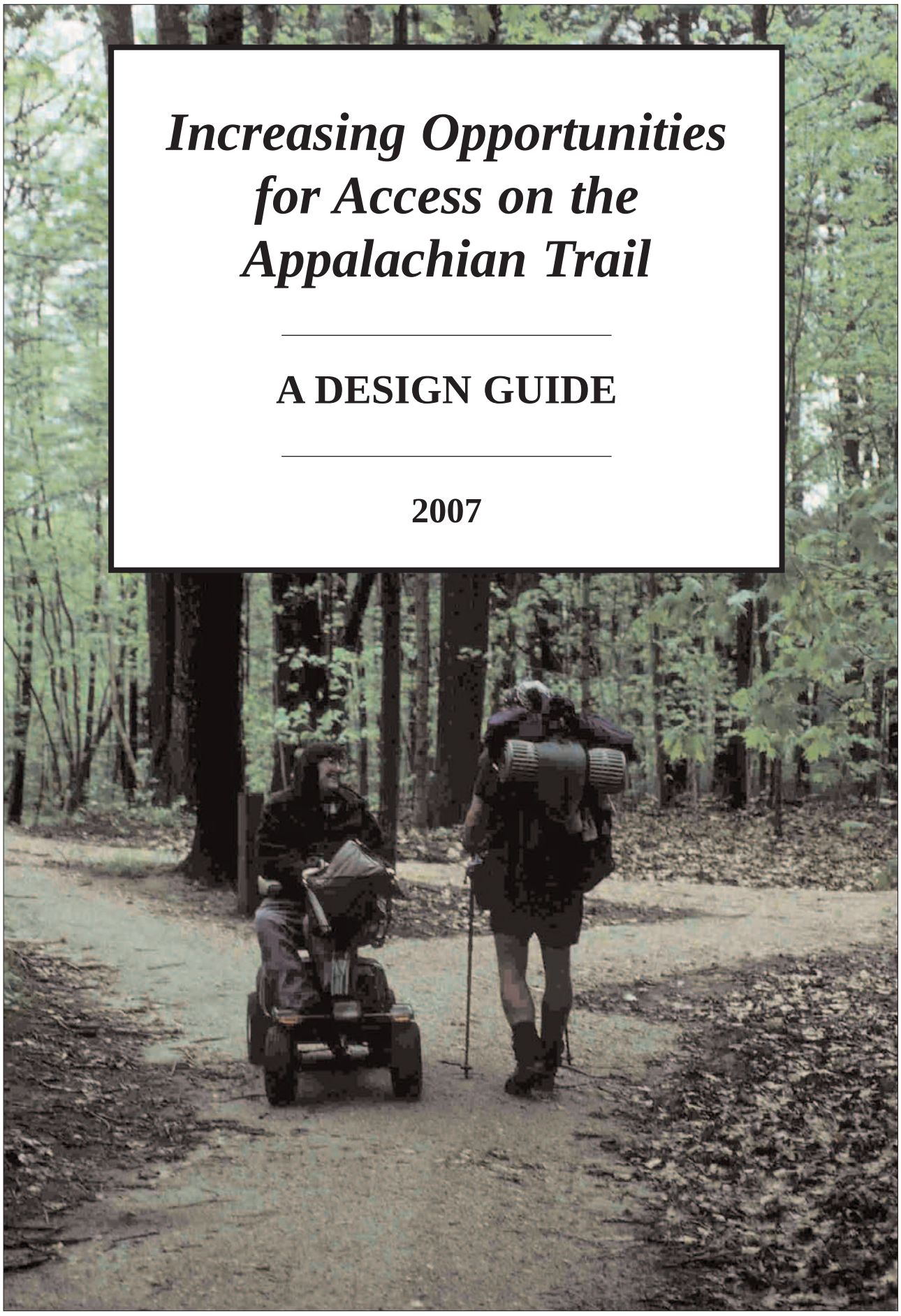
Increasing Opportunities for Access on the Appalachian Trail

A DESIGN GUIDE

2007



Cover photograph: Two trail users meet on an accessible section of the Applachian Trail in Falls Village, Connecticut. Courtesy of Applachian Trail Conservancy.

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A DESIGN GUIDE

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APPALACHIAN TRAIL CONSERVANCY
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Seven Oaks Consulting, LLC
March 2007

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Benton MacKaye, from ATC's Local Management Planning Guide

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INTRODUCTION

The 2,175 mile-long Appalachian National Scenic Trail traverses 14 states from Maine to Georgia. Visited by three to four million people each year, the Appalachian Trail is considered one of the most popular units of the National Park System. In 1968, the United States Congress designated the Appalachian Trail as the Nation's first national scenic trail, "to provide for maximum outdoor recreation potential and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of the areas through which such trails may pass"[i]. This law, and the extensive land protection programs that followed, underscore the significance of the Trail as one of our nation's most important recreational and scenic resources.

The Comprehensive Plan for the A.T. outlines the guiding principles for managing the A.T. It says that "The Trail will be continuous in its marking and be open to **all** to walk upon it." (emphasis added) (p. 8). The purpose of this document is to build upon the core management philosophies outlined in the Comprehensive Plan including management through the Cooperative Management System; managed for traditional A.T. values and goals; diversity and character of A.T. lands will continue; maintenance and construction will be carried out in accordance with A.T. "Trail, Design, Construction, and Maintenance"; hikers are responsible for their own safety and comfort; an unregimented atmosphere and encouragement of self reliance; and providing opportunities for all hikers to experience the Appalachian Trail.

This manual was a direct result of an effort by A.T. managers to navigate the many issues related to trail management and accessibility and distill the numerous nuances down to an easily digested, and most importantly, user friendly document. Many sources were used in the development of this manual; however it is not intended to cover all aspects of trail management or accessibility. Rather, it attempts to integrate traditional design concepts with

increased awareness of accessibility issues to provide managers with an additional tool in sustaining the values of the Appalachian Trail.

Who Should Read This?

This manual is intended for any trail manager or partner, volunteer, professional, or agency staff member who wishes to learn more about accessibility and decision making processes for trail projects considering universal design. The manual incorporates examples from existing and ongoing projects along the Appalachian Trail but may be representative of other pedestrian trails.

About the Appalachian Trail

The Appalachian National Scenic Trail is a unit of the national park system and was America's first National Scenic Trail. A footpath running primarily along the crest of the Appalachian Mountains, the Trail provides opportunities for outdoor recreation in a natural, undeveloped environment to many thousands of people each year. The Trail is managed as a scenic, natural, and recreation resource for those who desire a challenging outdoor recreation experience or for those who wish to get away from the trappings of modern life.

Under a unique series of cooperative agreements with the Department of Agriculture (USDA Forest Service) and Department of Interior (USDI-National Park Service), the Appalachian Trail Conservancy has accepted management responsibility for a corridor of land surrounding the Appalachian Trail footpath. These "Delegation Agreements" assign responsibility for Trail management and protection to the Appalachian Trail Conservancy, which in turn has delegated that responsibility to its member clubs. In effect, this makes the Appalachian National Scenic Trail America's only volunteer-managed National Park.

The Appalachian Trail Conservancy (ATC) is a nonprofit educational organization of over 35,000 members dedicated to protecting and promoting the Appalachian National Scenic Trail (A.T.) along its 2,175 mile length from Maine to Georgia. The Conservancy is also a federation of 30 Trail-maintaining clubs (and their 125,000 members) whose volunteers manage and maintain the A.T.

[i] National Scenic Trails Act 16 U.S.C. §1242a2

I. ACCESSIBILITY: WHAT IS IT?

Accessibility Background

In describing the A.T., words like remote and winding are often used. Described by Harold Allen, "the Appalachian Trail should be remote for detachment, narrow for chosen company, winding for leisure, lonely for contemplation, the Trail leads not merely North or South, but upwards to the body, mind, and soul of man." There is a growing desire among trail partners to provide opportunities for persons with disabilities to utilize the Appalachian Trail where appropriate and feasible, so that they too may experience the Trail described by Harold Allen. However, a pedestrian trail that meets accessibility guidelines is a highly designed path, generally with imported surfacing and a gentle slope. It avoids both man-made and natural obstacles. Accessible trails require more involved construction and maintenance techniques and resources.

If it hasn't already, accessibility will become a permanent part of the list of design considerations for trails and facilities. Awareness of access issues in the trail community has increased, fostered by congressional legislation and societal realities. As the aged population grows, the disabled population grows correspondingly, and as interest in nature, wildlife, physical exercise continues to be strong, public demand for opportunities along the Appalachian Trail continues to grow. This increasing desire is reflected by increased information requests to A.T. partners for accessible recreation opportunities along the Appalachian Trail.

For over a decade, the outdoor community has wrestled with the challenge of increasing recreational opportunities for persons with disabilities on public lands. The challenge for recreation managers is accommodating this goal while at the same time ensuring that such opportunities do not alter the settings of these recreational experiences. National policy guidance on integrating accessibility with outdoor recreation management on public lands, including the Appalachian Trail, resides with the U.S. Access Board. In the 1990's, the board convened a group of outdoor recreation stakeholders, including ATC, to develop new guidelines for accessibility on trails and outdoor facilities. While the work of that group has been completed, the resulting guidelines have not yet been adopted as "the law of the land." The USFS, as one of the stakeholders in the process, decided to develop its own set of guidelines to provide direction and tools for land managers to address increasing requests and inquiries regarding opportunities for persons with disabilities on National Forest Lands, and to attempt to demonstrate its compliance with other federal laws regarding persons with disabilities.

In 2006, after a long public process, the USFS developed a set of guidelines to be utilized on all USFS lands. The USFS Trail Accessibility Guidelines (FSTAG) and the Outdoor Recreation Accessibility Guidelines (FSORAG) define how and when accessibility along trails and at facilities on U.S. Forest Service lands will be considered. Both FSTAG and FSORAG are nearly identical to the Access Board's draft guidelines. Their adoption created a need for information regarding their application on portions of the A.T. located on National Forest lands. Because FSTAG and FSORAG are so close to the Access Board's draft guidelines, their adoption also created an opportunity to become familiar with application of the

Access Board's guidelines, which will apply to the entire A.T. when and if they are adopted. With requests for information about opportunities for persons with disabilities on the A.T. continuing to arise, ATC and its partners felt an overarching need to provide direction on accessibility. FSTAG and FSORAG currently provide the best practices for trail managers considering accessibility.

Some might ask, "Shouldn't we wait until the release of the Access Board Guidelines in case they are different from the USFS guidelines?" FSTAG and FSORAG are virtually identical to the draft guidelines for trails and outdoor facilities developed by the Access Board in the late 1990's. In the meantime, FSTAG and FSORAG offer the trail community a framework to consider increasing opportunities for access in preparation for the potential and likely adoption of the Access Board guidelines.

What does an accessible trail look like?

Trails that meet the FSTAG have a broad range of appearance. While some Accessible trails may be paved or surfaced, some are natural surfaced and just wide enough to allow for passage of a person using a wheelchair. In either case, the images conjured up by the mention of a fully accessible trail are not usually in a primitive or backcountry setting like the Appalachian Trail. *Accessible trail design is in some respects less about accessibility and more about sustainable trail design.* Both the draft Access Board guidelines and the FSTAG follow what are called universal trail design standards. These standards are not new to trail

Disabilities take many forms, and not all persons with disabilities use wheelchairs. This gentleman uses a cane while enjoying the outdoors along the A.T. in Boiling Springs, PA.

managers and partners of the A.T. community; they encourage designing trails in sustainable locations, resulting in less maintenance while providing high quality trail experiences. These design principles and considerations make sense for any project and generally provide standards that work in frontcountry or remote backcountry settings. While fully accessible trails require wider tread widths and fewer obstacles, simply applying the universal design standards will create trails that are more sustainable and accessible, even if they do not meet all accessible trail guidelines.

Increasing access to the Appalachian Trail is not appropriate or possible everywhere along the trail. But trail partners and managers can now consider opportunities for accessibility, and where possible and appropriate increase the level of access of the A.T. while ensuring the protection of the A.T. experience described by Harold Allen. This design guide is intended work toward that end by:

- Helping trail managers address access issues and make decisions regarding accessibility;
- Guiding managers through the process in a way that encourages increased development of opportunities for all people to use the Appalachian National Scenic Trail; and,
- Protecting the primitive and remote nature of the Appalachian National Scenic Trail.

Accessibility Awareness

At the time of the 2000 census, 54 million people, or 1 in every 5 people in the U.S., had a disability that significantly limited one or more major life functions such as walking, seeing, hearing, or breathing. Of that number, 4% used wheelchairs and 7.4% use crutches, canes, walkers, or other mobility aids. And the U.S. population is aging. By the year 2030 more than 31% of the population will be over 55 years of age. As people age, disability increases. In 2004, 42% of people over age 65 had a disability. There's a lot of truth to the saying that if you live long enough, you are sure to join the ranks of people with disabilities, and that will not only affect your own abilities, but that of your family and friends as well.

If anyone in a group has a disability, accessibility is an issue for the whole group. It influences where the group can go and what they can do. Ski areas learned many years ago that each skier who has a disability is usually accompanied by 3.8 additional skiers who don't have disabilities. Just as there are varying preferences among the general population, not every person who has a disability enjoys outdoor recreation. We must make sure that our trails, facilities, and programs allow everyone, including people with disabilities, to choose their own recreational activities.

