Trail Design Standards

Design details of trails that are funded by state or federal transportation programs must be approved by those agencies. Therefore adherence to their current standards and procedures streamlines the approval process. It helps to consult the local public works department or the VDOT District Engineer early in the design process so that plans are prepared appropriately for review. Also, ask for the review process timetables so that you can accurately schedule advertising for bids.

Sources of Information on Trail Design

VDOT, and some localities, publish standards and specifications for roadway improvements, which include bike lanes and a range of other structures and improvements, such as culverts, that are useful for trail design. Any trail that is constructed within the ROW of a public street or road must conform to the applicable standards. The American Association of State Highway and Transportation Officials (AASHTO), a source used by VDOT in developing state standards, publishes a *Guide for Development of Bicycle Facilities* that includes parameters for width, clearance, radius of curves, and even the friction values for different surfacing materials. For mountain bike trail design standards, designers should contact the International Mountain Bicycle Association, which is in the final stages of developing standards. For foot path design specifications and methods, see *Trail Design, Construction, and Maintenance* by the Appalachian Trail Conference (ATC). The Rails-to-Trails Conservancy's *Trails for the Twenty-Fist Century* contains a wealth of design information, and *How Greenways Work*, published by the Rivers, Trails, and Conservation Assistance Program of the National Park Service, contains design information applicable to greenways.

For water trails, see *Modern Water Trails, Second Edition*, a publication of North American Water Trails, Inc. (see Bibliography). Water trails have some requirements that differ from overland trails. Some water trail design criteria are listed on the following table.

Water Trail Design

1) **Provide access points at fairly frequent intervals (5 miles for rivers).**
2) **Provide adequate parking to meet demand. Hand carry launches should be hardened as well as boat ramps. Boat slides do well where banks are steep.**
3) **Have information kiosks and brochures at each access which orient users to the trail, and contain a map describing public use areas, sanitation stations, emergency telephone numbers and locations of telephones, camp sites, rules and regulations.**
4) **A "leave no trace" philosophy of use should be advocated in the literature and on information kiosks.**
5) **Camp sites should be hardened in heavy use areas. Most campsites should not be accessible to vehicles except for administrative access.**
6) **Riparian areas should be protected and maintained as functioning buffers.**
7) **A 'no open camp fire' policy should be enforced.**
8) **Public lands should be clearly identified from the river.**
9) **Mile markers should be posted along the river and tied to the map in the brochure.**
10) **Prohibitions against trespass on private land should be clearly stated in informational literature.**
11) **Some group camping areas should be developed for scouts and other group use.**
12) **Provide sanitation facilities at public access points and periodically along trail. (5 miles)**

Various publications and technical manuals include specific data and design criteria related to the alignment, materials, and finishing of trails, bike paths, and other pedestrian and motorized facilities. In addition, there are sources of information on construction practices and mitigation measures appropriate for developing recreation facilities in sensitive environments. Some local governments publish their own standards and practices, and others refer to state manuals of standards as the authority for what would be required for local permits to be issued.

For any trail, there will be a set of conditions that must be resolved by its design. This handbook can not outline all of the criteria for all types of trails, but does include sample criteria that relate to a universally accessible pedestrian trail design. This information will serve to define the parameters of a type of trail that would be widely developed, and to demonstrate the significance that various environmental and construction factors have for the design of other specific types of trails.

The balance of this section is taken from the *Trail Development and Management Standard Operating Procedures Manual* developed by DCR, Division of State Parks.