction practices

If a trail cannot meet the guidelines because of any of the above exceptions, efforts should be made to ensure that as much of the trail is as accessible as possible. In locations where trails are not accessible, ensure equivalent accessible trail experiences.

PEDESTRIAN TRAILS

Providing variety and choice increases access for people of all abilities. A system that provides both primary and secondary trails, for example, allows a non-athletic wheelchair user or a pedestrian who wants an easy stroll to enjoy an excursion on a moderately wide, gentle path, while a more adventure-some person would try a narrower, steeper trail.

Accessible portions of pedestrian trails should comply with Access Board guidelines for outdoor developed areas. One of the chief distinctions between recreational trails and a path of travel governed by ADAAG criteria for buildings and facilities is slope. No more than 30 percent of the total length of a designated accessible trail should exceed a running slope of 1:12 (8.3 percent) or have a cross slope greater than 1:20 (5 percent). In general, the running slope of an accessible trail should be less than 1:20 (5 percent). However, steeper trails could be considered accessible in the following conditions:

- Maximum “running slope” (in the direction of travel) of 1:12 (8.3 percent) for 200' with resting intervals
- Maximum running slope of 1:10 (10 percent) for 30' with resting intervals
- Maximum running slope of 1:8 (12.5 percent) for 10' with resting intervals (Figure 32)

MULTI-USE TRAILS

Multi-use trails should meet all the special requirements of pedestrian trails. Although steeper grades are per-

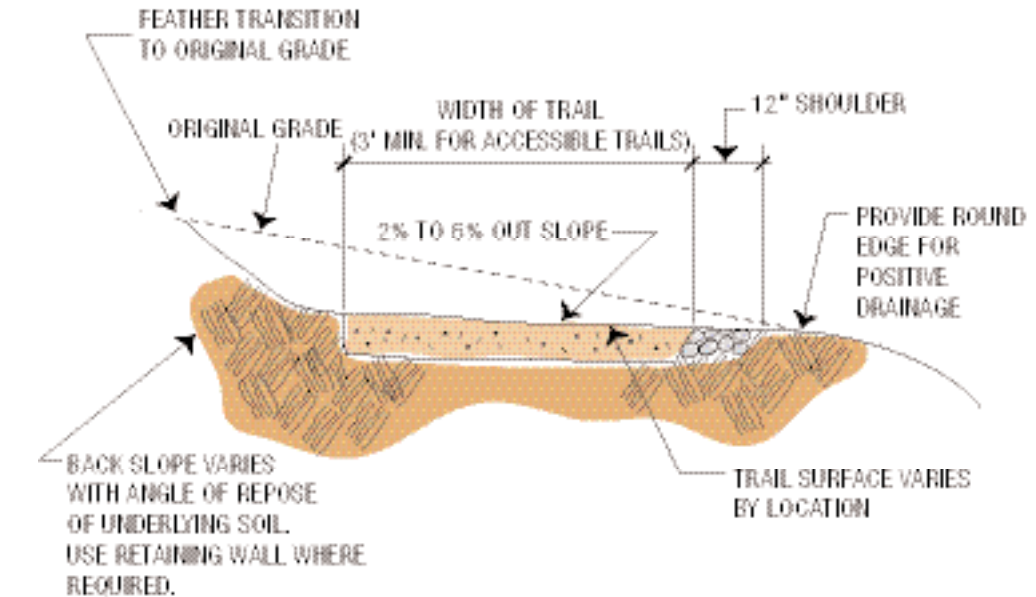


Figure 32. Cross slopes can reach a maximum of 5 percent in areas to increase drainage.

mitted, easy grades of less than 1:20 (5 percent) are recommended to provide greater accessibility for persons with disabilities and recreational bicyclists.

Typically, multi-use trails are a minimum of 8' wide. This allows bike lanes with a minimum of 4' in each direction. Depending on the number of people using the trail, the width could be much greater (Figure 33).

To increase accessibility for runners or the elderly who desire softer surfaces

that minimize impacts on bone structure, provide soft surface pedestrian shoulders on one or both sides that can be used as walking or running paths.