Terminology and Definitions

Establishing the appropriate terminology and developing awareness are important foundations for any conversation about accessibility. People who have disabilities refer to themselves in many different ways, and it can be difficult and nerve-wracking to know if the terms you might use are "politically correct" or considered acceptable by the majority of people. The

1990 Americans with Disabilities Act (ADA) uses only the terms, "**persons with disabilities**" and "**accessible**" and these are the same terms that Federal agencies use in their regulations, policies, and other documents. Words in this section marked with an ***** have a definition taken from FSTAG, FSORAG, or the access board's guidelines.

Accessible facilities or trails – comply with the accessibility guidelines and standards. A facility or trail is either accessible, or it is not accessible. There are no shades of accessibility. The only way to evaluate accessibility is by using the legal standards and guidelines. For instance, an accessible privy meets the requirements and a privy that doesn't meet **all** the standards and technical provisions is not accessible. "Almost" doesn't count.

Terms sometimes used to describe facility accessibility that are **not correct** include "partially accessible", "accessible with assistance", "barrier-free", "ADA accessible", and "handicapped accessible". The first two terms are incorrect because a facility is either accessible or it is not accessible. If the facility is not accessible, the visitor or employee needs to know what specific portion(s) or area(s) of the facility are not accessible. "Partially accessible" and "accessible with assistance" imply that there are some accessibility problems, but do not provide enough information to be helpful. "Barrier-free" is not legally defined or commonly understood. "ADA accessible" confuses laws with accessibility standards. "Handicapped accessible" is a self-contradictory term meaning "barrier-no barrier", which of course makes no sense. The best terms are simply "accessible" or "not accessible".

All that said, it is certainly possible to enhance a trail's accessibility to a broader range of the public by including accessibility as a trail design goal. **Designing and creating an accessible trail (as defined above) without altering the character of a trail and/or the environment around it is very challenging. A trail that has a moderate grade with no rock steps will be accessible to a wider segment of the population than a steep trail up the fall line with rock steps.**

Accessibility Guidelines – include several documents: A building is not considered accessible unless it meets the Americans with Disabilities Act Guidelines/Architectural Barriers Act Accessibility Guidelines (ADA/ABAAG). These are the standards that govern accessible door widths and ramp grades, among other accessible features. In 1999, the U.S. Access Board developed draft accessibility guidelines for trails and outdoor developed recreation areas. As of November 2006, those Access board guidelines had not completed the public comment process required to make those guidelines legally enforceable. In May of 2006 the Forest Service completed public comment on their guidelines for trails and outdoor recreation areas, the FSTAG and FSORAG, based on that Access Board draft. While use of those Forest Service guidelines is only required within the agency's boundaries, because the guidelines have been fully reviewed by the public, the FSTAG and FSORAG serve as accessibility guidance both where the A.T. crosses Forest Service lands and along the rest of the trail.

Alteration* – a change in the original purpose, intent, or function for which the trail was designed.

Constructed feature* – A structure built for a specific public use in the natural environment such as a tent platform, privy, shelter, picnic table, fire ring, parking lot, etc. Also called a facility.

Construction* – building a new trail or segment of trail where there was no trail before.

Developed Recreation Site* – a discrete site with a concentration of public recreational facilities and services, such as a campground, picnic ground, trailhead, scenic overlook, or parking lot, and evidencing a significant investment in facilities and management under the direction of an administrative unit in the National Forest System. Generally has public vehicular access.

Disability – a medically definable condition that causes a limitation in one or more of a person's major life activities such as walking, seeing, hearing, speaking, breathing, thinking, etc.

Person-first terminology is the preferred language to use because the person is more important than the disability. Examples of person-first terminology include: "the person who is blind" -not "the blind person" or "the person who uses a wheelchair" -not "the wheelchair-bound person" or "the wheelchair person".

Drainage lens – a quantity of coarse gravel wrapped in geotextile and used as base material for a section of trail that sees enough diffused water moving across the tread to warrant special treatment, but not enough to require a culvert. Similar to a sausage or burrito turnpike.

Element – This term can be found in some of the FSORAG technical provisions. In the context of the provisions, it generally means the item or thing a user is trying to reach.

Fall Line – See page 56

Feature – A place or object of cultural or natural interest such as a waterfall or an historic farmsite.

Geotextile – Also called landscape fabric, geotextile is a water permeable synthetic fabric that is laid down before a gravel base material is added. The geotextile supports the gravel and prevents it from sinking into saturated soil.

Grade – See page 55

Handicap – a barrier or circumstance that makes progress or success difficult, such as a flight of stairs that may be impassable for a person using a wheelchair.

It is important to understand that there are negative connotations to the term "handicapped" when referring to a person who has a disability. The word has been around for centuries, but was not used to refer to people with disabilities until the late 1800s. Many people believe that the term "handicapped" was first used in relation to individuals who have disabilities when Civil War veterans whose injuries prevented them from working were begging on the streets with "cap in hand." Standard references do not support this story. But because the story has become legend describing people with disabilities as "handicapped" is offensive to many people. It may be useful to think of handicapped as the "H" word and eliminate it from your vocabulary, print materials, and outreach.

Maintenance* – routine or periodic repair of existing trails or trail segments to restore them to the standards or conditions to which they were originally designed and built. **Maintenance does not change the original purpose, intent, or function for which the trail was designed. Trail maintenance work does not trigger the accessibility requirements**.

Maintenance includes, but is not limited to:

- Removal of debris and vegetation, such as downed trees or broken branches on the trail; clearing trail of encroaching brush or grasses; and removing rock slides.

- Maintenance of trail tread, such as filling ruts and entrenchments; reshaping a trail bed; repairing a trail surface and washouts; installing rip rap rock to retain cut and fill slopes; and constructing retaining walls or cribbing to support trail tread.

- Erosion control and drainage work such as replacing or installing necessary drainage dips or culverts; and realigning sections of trail to deter erosion or avoid boggy areas.

- Repair or replacement of deteriorated, damaged, or vandalized trail or trailhead structures or parts of structures, including sections of bridges, boardwalks, information kiosks, fencing and railings; painting; and removing graffiti.

Outdoor Recreation Access Route (ORAR)* – A continuous, unobstructed path designated for pedestrian use that connects constructed features (such as a camping unit and water source or picnic tables and a toilet building, etc.) within a picnic area, camping area, or developed trailhead. ORARs are required only in developed recreation sites. ORARs have technical requirements that are similar to accessible trails. However the slopes on ORARs are required to be less steep than those allowed on accessible trails.

P**rominent feature** – a natural, cultural, or historic feature located along or adjacent to a trail that has national, regional, or local distinction or significance. It might be the focal point,

main attraction, or destination of the trail or it may simply be an interesting secondary feature such as a boulder outcrop, waterfall, grouping of old or unique trees, cultural or historic structure, a wildflower meadow, an area popular for wildlife viewing, or a scenic vista.

Reconstruction – a term that is not used in Federal accessibility guidelines or the FSTAG, even though it is frequently used in the trails community. For the purposes of the FSTAG, actions are categorized as *alteration, construction*, or *maintenance*.

Trail* – a pathway designed for the purpose of recreational hiking.

Trailhead* – a site designed and developed by the Forest Service or other government agency, a trail association, a trail maintaining club, a trail partner, or other cooperators to provide staging for trail use.

For purposes of the FSTAG the following *do not* constitute a trailhead:

- Junctions between trails where there is no other access

- Intersections where a trail crosses a road, or users have developed an access point, but no improvements are provided by the Forest Service, trail associations, a trail maintaining club, a trail partner, or other cooperators beyond minimal markers for health and safety.

Universal Design – is often associated with accessibility and is a great way to approach planning trail and facility projects. Universal design is simply designing programs and facilities to be usable by all people, to the greatest extent possible, without separate or segregated access for people with disabilities. However, universal design does not necessarily meet the stringent technical specifications of FSTAG and FSORAG.

Universal Trail Assessment Process (UTAP) – measures a wide range of factors that affect the potential accessibility of a trail. That detailed information on trail conditions is then synthesized and can be presented to a user. Armed with a UTAP assessment, a user, regardless of the presence of a disability, can decide for themselves if a trail is right for them and their own ability. The advantage of UTAP is that it gives the user the information they need to make the choice for the setting and type of recreation. For more information on UTAP go to: www.beneficialdesigns.com/trails/utap.html

Federal Legislation

The Architectural Barriers Act (ABA) became law in 1968. It mandates that all facilities built, purchased, rented, altered, or leased by, for, or on behalf of a Federal agency must be accessible.

In 1973 the Rehabilitation Act became law. Section 504 of the act applies to programs and activities that are conducted by Federal agencies and by entities that receive funding from, or operate under a permit from, Federal agencies. It requires that these programs and activities provide an equal opportunity for individuals with disabilities to participate in an integrated setting, as independently as possible. The only exception to the requirement is if providing accessibility would fundamentally alter the program. An example of a fundamental alteration to a program would be allowing use of a motorized vehicle in a wilderness area.

7 CFR 15, which was finalized in 1994, is the USDA implementation guideline for Section 504. Subpart 15e applies to programs conducted by the Forest Service.

Subpart 15b applies to programs operating with Federal agency funding, under special use permits, or under other agreements with the agency. If a building or structure must be entered in order to participate in the activity at the site, it must be accessible.

The Americans with Disabilities Act (ADA) became law in 1990. Except for Title V Section 507, the ADA does not apply to Federal agencies' facilities and programs, because they were already required to be accessible under the ABA and Section 504. The ADA applies to State and local government services and to public accommodations, which are businesses and organizations that are open to the public. Title V Section 507c applies to congressionally designated wilderness. It reaffirms the 1964 Wilderness Act and clarifies that agencies aren't required to change the character of wilderness areas in order to provide accessibility. It also defines a wheelchair and states that wheelchairs meeting that definition can be used in congressionally designated wilderness.

More information about key federal accessibility legislation is available at the US Access Board's website: www.access-board.gov

Accessibility and the A.T.

Some may be surprised that many folks with disabilities have visited and even spent a lengthy amount of time on the Appalachian Trail. Often our first image of an individual with a disability is a person who uses a wheelchair; in fact, many individuals deal with a wide variety of disabilities. While some disabilities offer more challenges than others to moving along the Appalachian Trail unaided, conditions found along the Appalachian Trail are challenging to many people who are able bodied and in the prime of their life. After all, isn't that the point of why the A.T. was designed as a backcountry, primitive trail? A.T. users are expected to challenge their abilities, and in some cases, realize their limitations, and either decide to overcome them or decide not to. That is a choice any trail user must make. In recent years, several A.T. users who are also persons with disabilities have determined to overcome their own

challenges along the Appalachian Trail.

Just before Thanksgiving in 1990, Bill Irwin, a hiker from North Carolina who now lives in Maine, became the first known person who is blind to thru-hike the entire Appalachian Trail. With the help of his service dog, Orient, and a network of supporters, Irwin was able to do what had previously been unthinkable. His web site is: www.billirwin.com

In 2004, Scott Rogers of Washburn, TN. completed all but approximately 100 miles of the A.T. In 2005, he completed his missing sections of A.T. and became a 2,000-miler. Scott's left leg is amputated above the knee. His website is: www.onelegwonder.com

Other thruhikers with disabilities:

- Sally Burgess, Ann Arbor, MI. 1990 thru-hiker. Amputee- arm.
- Carl Moon, Powder Springs, GA. 1991-1992 thru-hiker. Amputee- foot.
- Bob Barker, Sandstone, VA. Thru-hiked three times (1977, 1981, 1986). Multiple Sclerosis.
- Mike Schank, Tell City, IN. Thru-hiker. 1991-'92. Stomach, and portions of liver, esophagus, pancreas, and intestine were removed after cancer diagnosis.
- Henry Tanner, James Island, SC. 1995 thru-hiker. Stroke survivor.

Multiple hikers with the following conditions have also completed the Trail: deaf, HIV-positive, cancer, diabetes, hip replacement, knee replacement, and overweight by as much as 80 pounds.

Galehead Hut and AMC

In 1999, the Forest Service notified the Appalachian Mountain Club that under the ADA, AMC's Galehead Hut, located along the A.T. in the White Mountains of New Hampshire was to be made accessible during a major renovation. At the time, many decried this requirement as an excess. Why should a hut, 4.6 miles up a steep, rocky, and rutted trail, and perched at the edge of the largest federal wilderness in the Northeast be made accessible? In 2000, after the renovation was complete, three hikers who use wheelchairs made it to the hut after a grueling all day effort. Their journey to the hut was supported by volunteers from Northeast Passage, an organization that facilitates access to the outdoors for persons with disabilities. The volunteers accompanied and assisted the three at every turn, however the hikers who used wheelchairs were never carried. When they all arrived at the hut that evening, they were able to use Galehead's accessible features and wheelchair ramp, which many had said were a waste of money and would never be used.

Every year, adaptive technology for persons with disabilities increases opportunities for accessing the outdoors. Fat tire wheelchairs now allow the folks who use them the opportunity to access places that were beyond reach just a few short years ago. Folks like Bill Irwin and the Galehead visitors have shown that society's perceptions about the abilities of the disabled are now being outstripped by reality.

II. FOREST SERVICE ACCESSIBILITY GUIDELINES

The Forest Service Trail Accessibility Guidelines (FSTAG)

and

The Forest Service Outdoor Recreation Accessibility Guidelines (FSORAG)

The Forest Service Trail Accessibility Guidelines (FSTAG) of 2006 applies to new or altered trails that are managed for hiker/pedestrian use and that connect either directly to a trailhead or to an accessible trail. These guidelines only apply within National Forest System boundaries. The entire text of the FSTAG can be found at: www.fs.fed.us/recreation/programs/accessibility

FSTAG applies only when a trail meets all three of these conditions:

1. The trail is new or altered. An alteration to a trail is a change in the original purpose, intent, or function for which the trail was designed;

2. **and** the trail has a designed-use (in accordance with the Forest Service trails terminology, design and management processes) for hiker/pedestrian use;

3. **and** the trail connects either directly to a trailhead or to a currently accessible trail.

The Forest Service Outdoor Recreation Accessibility Guidelines (FSORAG) of 2006 applies to newly constructed and reconstructed camping facilities, picnic areas, beach access, Outdoor Recreation Access Routes (ORARs), and other constructed recreation features including benches, trash and recycling containers, viewing areas at overlooks, telescopes and periscopes, mobility device storage, remote area pit toilets, warming huts, and outdoor rinsing showers. These guidelines only apply within National Forest System boundaries. The entire text of the FSORAG is available at: www.fs.fed.us/recreation/programs/accessibility

FSTAG and **FSORAG** apply to ALL facilities and associated elements on USFS lands. However, remember that the federal accessibility legislation applies to ALL A.T. lands. Currently, FSTAG and FSORAG are the best standards available and should be used for evaluating and planning accessibility projects on all A.T. lands. As of this writing, it is anticipated that standards similar to those found in FSTAG and FSORAG will become the national standards for trails and outdoor recreation facilities.

When Do Forest Service Regulations Apply?	
FSORAG	**FSTAG**
Developed Recreation Site Features	Hiker/Pedestrian Trails
new *or* ***reconstructed****:* - picnic areas - picnic tables - fire rings - cooking surfaces - grills - pedestal grills - woodstoves - fireplaces - benches - beach access - outdoor recreation access routes - camping units (table/cooking pads, parking spurs, tent pads, platforms) - campground utility connections - outdoor rinsing showers - remote area pit toilets - trash/recycling containers - viewing areas and overlooks - telescopes and periscopes - mobility device storage - warming huts	***new*** *or* ***altered*** *trails that are:* - designed for hiker/ pedestrian use *and* - that connect either directly to a trailhead *or* - connect to a currently accessible trail **Note: ALL 3 CRITERIA MUST BE MET BEFORE THE FSTAG IS REQUIRED TO APPLY.**

A. Implementing the FSTAG Process

When considering accessibility in your trail project, be sure to review the Process Overview Chart, included in Appendix A, which graphically summarizes the FSTAG steps and sequencing. There are four steps to this process.

Step 1: Determining the applicability of the FSTAG

Once you have decided to embark upon a trail project on Forest Service land, you must always review these three questions and determine the applicability of FSTAG.

1. Is the designed use "hiker/pedestrian"? If yes, then:

2. Does the work meet the definitions on the previous page for new construction or alteration? If yes, then:

3. Does the proposed trail connect to a trailhead or accessible trail?

If the answer to any of those questions is "no", then compliance with FSTAG is not required. The finding that FSTAG does not apply should be briefly documented and put in the project file. If the answer to all three questions is yes, or there is an opportunity to increase the accessibility of the trail segment, then go to Step 1A: Determine Conditions for Departure. For an example of determining the applicability of FSTAG, we'll use the Appalachian Trail.

FSTAG and the Appalachian Trail

How does the FSTAG apply to the Appalachian Trail? First comes the three-condition FSTAG test. It is where you determine whether or not FSTAG even applies to your trail project. You should always consider this test, and document your decision.

The Appalachian Trail Test:

Condition 1: Is the Trail new or altered?

Answer: While trail managers often consider a relocation or a reconstruction project as creating new treadway, by the definition in the FSTAG, because the trail itself is not changing in intent or purpose, (i.e. it's still part of a primitive backcountry trail with the defining A.T. Experience language), these projects are not considered new or altered trails, but rather maintenance. In most cases the A.T. will not meet this condition. However, this condition should always be considered and decisions regarding projects should still be documented.

Condition 2: Is the Trail a hiker/pedestrian use only Trail?

Answer: Yes, the A.T. meets this condition.

Condition 3: Does the trail connect either directly to a trailhead or to a currently accessible trail?

Answer: While the A.T. crosses many roads, by the definitions in FSTAG, not all of the A.T.'s access points are actually "trailheads". A trailhead, for the purposes of FSTAG, is defined as a "site designed and developed by the agency, trail association, a trail maintaining club, a trail partner, or other cooperators to provide staging for trail use." For purposes of the FSTAG the following do not constitute a trailhead:

- Junctions between trails where there is no other access,
- Intersections where a trail crosses a road, or users have developed an access point, but no improvements are provided by the Forest Service, trail associations, a trail maintaining club, a trail partner, or other cooperators beyond minimal markers for health and safety.

In most cases the A.T. will not meet all three of the conditions, but may in some. Generally, the first condition (new or altered trail) will not be met, so in most cases the application of FSTAG will not be required. However, for all projects on Forest Service lands, the evaluation of these criteria should be conducted and documented to ensure that trail managers have considered and made a sound determination on the applicability of FSTAG. This documentation should include when and why the determination was made, and who made it. The documentation should be placed in the project file.

While the FSTAG does not apply to maintenance, where practicable and feasible, managers are encouraged to improve accessibility on trails through trail maintenance and repair activities that incorporate universal design. When a trail is maintained, there is often an opportunity to improve access.

In the event that a project meets all three conditions, or it is determined that you want to pursue an accessible project, then you apply the standards set forth in FSTAG including the four **Conditions of Departure**, **General Exceptions**, and **Technical Provisions**. Each of these concepts is discussed in detail below.

It is important to remember that for every project proposed on USFS lands, this process needs to be followed and documented, and it is also recommended for use on A.T. projects where accessibility is desirable.

Step 1A: Determine Conditions for Departure

Section 7.3 of the FSTAG explains the construction requirements necessary for accessible trails, including trail **grade, cross slope, resting intervals, surfacing, clear tread width, passing spaces, tread obstacles, protruding objects, openings, edge protection,** and **signs.** All of these requirements are minimums.
When FSTAG is applied, compliance requires that trail managers consider accessibility

through a trail analysis process. Trail managers must analyze their trail design to see if they can meet the technical provisions, which define the parameters under which a trail can then be called "accessible." The process of applying FSTAG requires a significant amount of technical measuring and documentation, especially regarding conditions for departure from the guidelines and technical provisions.

In fact, the FSTAG recognizes that 100% accessibility will not always be feasible or possible due to the natural terrain, existing vegetation, or other constraints. To protect the unique characteristics of the outdoor environment and trail recreation opportunities, exceptions and deviations from some technical provisions are permitted where certain circumstances, called Conditions for Departure, apply. Section 7.1.1 of the FSTAG identifies four conditions for departure. Circumstances under which exceptions can be made due to the conditions for departure are not the same for every situation.

Conditions for Departure

The following are the four conditions for departure that permit deviations from specific technical provisions where allowed by an exception:

1. Where compliance would cause substantial harm to cultural, historic, religious, or significant natural features or characteristics.

This may include a large boulder or rocky outcrop, body of water, unique vegetation, or area protected under federal or state laws. An example of this would be McAfee Knob in Virginia, or the summit of Katahdin.

2. Where compliance would substantially change the physical or recreation setting or the trail class, designed use, or managed use of the trail or trail segment or would not be consistent with the applicable forest land and resource management plan.

The FSTAG recognizes the value of the full range of recreational opportunities by allowing exceptions where compliance with the technical provisions would change the nature of the recreation opportunities or conflict with a resource management plan. People using primitive trails experience the outdoor environment in a nearly natural state. There is no requirement to dynamite or pave to provide accessibility if doing so would unacceptably change the character of the setting and the recreation opportunity.

3. Where compliance would require construction methods or materials that are prohibit ed by federal, state, or local law, other than state or local law whose sole purpose is to prohibit use by persons with disabilities.

This condition for departure is best illustrated by example. Federally designated Wilderness

areas prohibit use of mechanized equipment, so if a technical provision can't be accomplished with hand tools, this condition for departure will apply if an exception is not allowed. This condition for departure may also apply in areas where imported materials such as soil stabilizers would alter the integrity of the resource, or in designated wetlands or coastal areas that are sensitive to imported materials, or where federal statues such as the Wilderness Act, Endangered Species Act, or state and local law impose restrictions to address environmental concerns, or where water crossings are restricted to safeguard aquatic features that are protected under federal or state laws.

4. Where compliance would not be feasible due to terrain or prevailing construction practices.

The phrase "would not be feasible" in this condition for departure refers to what is not reasonable, rather than to what is technically impractical. This condition for departure applies when the effort and resources required to comply would be disproportionately high relative to the level of access created. For example: It may be possible to provide a trail with a maximum 1:20 (5%) grade up a 1,500-foot mountain using heavy construction equipment. However, the trail would be about three times as long as under a traditional backcountry layout, which could cause inappropriate environmental and visual impacts as well as more than tripling the time, cost, materials, and amount of disturbed ground required for construction. The intent of this condition for departure is to ensure that compliance with the technical provisions of the FSTAG does not require the use of construction practices that are beyond the skills and resources of the organization building the trail.

Using the General Exceptions in the FSTAG

The general exceptions provide relief from the technical provision when a combination of factors may make it impractical to make an entire portion of trail accessible. For example, many trails have environmental barriers that are so severe or numerous that a trail through an area can't be modified to meet the intent and objectives of an accessible hiking opportunity. The exceptions do not necessarily provide relief for entire section of trail, just the section in question as you'll see in Step 2 and Step 4.

General Exception One addresses situations where extreme but not uncommon environmental factors could render compliance with the technical provisions impractical. General Exception One is concerned with the presence of limiting factors of grade, surface, and tread width and obstacles. Step 2 determines if General Exception One can be applied.

General Exception Two provides that when one or more conditions for departure exist that result in deviations from the technical provisions for over 15% of the length of the trail, the technical provisions only apply to the segment between the terminus and the first point of deviation if that segment is more than 500 feet long. If that section is less that 500 feet in length, then the technical provisions do not apply to the trail, except when a prominent feature is located between the terminus and the first deviation, then the technical provisions apply up to the prominent feature. Step 4 walks you through this.

Step 2: Identifying the Presence of Limiting Factors

The sequence for identifying the limiting factors may vary and does not need to be done in the order illustrated in the Process Overview Chart, found in Appendix A. Generally speaking, the Process Overview Chart works you through these questions:

1. Does the combined trail grade and cross slope exceed 20 % for 40 feet or more? (see Chapter V – Design Principals)
2. Is there a condition for departure, does it occur more than 500 feet from the trail terminus?
3. Is the surface not firm or stable for at least 45 feet?
4. Is the trail width 18 inches or less for a distance of at least 20 feet?
5. Is there a trail obstacle at least 30 inches high?

If you find a limiting factor where a condition for departure applies, there's no reason to evaluate the trail beyond that point. Just look at the section between the limiting factor or prominent feature and the beginning of the trail. If there are no limiting factors that would prevent compliance with the FSTAG, proceed to Step 3.

Step 3: Applying the Technical Provisions

This step involves looking at FSTAG technical provisions located in sections 7.3.1 through 7.3.8, which are the provisions for trail grade, cross slope, resting interval, surface, clear tread width, passing space, tread obstacles, protruding objects, and openings. The Process Overview Chart only summarizes the requirements for trails. Designers must refer to the FSTAG for detailed instructions, definitions, and technical provisions 7.0 through 7.3.10.

A series of questions with yes or no answers is asked for each of the provisions listed above, similar to Step 2. Let's take Trail Grade as an example.

First, look at the existing conditions on the ground and determine if the trail alignment complies with the required grades (1:20 (5%) for any distance, 1:12 (8.3%) for up to 200 feet, 1:10 (10%) for up to 30 feet, etc.). If not, is there a condition for departure which would prevent adjusting the trail alignment or making other changes to achieve compliance? If a condition for departure exists, measure and record the length of the deviation and proceed to the next provision. If the trail alignment complies with the required grades or there is no condition for departure, compliance with the provision for trail grade is required.

Each technical provision is addressed in a similar manner. A determination is made for every provision: either compliance is required, or deviations are permitted. Be sure to measure and record the length of each deviation for a particular provision. Once you have worked through the technical provisions, proceed to the last step.

If at any point during Step 3 you find that the recorded length of deviations from the provisions adds up to 15% or more of the total trail length, proceed directly to Step 4.

Step 4: Calculate Cumulative Deviation Percentage

This is the final step in determining how much of the trail could comply with the FSTAG as addressed by General Exception 2.