A typical multi-use trail corridor might then be a minimum of 12' wide, assuming a minimum width hard surface and 2'-wide soft surface shoulders in each direction. If the multi-use trail is to be used by maintenance vehicles, a minimum 10'-wide hard surface is recommended.

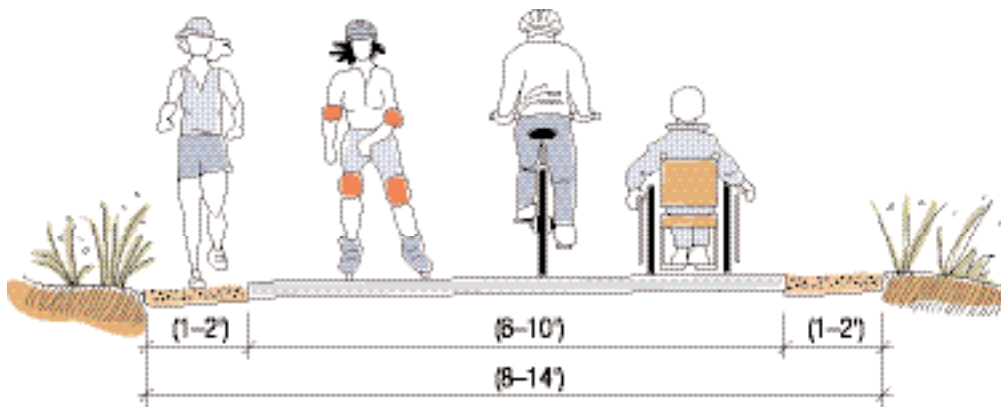


Figure 33. Multi-use trails can range from 6 to 10' wide, plus shoulder width for runners and other users.

Hardened surfaces are usually asphalt or granular aggregate material stabilized with a binder. Soft surface portions can be fine granular stone (crushed rock or decomposed granite). Trails for skaters should have a smooth, paved surface.

Tread obstacles such as steps or water-bars should be avoided on multi-use trails. Drainage grates generally should be located outside the trail, or designed with small openings perpendicular to the path of travel for wheelchair and bicycle safety.

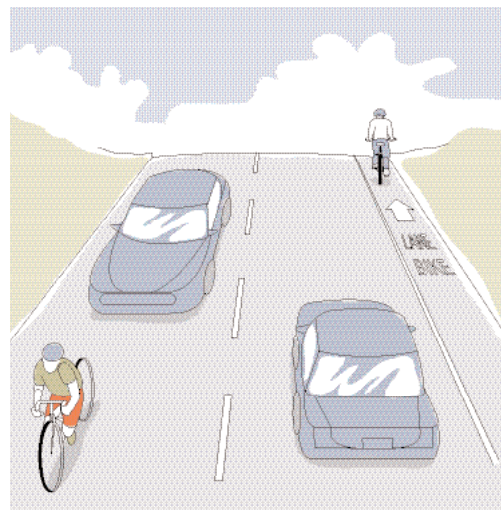


Figure 34. If width is a constraint, give preference to uphill bicycle lanes, while downhill bikers share the road with cars.

BIKEWAYS

Road width constraints and volume of traffic are the primary determinants for the type of on-road bikeway provided. Where possible, provide striped bike lanes on both sides of major roads. Where road width is a constraint, priority is given to uphill bike lanes (Figure 34).

Although the American Association of State Highway and Transportation Officials (AASHTO) minimum width for bikeways is 4', the recommended minimum width for marked bike lanes on each side of the roadway should be 5' to accommodate a wider spectrum of cycling skill. Even wider lanes of 6' or more should be considered in those areas where recreational cyclists predominate to allow two cyclists to ride side by side.

Some roadways and service roads have low traffic volumes with low speeds. If the roads are appropriately signed, bicyclists and autos can share them safely without marked bicycle lanes.

Most bikeway grades are the same as existing roadway grades, which vary from nearly flat to very steep.