- Tally up the measurements of permitted deviations from Step 3.
  If they occur on less than 15% of the total trail length,
  the FSTAG technical provisions apply to the entire trail.

However, if the length of permitted deviations is 15% or more of the total trail length, the FSTAG applies to only part of the trail, or may not apply at all:

- If the first deviation occurs more than 500 feet from the trail terminus,
  then apply the FSTAG from the terminus to the first deviation.

- If the first deviation occurs less than 500 feet from the trail terminus
  and there is a prominent feature, then the FSTAG applies from the trail terminus
  up to the prominent feature.

- If the first deviation occurs less than 500 feet from the trail terminus
  and *there is no prominent feature*, then the FSTAG does not apply to the trail at all.

That's all there is to it! The Process Overview Chart is shown in Appendix A.

Documenting Decisions

Once a determination is made regarding the FSTAG, section 7.1.3 of the FSTAG requires documentation of the determination be saved in the project file. The documentation doesn't have to be anything elaborate, and there's no required format. A single page stating how and why the determination was made, which conditions for departure and exceptions apply to what trail sections, the date, and the names of the people who made the decision is sufficient. You simply have to establish that FSTAG was utilized at the onset of the project and that a good-faith effort was applied to the consideration of accessibility. A decision not to make a trail accessible is an important decision that will affect both current and future trail users and managers. The documentation is required to assure that the decision can still be understood if the people involved are no longer available.

B. Implementing the FSORAG: Trail Facilities

FSORAG and the Appalachian Trail

The federal accessibility laws require that new facilities constructed by or for Federal, State, and local government organizations, as well as facilities provided for the public by other entities, must be accessible in accordance with the accessibility standards in place when the facility is constructed. No entity has the authority to overrule those facility accessibility laws because they think a person with a disability won't go there. All newly constructed trail shelters and privies are required to meet the guidelines.

The decision process should include, "how do we make the facility accessible with as primitive a design as possible?" The challenge is ensuring that anything built along the A.T. is designed appropriately for a primitive setting and that the facility can be used for its primary purpose by all hikers, including hikers with disabilities.

FSORAG is the U.S. Forest Service's standard for compliance with federal laws in outdoor recreation areas. FSORAG provides technical specifications for outdoor recreation facilities that are not addressed in the ADA/ABA Accessibility Guidelines (ADA/ABAAG). FSORAG is the best guidance currently available for accessible facilities on all A.T. lands.

The Key Design Concepts and measurements below apply to all constructed features, and should be considered in planning decisions. If only one type of each constructed feature is provided, it must meet the technical provision; if more than one of each feature is provided, then at least one of each must meet technical provisions. For guidelines and technical provisions including ADA/ABAAG go to: www.fs.fed.us/recreation/programs/accessibility/

1. Key Design Concepts and Features

Transfer height: height between ground and feature that one uses to transfer between wheel chair to constructed feature.

a. Always between 17" - 19" inches high.
b. This includes shelter floors, tent platforms, bench seats, transfer areas, etc.

Doorways and ***openings***: must be at least 36" clear width and open outward.

Side Trail:
The trail between a shelter and trail, shelter and privy, privy and trail etc. is not an Outdoor Recreation Access Route (ORAR), but should follow FSTAG.

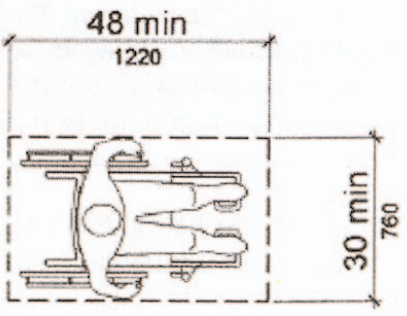
Reach Range: area one uses to utilize an element; may be up, down or at chair level.

a. 15” - 48” in height, and for shelves 22”- 25” in depth.
b. This includes shelves, pegs, etc.

Edge Protection**:** if provided for ramps, platforms, etc., at least 3” high.

Clear Ground Space: area that allows for direct or side approach to, or use of feature.

a. 30” by 48” area.
b. Must be firm and stable.



Clear Floor or Ground Space
Required by FSORAG

Slope of element: no more than 2% in any one direction, if drainage required no more than 3% allowed.

Steps: ONLY as a last resort at locations are in a site where there is not enough side slope, steps to a structure must function as transfer platforms.

a. The treads must be at least 14” deep and 36” wide.
b. One step must fall 17” to 19” above the center of the clear ground space.
c. Step risers should be 6”, or 9” (max).
d. We strongly encourage you to AVOID STEPS!

Boardwalks:

a. Width of at least 36”.
b. If it has edge protection follow specs for that. Boardwalk gaps should have gaps less than 1/2” wide.
c. Transfer area from ground to board or to floor must be less than 1” high.

The Mountaineer Falls Shelter in Carter County, Tennessee, built in 2006 and maintained by the Tennessee Eastman Hiking Club. This A.T. shelter provides an accessible entrance, area platform, pegs, and fire ring.

Railings: Are required when a feature sits at least 30" off of the ground.

a. Must be 42" high.
b. Openings must be small enough to prevent a 4" sphere from passing through.
c. Choose vertical versus horizontal slats.
d. Guardrails: protect people from drop-offs over 30" high, see International Building Code (IBC) 1003.2.12.
e. Handrails: provide steady grip when going up or downstairs or inclines, see IBC 1003.3.3.11 and ADA/ABA section 505.

2. Overnight Sites:

Dining and work surfaces: include but are not limited to bars, tables, counters etc.

a. Height of top of surface always between 28"-34".
b. Must include toe clearance/knee clearance below table surface.
c. This would include picnic tables, or shelves we provide for stoves, etc.

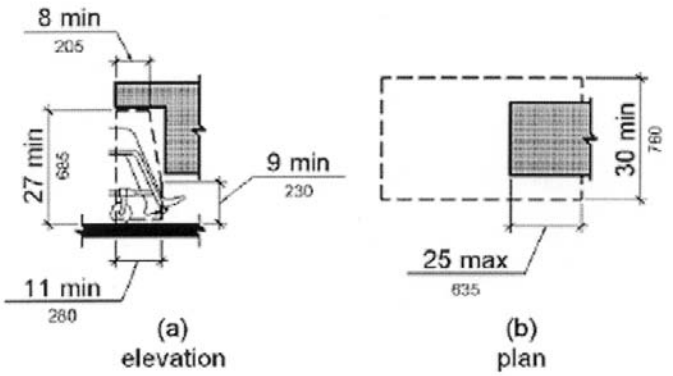
Picnic tables:

a. Dimensions: at least 27" high, 30" wide and 19" deep.
b. At least one wheelchair accessible seating space must be provided with 30" by 48"

of clear floor space and clear ground space 48” around usable portion of the table measured from the accessible seat but may be reduced to 36” if a condi tion for departure exists.

Knee and Toe Clearance: area underneath a table/shelf that allows for toes and knees to clear element.

a. Knee Clearance Minimum 27” high, 30” wide, and 19” deep.
b. Toe Clearance Minimum 9” high, extended at least additional 5” from the knee clearance.



Knee and Toe Clearance required by FSORAG

Benches:

a. Must be at least 36” long and between 17’ to 19” in height.
b. Back support must run entire length of bench.
c. Entire bench must support 250 pounds of pressure.
d. At least one end of bench must have adjacent clear ground space.

Fire Rings:

a. Must be at least 9” above the ground or floor surface, unless a Condition For Departure (CFD) exists.
b. Cannot exceed 24” in reach, unless CFD exists.

Food Hangs/Bear Boxes: Must meet technical provisions for clear ground space and “controls and operating mechanisms,” (ADA/ABAAG sections 308 and 309).

Shelter:

a. Two story/lofts: If a shelter design contains a sleeping loft and/or a second story, there must be at least one area of ground level or finished floor sleeping space that is accessible and usable for person's with disabilities.
b. The shelter "doorway" or opening into a shelter must be at least 32" wide.

Tent pads:

a. Dimensions: 48" of clear ground space (13' by 16' for average 5' X 8' backpacking tent) may be reduced to 36" if CFD exists.
b. If more than one pad is provided, 5 % of all pads must be accessible.

Bulletin Boards, Register Boxes, and ***Signs***: between 48" and 15" high. Must meet technical provisions for clear ground space and "controls and operating mechanisms," see ADA/ABAAG, sections 308 and 309.

3. Privies

Walls: are not required for an accessible privy, if provided they require:

a. grab bars and must support a 250 pound shear force applied to a grab.
b. The center line of the toilet riser must be 18" from the back wall, with the back of the riser against a side wall, and facing the other side wall.

Toilet Riser:

a. Vertical sides and a flat ledge on either side approx. 3" wide,
b. Back rest (seat cover can serve that function).
c. There must be a flat, clear space around the toilet riser measuring 60" X 60".

Grab bars:

a. must be 33" to 36" above and parallel to the floor.
b. One must be on the side wall starting 6" from the back wall and extending 36" across the toilet riser.
c. One must be on the back wall next to the riser, at least 42" in length, starting no more than 12" from the side wall.
d. A 2" X 4" on edge may serve as a grab bar. There may not be more than a 1.5" space between the grab bar and the wall.

Trail managers check out the Green Mountain Club's Churchill Scott accessible privy in Vermont. Note the wider door, slightly larger footprint to allow for turning radius, and ramp instead of steps.

For accessible privy, shelter, and other designs check with your ATC field office or agency partner.

Mouldering Privies: Where possible, dig the privy crib into the side of the hill and cantilever the floor, and doorway, to rest on a support at grade on the hillside, or provide a landing outside the door with an at-grade transition from the privy access trail. Where this is not possible, a boardwalk should lead to the door with a grade of 5% or less.

III. CASE STUDIES

The following case studies are intended to provide trail managers with a review of some of the factors and decisions involved with the creation of four trails, each of which has a goal of accessibility at the outset. In each case, there was no requirement to apply FSTAG or make the trail accessible; compliance was voluntary. In each case, trail managers felt there was an opportunity to create an accessible trail section that would not compromise the primitive nature of the Appalachian Trail, or that the experience itself lent itself to accessible design parameters. After the case studies, key similarities and lessons learned that could be applied to your project and decision making will be covered.

Each includes:

- Description of site
- Trail use history
- Design challenges in terms of meeting the technical provisions
- Cost analysis
- Outcomes- how did/does it work?
- Long term management plan

Interviewing club and agency decision makers on site for the case studies:
Clockwise from top left: Osborne, Bear Mountain, and Falls Village.

CASE STUDY: Osborne Farm Shady Valley Overlook Trail (A.T.)

Location:	Shady Valley, Tennessee
Status:	Accessible trail constructed in 2006 to replace existing A.T. section
Features:	Views, overlook of Shady Valley
Accessible Trailhead:	Installed for Relocation
Length:	.7 miles
Elevation gain/loss:	100 ft.
Local Club:	Tennessee Eastman Hiking Club (TEHC)

Summary:

An accessible trail has been constructed to replace a section of the A.T. located on a deteriorating farm road. The accessible trail section starts at an accessible trailhead and moves through rolling hay fields along a hilltop to a panoramic view of Shady Valley, Tennessee. Beyond the overlook, the A.T. will continue north but not be accessible.

Background:

The original route of the A.T. was along the farm road through the 250 acre Osborne Farm atop Cross Mountain, but was moved to USFS land to the south because the Osborne Family would not sell their tract to protect the A.T. When the Osbornes decided to move, they sold their farm to the USFS and in 2001 the A.T. was restored to its historic route. Wide open views from pastures and hayfields on the farm overlook Shady Valley, Tennessee, an area known for its cranberry bogs and large timber, and north to Mount Rogers in Virginia. After the acquisition of the farm, TEHC, the local A.T. club, and Morgan Sommerville, ATC Regional Director recognized the accessibility potential of the open fields at the top of the hill and asked the USFS if accessibility should be considered in the relocation of the A.T.

The club agreed to incorporate accessibility into their design and in 2001 came up with a designed route based on the Access Board's outdoor reg/neg committee findings. NEPA scoping of the route was initiated and completed. Willing to use the proposed relocation as a demonstration project, the TEHC, ATC and USFS agreed to present the proposed relocation at a USFS Accessibility training workshop in Cincinnati to discuss the design and determine whether it met the proposed USFS FSTAG guidelines. Much to the surprise of TEHC and ATC, the group determined that the proposed Osborne relocation met several exceptions in the USFS FSTAG process and the FSTAG did not require that the relocation be built to accessible standards. However, the lay of the land and the scenic features lent themselves to an accessible A.T. section, a very rare occurrence along the A.T.'s southern region. The decision was made to proceed with an accessible relocation to the high point of the tract, pending funding. Following adoption by the USFS of FSTAG, the designed route was re-checked for compliance with FSTAG technical specifications, and the green light for construction was given. The Forest Service has been very active in and supportive of the project, and as part of the relocation, the agency constructed a new parking lot on the east side of Tennessee Route 91 with an accessible space on the west side of the road where the accessible trail will start.

The gentle landscape of the Osborne Tract is perfectly suited for the construction of an accessible trail. The ridge top location, its sweeping views of the valley, along with the agrarian setting provide attractive features.

Design Considerations:

The greatest challenge posed by design of this trail was in combining an accessible route with a hiker route through open rolling fields. Routes that don't provide the hiker a reasonable opportunity to travel maximum distance with minimal expense of energy will risk being bypassed, particularly when the grass is low. The club has recognized this possibility and has kept any turns on the trail extremely gentle, with the alignment generally headed directly or near directly to where the route disappears over the next hill.

Moving into the field from the accessible parking lot required installing a sidehill ramp into the bank to get up from the sunken farm road, and has the steepest grade of the trail- much of the trail in the fields has grades of 2-5%. This ramp from the parking space also required cribbing, as it needs to switchback on itself near the top of the ramp to turn back to the direction of the fields and to utilize an opening in a fence just adjacent to the old farm road. The required average grade on this trail is 2.6% in order to gain the 100 feet in elevation from the parking area to the overlook at Shady Valley in .5 miles. With this generally below the "go forever" accessible grade of 5%, getting an accessible grade on this trail was not a problem.

The club's design standard for this trail was a 36" wide trail. The contractor excavated the location for the tread to a depth of 6 inches, then laid down geotextile fabric and filled with ABC aggregate (a.k.a. "road bond"), a combination of different sizes of sharp gravel and stone dust. The contractor mechanically tamped the ABC aggregate to provide a durable, firm, and stable trail tread. One of the clubs biggest concerns is the growth of grass and weeds on the edge of the trail that will eventually work their way into the tread itself. They are also designing the tread to be flush with the height of the hay field so that the trail will not be an impediment to mowing the hayfield, and so water will be able to flow across the trail, rather than being caught on the uphill side of a built up trail. The club has also specified the installation of grade dips every 200' to disperse any water that accumulates on the trail and also to serve as a rest spot for wheelchair users. This meets the FSTAG technical specifications for accessible trails up to an 8% grade, as well.

Soils here are typical of hilltop hayfields: well drained and with few, if any, rocks. Though the sunken road has eroded to the sandstone bedrock found here, soils appear to be adequately deep in the hayfields. The only vegetation on the route is grass, except in the locations where the trail passes through tree-shaded fencerows. The trees are almost exclusively locust and often have sizeable poison ivy vines climbing their trunks.

Funding:

Construction of the accessible trail was paid for by a grant from the Weyerhauser Foundation. The contractor was paid $7 per linear foot and $35 per grade dip. The project included 2543 linear feet of tread construction and 12 grade dips. One additional dump truck load of road bond was also purchased for $367. The total contracted cost of the project, less the extra road bond, was $18,221.

What's next?

The TEHC and ATC will design and install accessible walk thru's or stiles in the fences crossed by the Osborne accessible relocation. Approximately five fences are crossed by the relocation. Locust posts for trail blazes will also be installed at appropriate intervals along the relocation. Consideration will be given to adding two natural-appearing rock benches along the route, one where it passes under a maple tree at the top of the first hill (the approximate half-way point), and one at the northern terminus of the accessible portion of the relocation.

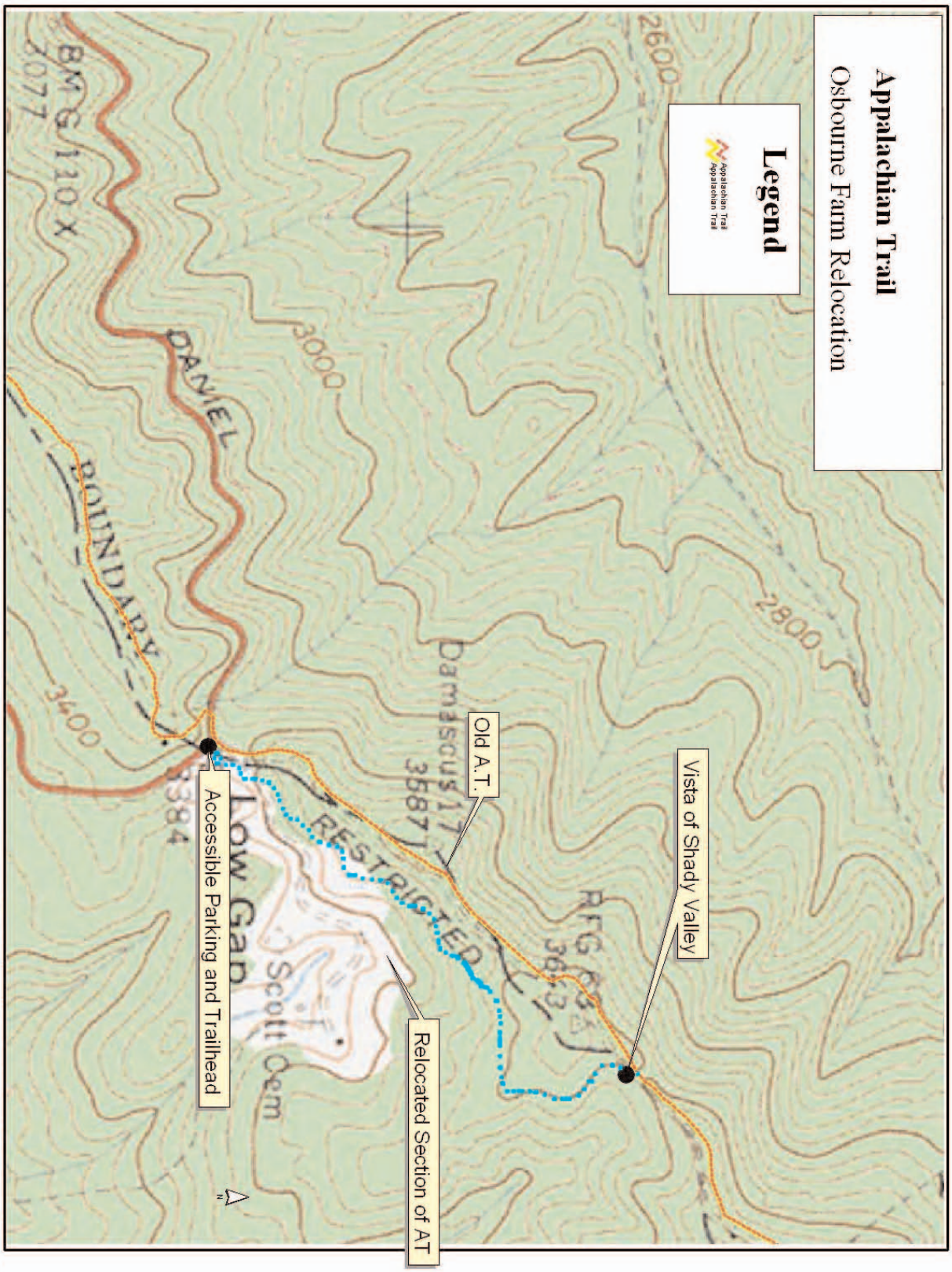
The trail was constructed in spring/summer of 2006. Maintenance of the trail will be done by TEHC, the local A.T. club, in cooperation with ATC and the USFS. The relocation will be monitored for the need to regrade or add more gravel to the tread. A pile of gravel was stockpiled close to the middle of the relocation to use for future maintenance of the trail tread.

Would they do it again?

Morgan Sommerville, ATC Regional Director, answered this question by saying, "It is a good location for an accessible trail. I hope people with disabilities will find their way there and enjoy this accessible trail! The accessible trail is in a better location, scenically, than the original route of the A.T., which followed the farm road through the pastures. Therefore, we have actually improved the character of the A.T. on the Osborne Tract. Of course, we could have marked a route in the same location with no construction!"

Morgan noted some problems with grass growing in the tread, but said " ….if we get that resolved, and maintenance costs are not too high, I would do it again. We have no feed back from hikers yet. We'll have to wait until next year for that."

The Bristol Herald Courier covered this accessible portion of the A.T. on December 11, 2006. See the story at:
www.tricities.com/tristate/tri/search.apx.-content-articles-TRI-2006-12-11-0036.html



Map Produced By: Applachian Trail GIS - March 2007

CASE STUDY: George Pearis Cemetery Trail

Location:	Pearisburg, Virginia
Status:	Accessible trail proposed; to replace existing trail
Features:	Historic Cemetery, views of New River
Accessible Trailhead:	Proposed
Length:	.4 miles (current trail)
Elevation gain/loss	111 ft.
Local Club:	The Roanoke A.T. Club (RATC)

Summary:

An accessible trail is proposed to replace an existing blue blazed side trail that connects a currently non-accessible A.T. informal access point just southeast of an area known as Bluff City along the New River, in Pearisburg, Giles County, Virginia. The A.T. crosses this blue blazed trail just 100 yards Trail West of the cemetery, which is located on a knoll 111 feet directly above the parking area.

Background:

The George Pearis Cemetery, located on the top of a knoll overlooking the New River and Virginia Route 460, is the final resting place of Capt. George Pearis, a revolutionary war veteran and the founder of Pearisburg. Approximately two hundred other people are buried in the cemetery, including at least two confederate Civil War veterans. The last internment in the cemetery occurred in the 1930's.

Encroaching vegetation and neglect have taken a toll on the cemetery. Many of the headstones are now on the ground and in poor condition. At one time, a wire fence enclosed the cemetery, but is now on the ground. The brick enclosure around Capt. Pearis' grave is damaged and needs repair. The Daughters of the American Revolution have pledged to repair and maintain the cemetery, once they have reliable access.

The local trail club, RATC, maintains both the A.T. and the blue blazed cemetery trail. The cemetery trail has been improved over several years by college students on spring break, and the trail has good to excellent sidehill construction.

The A.T. currently crosses the .4 mile blue blazed trail to the cemetery about 100 yards from the cemetery. The A.T.'s location here is not optimal, as there is currently no reason for the trail to go to the top of the knoll, with the exception of the cemetery, which is the only feature on the wooded top.

Both the club and the ATC regional office in Blacksburg have been looking at the cemetery trail as a potentially accessible trail. Reasons cited include the designation as a trailhead location for the A.T., community interest in maintaining the cemetery, the cemetery as a promi-

The hilltop George A. Pearis Cemetery in Pearisburg, Virginia. The New River is visible behind Pearis' grave (R). Pearis was a revolutionary war veteran and founder of Pearisburg. The Cemetery also contains the graves of at least two confederate Civil War veterans.

nent feature, the fact that many of the cemetery visitors have disabilities, and the potential to provide opportunities for a wider range of users of the area.

Design Considerations:

The current blue blazed route approaches the cemetery from a designated parking area in a field by sidehill construction with one switchback. The average fall line grade on the southwest side of the knoll, below the cemetery, is approx. 40%. Unfortunately, the current trail has grades at the bottom of 20% and enters the cemetery below the desired location, making it difficult for a retrofit. A trail designed to meet accessible trail specifications would need to be constructed anew. With the cemetery located 111 vertical feet directly upslope of the trailhead, a .4 mile trail gaining that elevation will average 5.25.%, well within FSTAG's requirements for grade. NPS ownership of the entire hill offers much flexibility for trail location. Ultimately, the location for the trail may be determined by archeological review.

The cemetery is located approximately 60 feet below the top of the knoll on the north end of the knoll making a wraparound or spiral alignment of the new trail appear infeasible, unless additional trail length was desirable. A spiral alignment would also not provide any additional views unless views were cleared. The most likely alignment would be a sidehill trail headed south from the trailhead with one switchback after approximately half of the needed elevation was gained.

The average fall line slope on the south length of the knoll is closest to the river is around 40%, declining as the slope moves to the southeast. The knoll is wooded with the dominant tree species of cherry and locust, with smaller amounts of cedar. The understory is dense in places with wild grape, kudzu, poison ivy, multiflora rose and greenbriar. Soils appear to be clay, and relatively stable. There does not appear to be any ledge on the knoll that would inhibit trail design. No large rocks were apparent, either.

Left: Side trail to Pearis Cemetery. Only the upper portion of this trail could be retrofitted to be made accessible, the bottom section is too steep.

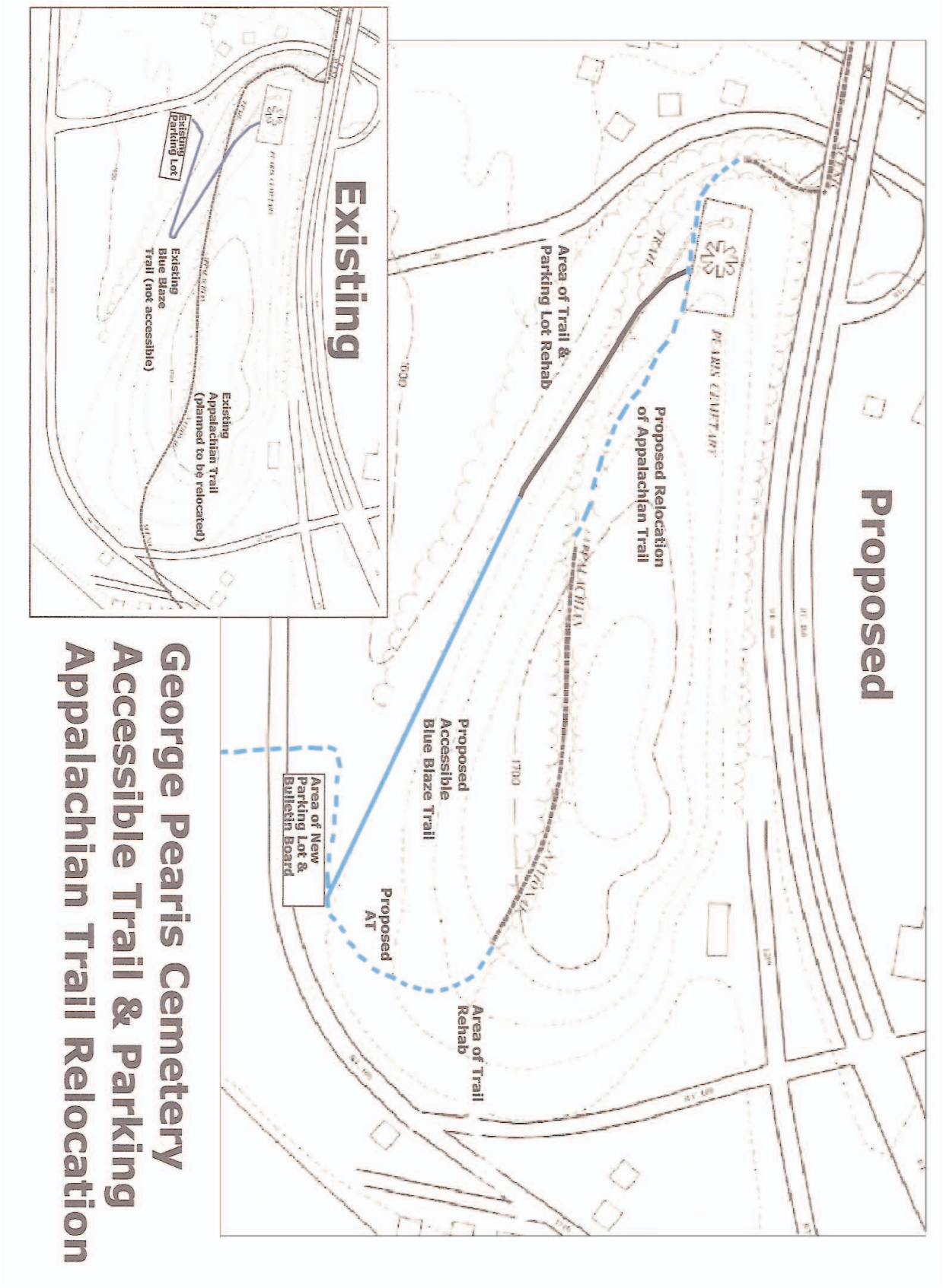
Right: The Pearis Cemetery is at the left end of this hill (a.), 111 feet above the proposed parking area (b.). An accessible trail would need much of the length of the hill to reach the Cemetery at an accessible grade.

Funding:

At this point, ATC and the local club are expecting to apply for a Recreational Trails Fund (RTF) grant through the Virginia Department of Conservation and Recreation. By fully valuating volunteer labor, and through additional contributions from ATC and the Forest Service, the Club and ATC expect to pay for all direct construction costs with an RTF grant. The Pearis cemetery Committee, the Town of Pearisburg, Giles County, ATC, and the USFS have committed to long term maintenance of this site and area.

What's next?

The Trail Partners have identified two alternatives. The fist option includes combining the A.T. and the blue blazed trail from the proposed trailhead area (b. on the map). this route would climb at a 2-3% grade with one grades "s" curve and proceed for 1000 feet to a point where it would connect with the existing blue blaze. Approximately 200 feet Trail north of this point, the A.T. would turn and head to the New River and the blue blaze would continue in its existing location 100 yards to the cemetery. The second alternative would leave the two trails separated and would require rehabilitation and minor realignment of the blue blaze, and relocation of the A.T. to the point where the two trails currently intersect. Both alternatives will meet accessible design parameters, but the final route will be determined by archeological review of the area.


George Pearis Cemetery
Accessible Trail & Parking
Appalachian Trail Relocation
Existing
Existing Parking Lot
Existing Blue Blaze Trail (not accessible)
Existing Appalachian Trail (planned to be relocated)
Proposed
Area of Trail & Parking Lot Rehab
Proposed Relocation of Appalachian Trail
Proposed Accessible Blue Blaze Trail
Proposed AT
Area of New Parking Lot & Bulletin Board
Area of Trail Rehab

CASE STUDY: Bear Mountain (A.T.)

Location:	Bear Mountain State Park, New York
Status:	Accessible trail laid out on summit; A.T. section from lawn area to summit will have universal design enhancements.
Features:	Very heavy use, multiple views of Hudson River Valley; views of New York City skyline.
Accessible Trailhead:	Yes
Length:	1.4 miles (relocation from lawn area to summit) .5 miles (accessible trail on summit)
Elevation gain/loss:	1085’
Local Club:	New York/New Jersey Trail Conference (NY-NJTC)

Summary:

An accessible trail, part of which will become the A.T., has been designed to provide users at the Bear Mountain summit with a short route to an overlook with views to the north. The section of A.T. southbound from the main park “lawn” area to the summit, which is now being reconstructed, was investigated for accessibility, but has serious grade and terrain challenges. This section will be reconstructed not as an accessible trail, but with considerable universal design enhancements.

Background:

The first section of the A.T. was opened on Bear Mountain in 1923. Today, Bear Mountain is one of the most heavily used urban parks in the Northeast. It is estimated that between 1.5 and three million people visit just the “lawn” area, which is also the trailhead to the A.T. and it’s route to the summit, each year. The trailhead is accessible by bus and train from New York City, and many of the visitors to the park speak Spanish, Korean, Hebrew, or many other languages, and may only speak English as a second language. The immediate area around the “lawn” and trailhead also features a carousel, zoo, and museum. It is safe to say that most of the Bear Mountain’s visitors are not coming to hike the A.T., but rather just to get out of the city for a day. There are limited facilities for thru-hikers in the park, and they are likely to stop only for mail and a soda. Trail signage is scarce at best and in English only.

The A.T. from the lawn to the summit is paved in sections with the pavement in poor condition; in others it is deeply eroded. The A.T. also winds through the woods and does not provide a particularly direct route to the summit, partially due to a large talus slope and cliffs between the summit and lawn. Numerous unmaintained herd paths leave the A.T. where visitors have headed out for a more direct route to the summit.

In 2001 the project partners, including New York State Office of Parks, the NY-NJTC, ATC, the National Park Service (NPS), and Palisades Interstate Park Commission began planning for the project, ultimately deciding to relocate the majority of the A.T. between the lawn and summit due to its somewhat impractical location and deteriorating condition. The ATC and

Left: The summit of Bear Mountain viewed from the “lawn”. With three million visitors per year, it is arguably the busiest trailhead on the A.T.

Right: The A.T. as it leaves the lawn area for the summit.

the NY-NJTC hired Peter Jensen, a professional trail designer/builder, to design a new route to the summit, and to do so on grades and in terrain where building some accessible trail would be possible.

Just as the A.T. leaves the lawn area, a small former toilet building will be renovated as an interpretive facility for trail construction. A “green paved” accessible trail will be built from the lawn area to the building. Displays and examples of stone culverts, sidehill construction, and other trail building elements are proposed.

Jensen was also contracted to lay out an accessible trail on the summit. The summit is another busy area, with a viewing tower and an auto road that visitors can drive up.

Design Considerations:

Though both sections have now been designed and construction has started on the middle part of the A.T. relocation, the relocation was not able to be designed as fully accessible due to terrain limitations and the change in hiking experience that would be required to make the trail accessible. Steep grades, ledges, and a significant talus slope will result in trail grades and obstacles that will not meet accessible guidelines, despite the best efforts of designers. The cross slope, surfacing, protruding objects, and other elements will meet accessible standards. Consecutive steps will be kept to a minimum, but the bottom portion of the trail will have over 700 steps. The steps will be designed to not exceed 8 feet of rise. Width will vary from 3-5 feet, depending on terrain. A few sections will have widths of less that three feet. Although it will not be possible to build this relocation to strictly accessible standards, the application universal design will result in enhanced access for many users on virtually all sections of trail. The NY-NJTC describes the overall design and enhancements as “novice friendly.”

Left: Typical Bear Mountain slope: steep and rocky.

Right: Universal design principals were incorporated into the design for the reconstructed A.T. To make the trail fully accessible would have resulted in a change of character for the trail and its environment.

The Rutgers University School of Landscape Design held a two part charette to generate consensus among the management partners and other stakeholders such as botanists and historians. The new trail route roughly follows the charette's result, with the trail designers making final adjustments. It is expected that the trail on the summit will be fully accessible.

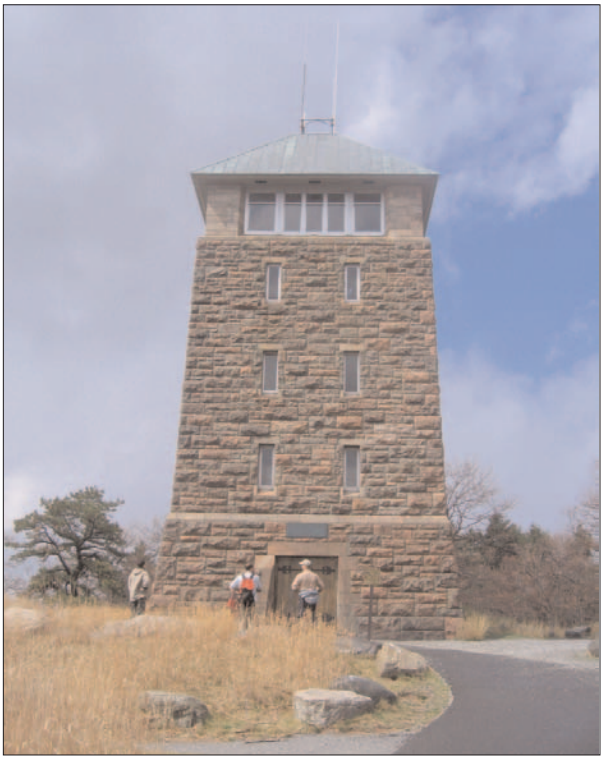
Funding:

The NY-NJTC is taking a creative approach to the project in viewing it as an excellent five year opportunity to recruit and train new volunteers. Much of the trail will be built with volunteers but expenses will still be substantial, as training, equipment, and supervision will be required for all volunteer work and training.

The NY-NJTC is estimating the entire project to cost in the range of one million dollars. In order to keep the project rolling, the NY-NJTC raised $250,000 to pay the salary of a project manager for the life of the project.

For 2006, NPS, NY/NJTC and ATC have come up with $263,000 for salaries and benefits, supplies, materials, and equipment, contracts, and SCA crews. Some of the imported crushed stone for the trail has been donated. Annual operating costs for the project are expected to dip a bit as the bulk of equipment purchases were made this year, but materials cost will also increase in coming years.

Design and construction details for both the summit accessible trail and the A.T. from the lawn area to the summit have not yet been finalized, and detailed cost per mile estimates for each trail will not be available until that time.



Perkins Memorial Tower on the summit of Bear Mountain. The accessible trail planned for the summit will go north from the A.T., tower, and parking area to an overlook of West Point and the Hudson River.

What's next?

The trail partners have begun construction of the middle section of the A.T., using volunteers under the direction of Eddie Walsh, the NY-NJTC's staff project coordinator. All told, the relocation is expected to take between 5-10 years to complete. Construction of the trail began in the spring/summer of 2006. Maintenance of the trail will be done by the NY-NJTC. For a comprehensive project overview go to: www.nynjtc.org/BearMountainTrails/

Would they do it again?

Though the construction of the accessible trail on the mountain and the relocation of the A.T. has just started, the project has been in the works for several years. Ed Goodell, Executive Director of the NY/NJ Trail Conference responded to this question with a resolute "absolutely!" He had two reasons. First, he said he knows many people with disabilities- family, friends, and others - who would "absolutely love the trail." Secondly, he noted that the trail would have a "populist appeal" to a much broader segment of the population, including those who are not comfortable with "hiking." Ed said expects that the accessible trail "will become a favorite place for many."

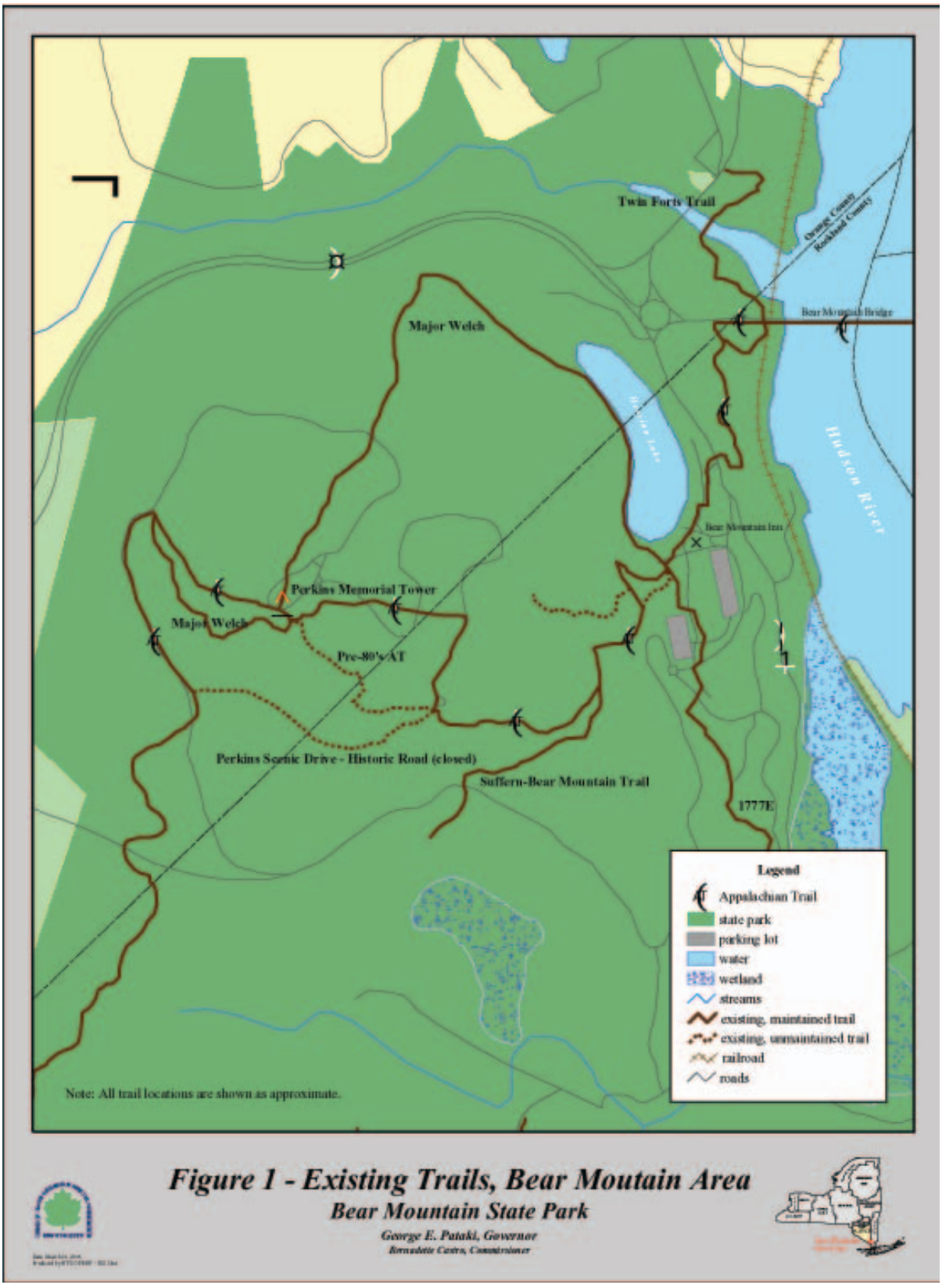
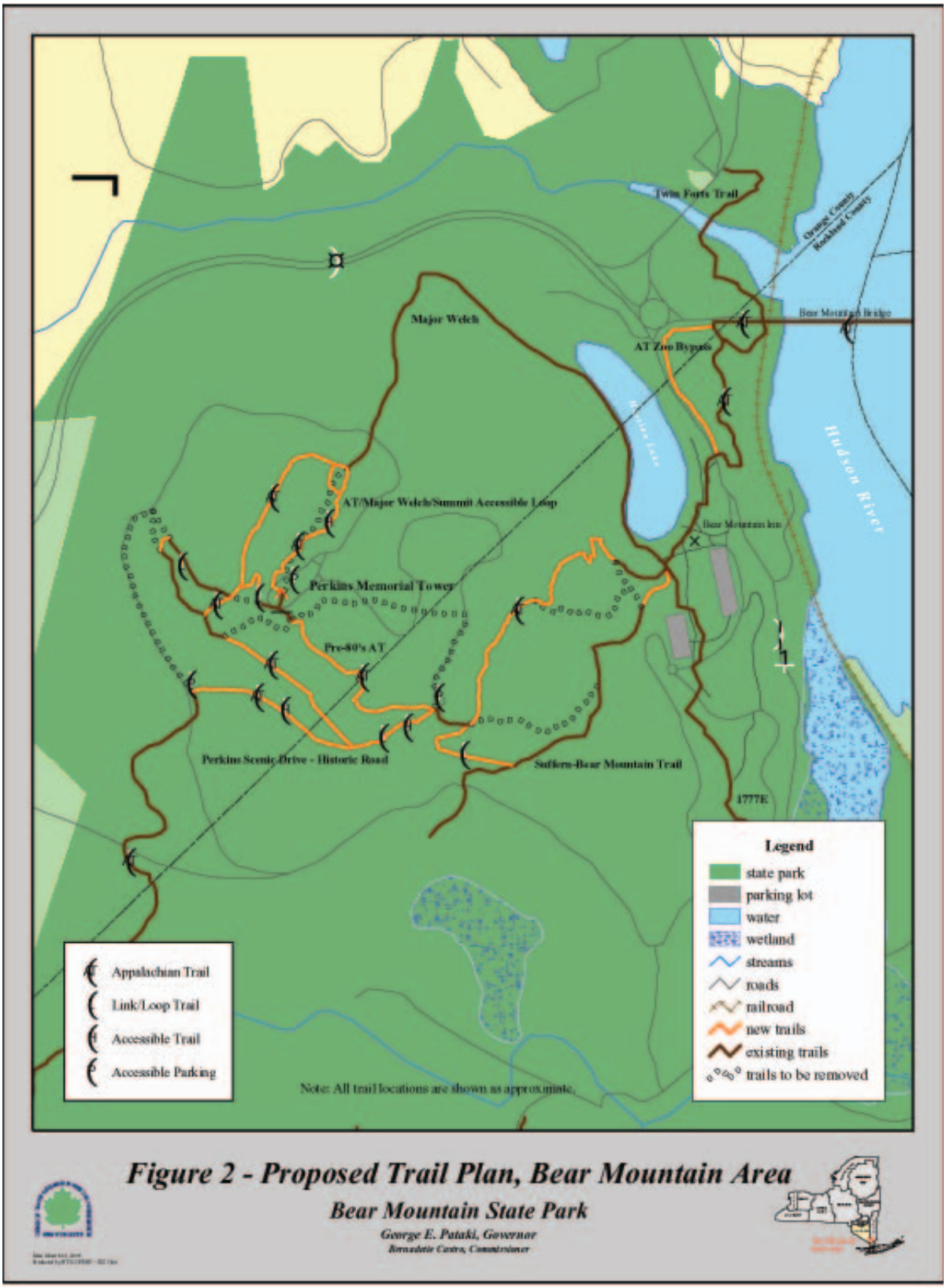


Figure 1 - Existing Trails, Bear Moutain Area

Bear Mountain State Park

George E. Pataki, Governor

Bernadette Castro, Commissioner


Twin Forts Trail
Major Welch
AT Zoo Bypass
Bear Mountain Bridge
Orange County
Rockland County
Hudson River
AT/Major Welch/Summit Accessible Loop
Bear Mountain Inn
Perkins Memorial Tower
Pre-80's AT
Perkins Scenic Drive - Historic Road
Suffern-Bear Mountain Trail
1777E
Legend
state park
parking lot
water
wetland
streams
roads
railroad
new trails
existing trails
trails to be removed
Appalachian Trail
Link/Loop Trail
Accessible Trail
Accessible Parking
Note: All trail locations are shown as approximate.
Figure 2 - Proposed Trail Plan, Bear Mountain Area
Bear Mountain State Park
George E. Pataki, Governor
Bernadette Castro, Commissioner

CASE STUDY: Falls Village Accessible Trail (A.T.)

Location:	Falls Village, Connecticut
Status:	Accessible stacked loop constructed in 2000 utilizing a part of the A.T.
Features:	River bank location, interpretive trail, cultural features.
Accessible Trailhead:	Existing
Length:	1.1 miles
Elevation gain/loss:	unknown
Cost per mile:	$54,500 (in 2000)
Local Club:	AMC Connecticut Chapter (A.T. Committee)

Summary:

In 2000, the local A.T. club, in partnership with Northeast Utilities (owner of the first 500' of trail, with a deeded right of way owned by NPS), constructed a 1.25 mile accessible trail, utilizing the existing A.T. as a portion of the accessible trail. The trail is next to the Housatonic River and offers extremely gentle grades- part of the accessible trail is built on a former harness racing track.

Background:

In the late nineties, Dick Blake, a volunteer with the local club, A.T. Committee, proposed the accessible trail. Dick's wife was confined to a wheelchair, and there were very few places for Dick to be able to take her to enjoy the outdoors. The club voted to build an accessible trail at Falls Village, in order to create opportunities for accessible and less rugged recreation on the A.T. In Connecticut, there are very few locations aside from the Falls Village site with suitable terrain. At the time, the Access Board's reg/neg committee was beginning to develop draft standards for accessible trails.

Falls Village is a destination feature along the A.T., with the attraction of the Housatonic River and its banks, abundant cultural and natural features, and very forgiving terrain suitable for accessible grades. The trail is an easy drive from large population centers in Connecticut and New York. Northeast Utilities had an existing interpretive nature trail on the site, and there is easy access on paved roads for importing surfacing material. No demographic research was used for decision making.

In the 1980's, the A.T. was relocated to an existing section of Connecticut Forest and Parks Association trail along the Housatonic River in Falls Village. The area was one of the fastest growing parts of Connecticut in the late 1800's when a proposed industrial complex was developed based on using the river for power. Canals were built, incorporating a large glacial kettle hole, but it wouldn't hold water, and the industrial development was scrapped. The trail also passes through an old fairground that featured harness racing. In fact, the accessible trail uses much of the original harness racing track, which was last used in 1911.

The club then began consultations with Peter Jensen, a professional trails designer/builder and

A portion of the Falls River Accessible Trail follows the Housatonic River (just out of the photo to the right).

member of the Access Board's reg/neg committee. Peter was hired by ATC to provide additional input and recommendations on the club's proposed design, particularly regarding design standards and materials for surfacing. NPS did an environmental assessment of the site to ensure that construction would not harm the historic race track or other historic and cultural features at the site. The club then contracted with a local landscape contractor to construct the trail. Construction was begun in 1999 and finished in 2000.

Since 2000, the trail has held up well. Additional material has been added to areas that have needed it and three separate stores of material were stockpiled for use around the trail after construction. Volunteers have continued maintenance with assistance clearing blowdowns from Northeast Utilities. In 2005 a trail counter indicated 23,000 users.

The volunteers noted that they are very happy in general with the surfacing material, but have been having problems with drainage on the first section of trail. Recently, they added some pond sand to stabilize the tread. The sand has not worked, and the club is now looking at replacing it with a combination of more durable materials. While the remainder of the loop is in good shape and accessible, the very beginning is not, since the sand does not create a firm and stable footpath.

One other item of note: One of the volunteers involved with the trail has taken the time to create some very comfortable and rustic benches along the trail. However, the benches do not meet accessibility standards, which require a backrest. With several of the benches, on the side of the bench facing the river, there is not sufficient room for a wheelchair to negotiate between the bench and where the bank falls away.

Several short sections of the Falls Village Trail had to be built up with imported rock to meet accessible grade guidelines.

Design Considerations:

As this trail was being conceptualized, the Access Board's reg/neg committee was in the process of developing their recommendations. Ultimately, the club used the Access Board's draft guidelines as their design standard.

Conditions at the site are very favorable for accessible trail construction. Grades are very gentle, with the exception of old flood channels or drainages. Much of the woods and riverbank the trail traverses is grown over with 80 year old white pine. The soils are sandy and well drained. The contractor laid down geotextile and then spread three quarter-inch gravel 3 inches +/- thick and 3 feet wide for the treadway. In two places, the club needed to get across what appear to be shallow channels carved by past flooding and maintain their grade. In these sections, the contractor imported rip rap sized stone to build a causeway or turnpike, placed a culvert at the low point, and built the trail on and over the rock.

One bridge was constructed to accessible standards just as the trail goes into the woods, about 700' from the parking area.

Funding:

Initial estimates for the trail were $40,000. The contractor's price was $51,000, and final costs were just over $60,000.

The trail begins at the parking area with this informational kiosk.

Construction of the accessible trail was funded by a wide variety of sources, including AMC, ATC, local residents, and foundations. Money still continued to flow in after the trail was finished, and the A.T. Committee now has a $13,000 maintenance fund for the trail.

What's next?

The A.T. Committee is considering ways to fix washouts on the first 500' of trail, where drainage from a paved town road can be a problem. Recently, what the A.T. committee called "dirty pond sand" was used to surface the washouts and it has now become washed and does not meet the "firm and stable" criteria. The club is considering removing the sand, then surfacing with some combination of fabric, stone dust, half inch or less gravel, and a culvert or two to solve these problems.

Would they do it again?

Dick Blake, the volunteer who dreamed up the Falls Village accessible trail, and who was the driving force behind its construction noted: "I am sure that I would want to do it again, In fact doing proper maintenance is almost as much as doing it again."

Ted Cowles, who worked with Dick on the trail replied: "Dick came up with the original concept for the trail. It was a natural location, not only because of the relatively level configuration of the topography, and the beauty of the adjacent Housatonic River, but also for the interesting history of the locale . If you could ever find a location half as attractive as this, I'm sure we'd both be in favor of supporting it."

Falls Village Accessible A.T. Section & Trail

AMC Connecticut Chapter A.T. Committee

Common Themes From the Case Studies

Opportunities for accessibility are created by treadway challenges and their solutions.

In three out of the four case studies, management of existing use patterns and resource damage created opportunities to consider accessibility. Trail managers simply added accessibility to the list of management objectives to be met in the designed solution. In fact, the decision to relocate a trail section created the opportunity to consider accessibility, not that accessibility drove the decision to relocate the trail. For example, at the Osborne Farm, the management need was to get the A.T. off the road and purchase the property. Within these challenges and changes, trail managers considered if accessibility could be incorporated into the A.T. at Osborne Farm.

At Bear Mountain, it was a similar situation – a redesign of the A.T. on the east side and summit of the mountain offered an opportunity to consider accessibility as a design component. Accessibility was not possible on the lower east side section, but the summit area was a suitable location to incorporate and meet the accessibility design standards. And even though designers would not be able to meet accessible standards along the lower east section of the trail relocation, they remained intent on incorporating universal design at a minimum, and succeeded at designing a trail that is wider and much more usable to more people. They also decided the universal design enhancements would make the new section the most appealing route up the mountain, and even if it wasn't accessible, the universal design elements would also provide better resource protection than other trail options, and resource protection was their primary goal.

At Pearisburg, the situation is also similar. The installation of a needed accessible trailhead and parking area and future relocation of the A.T., along with a cultural resource utilized by the local community via a designated blue blaze trail created an opportunity to consider accessibility as a design goal.

The old saying "if it isn't broken, don't fix it" seems to be particularly applicable with trails and accessibility. When something is broken and needs to be fixed, it offers the opportunity to consider accessibility as part of the solution. Whether it is a shelter that needs replacing or a trail management challenge, solving problems offers an opening for trail managers to appeal to a wider range of users by considering, and where appropriate incorporating accessibility into their solutions.

Hiring a contractor makes good sense.

At Falls Village, Osborne Farm, and Bear Mountain the clubs and agencies involved understood the work involved in constructing an accessible trail requires expertise, skills, and equipment that trail clubs may not have. The need to excavate large amounts of material and import large amounts of gravel for surfacing requires equipment. Specialized trail contractors may have a better handle on the correct type of local gravel needed for a firm and stable surface, and can compare and understand the difference in the material.

Some areas may not have contractors who are skilled at trailwork, but they may be able to build a satisfactory trail with input and clear specifications from a club or trail consultant. In the case of Falls Village, the contractor's specialty was driveways. At Osborne, the contractor is a stonemason, trailbuilder, and landscaper. At Bear Mountain, the club, ATC Trail Crew and specialized trail crews are building the Trail. In the case of the Pearis Cemetery project the USFS Eastern Divide Ranger District staff, which has built several accessible trails, will be the contractor. The choice of a contractor is critical – make sure they have a very clear understanding of the specifications you require.

Terrain has the final say on accessibility.

At Osborne Farm and Falls Village, it was the very gentle, and in some cases nearly flat grades that made the possibility of an accessible trail a near certainty. The wide and nearly flat farm fields offered nearly no impediment to getting the grade required. At Falls Village, much of the trail is on an old flat harness racing track. Interestingly, the most challenging design element at both Osborne Farm and Falls Village was getting from the accessible parking area to the main portion of the trail.

At the time of this writing, Pearisburg appears feasible for an accessible trail, but the terrain is much more challenging than Falls Village or Osborne Farm. Per foot construction costs will be higher as much more soil will need to be excavated for full bench sidehill construction.

At Bear Mountain, creating an accessible trail was possible, but only if the hiking experience and the resource integrity was to be sacrificed. Boulders, rock ledges, and the need to gain very significant amounts of elevation would have required the mountainside to be covered with miles of trail in order to reach the summit. However, the designers used the concepts of universal design and whenever possible flagged 5 % grades, or built steps so that they would be wider and deeper, and aimed for a 5 foot tread width. While the trail will not meet accessible trail specifications due to too many limiting factors, the trail is still usable to more people, is still challenging, and most of all, the resource will be protected by the sustainability of universal trail design. Despite best efforts, it will not always be possible to make trails that meet accessibility standards without drastically changing the experience. But it is always possible to incorporate universal design into any trail, thus expanding the range of people who will be able to use it.

Road and accessible trailhead access is always part of the project.

A major component of the Falls Village and Osborne Farm projects included construction of an accessible trailhead. The Pearisburg project also includes an accessible trailhead and parking area. The large parking area at Bear Mountain already has accessible parking. Without road access and an accessible trailhead at the beginning of your trail, you are not likely to get use from persons with disabilities. This may seem like an obvious point, but if a proposed accessible trail does not have an accessible trailhead serving it, one will need to be constructed.

Accessible parking lot design and construction is a skill that most trail clubs don't possess. This is a great opportunity for a partner to step in. Some state and federal agencies have engineering and construction resources for building accessible parking areas that clubs don't.

Community and partner support is key.

Community support can provide tremendous momentum for a trail project, along with new sources of funding and additional volunteers to move or spread gravel. Finding opportunities to dovetail an accessible trail with community needs and desires can create great community support. The Pearisburg project has great community support because the accessible trail will provide access to the George Pearis Cemetery. The town was named after Pearis, a captain in the Virginia militia during the Revolutionary War. Pearis is buried in the cemetery along with confederate soldiers from the Civil War, and members of major families important in the history of the town of Pearisburg and County of Giles. Many of their relatives still live in the area today. Currently, the only access to the cemetery is a rugged section of the A.T. The new accessible trail will provide parking and a short route to the cemetery that will be usable by a much wider segment of the local population.

At Bear Mountain, the New York New Jersey Trail Conference has been in touch with a large local rehab hospital, who has strongly supported and will likely supply funding for the trail project. The Trail Conference views the project as an opportunity to train volunteers, reach out to the community, and build broader support for trails throughout the region. The area is often used by many residents of New York City and minority populations. The new trail segments present an opportunity to educate users, and has great potential to increase support for the A.T. and natural places like Bear Mountain State Park amongst a broader group of people.

The Falls Village project started with only moderate public support and some outright opposition, though support from Northeast Utilities, the landowner of a portion of the trail, was and is strong. Since the trail was built, the community has gotten solidly behind it and is very supportive. The amount of local use is extensive.

All three completed projects have strong partner support; Osborne Farm with the Forest Service, Falls Village with the Park Service and Northeast Utilities, and Bear Mountain with the plethora of state agencies involved in managing Bear Mountain and the National Park Service. All of these projects have also benefited from the strong support of ATC through direct and indirect funding, staff time, advocacy, publicity, and expertise.

Attractive features attract support.

All four case studies use the trail involved to access some unique historic, cultural, or natural features, thus creating more relevancy and support for the trail. At Falls Village, the features are the scenic Housatonic River, the abandoned 19th century industrial complex and the racetrack. At Pearisburg it is the cemetery and views of the New River. At Bear Mountain, it's the impressive views from the overlooks and summit, especially of the Hudson River; and at Osborne Farm it's the former farm site and the expansive views of Shady Valley.

None of these trails is a track through the woods that ends arbitrarily after a certain distance. Such an accessible trail would have limited appeal and would likely receive little corresponding use. Instead, the trail sections offer an experience that appeals to users regardless of their ability.

Funding and financial support.

Finally, building an accessible trail will require money, and lots of it. Falls Village, a relatively straightforward accessible trail, most of it on nearly flat ground (but with a bridge, and several culverts requiring crushed stone), costs ran to $55,000 per mile in 2000. Costs on Osborne Farm were close to $30,000 per mile, with no sidehill excavation, culverts, or bridges. The accessible trail on the top of Bear Mountain is not yet budgeted.

Strong community support for your project can open up new sources of funding, possibly ones you've never considered before. Your management partner may also be able to bring money to the table, and don't forget the value of volunteer labor, which can generate a major portion of match required for many grants.

IV. QUESTIONS AND SCENARIOS

1. Who do we have to talk to about accessibility? Who makes these decisions? Who should we involve? What resources are there to help answer questions about accessibility?

First off, talk to your ATC Regional Director and agency partner or the owner of the land you are working on. Your agency partner may be able to provide you with direction and decision making regarding accessibility. At the time of this writing, trails are only required to follow the FSTAG when they are on US Forest Service lands and they meet the three qualifying criteria. Only newly constructed or heavily renovated structures, such as shelters and privies must also be accessible on any public land.

2. We're going to build a new shelter. Do we have to make it accessible?

Yes. All new construction on any public land must be made accessible. That has been the law on federal lands since 1968 (Architectural Barriers Act), and on other public lands since 1990 (Americans with Disabilities Act).

3. We are replacing the roof on our shelter.
Do we have to retrofit the shelter to make it accessible?

No, because roofs are not required to be accessible in the guidelines. If there is an opportunity to change the roof to increase accessibility, perhaps by removing a protruding overhang that is less that 80" above the ground and is therefore a potential hazard to a person with limited vision, that would be a good improvement. However, you would not be required to change any other portion of the structure to make it accessible just because you are replacing the roof.

4. We need to put in a new privy to replace the one that is there.
Do we need to make it accessible?

Yes. See the answer to question 2., above.

5. We are planning a relocation of the A.T. Do we need to make it accessible?

No. A relocation of a trail does not meet the first of the three criteria for applying the FSTAG. That is, a relocation is not the construction of a new trail or an alteration of the trail, which is defined as the change in the original purpose, intent, or function for which the trail was designed. On other federal or state lands, there are no legally required guidelines for accessible trails as of this writing, though such guidelines are in the works.

6. We are planning to build a new side trail connecting a trailhead to the A.T. Do we need to make the side trail accessible?

On Forest Service lands, because this is a new, hiking/pedestrian trail, that connects directly to the trailhead, the first three conditions determining applicability of FSTAG have been met, so the FSTAG applies. But also, remember that what you call a trailhead may not meet the definition of a trail head; check question 11., below.

7. We think we have a section of trail we'd like to make accessible. What do we do next?

Talk with your regional director and agency partner. There will be many design decisions that will need to be made, and construction and maintenance will require significant funds. And remember, even if you want to make a trail accessible, it may not be feasible, or doable. If the action will alter the character of the trail, do not make the trail accessible. However, if accessibility will fit nicely into your other design parameters, we highly encourage you to design for the most accessible trail you can attain, while balancing the primitive management philosophy of the A.T.

8. Can a section be partially accessible?

No. A section of trail is either accessible, or it is not. However, by applying any of the technical provisions in the FSTAG that you can (without changing the natural setting), the result may be a substantially improved trail for many users, even though the trail would not meet the legal definition of accessible.

9. If someone can accept the challenge of the Trail why can't they accept the challenge of a shelter or privy that isn't accessible?

It is not a matter of accepting, it a matter of civil rights and the law. There is a fundamental difference between a trail and a shelter, privy, or post office for that matter, and it has to do with a built environment versus a natural environment. Under existing federal legislation, all facilities on public lands are to be accessible – it is a right for any person to expect a post office, shelter, or privy will be built in a manner that does not prevent them from using it. But a trail is a different matter: In a natural environment, all users, those with and without disabilities, choose the trails they are going to use based on the skill level required and natural setting. Facilities built on public land should not, by law, have a skill level – they should be accessible and useable by all.

As explained once by a hiker who uses a wheelchair, "Hiking is challenge by choice, using a privy is not a choice, so it shouldn't be a challenge."

10. What about fire towers?

Fire towers are exempt from accessibility requirements under the 2004 ADA/ABAAG, section 206 for buildings. That exemption includes "raised areas primarily used for security, life safety, or fire safety including, but not limited to, lookout galleries, prison guard towers and fire towers."

11. What is the difference between a parking lot and a trailhead?

FSTAG defines a trailhead as follows: "A site designed and developed by the agency, trail association, a trail maintaining club, a trail partner, or other cooperators to provide staging for trail use."

For purposes of the FSTAG and FSORAG the following do not constitute a trailhead: "Junctions between trails where there is no other access; Intersections where a trail crosses a road, or users have developed an access point, but no improvements are provided by the Forest Service, trail associations, a trail maintaining club, a trail partner, or other cooperators beyond minimal markers for health and safety." A designated trailhead may have a number of improvements such as a parking lot with designated parking spaces, an information kiosk, and a toilet.

The ADA/ABAAG only requires accessible parking spaces be designated by a sign with the wheelchair symbol, at parking lots that have designated spaces for 5 or more vehicles. If an area is provided at a trailhead in which vehicles are parked, but individual parking spaces are not designated by line striping, separate wheelstops, or other means identifying individual parking spaces, then there is no designated parking in that lot. If there is no designated parking in the lot, the requirement to designate accessible parking spaces also does not apply to that parking lot.

12. What is a trail head and when does it have to be accessible?

See the definition above. Since a trailhead is a constructed facility, it needs to be made accessible when the opportunity to do so presents itself, like when it is built, or when repairs to its components are necessary. For example, a non-accessible privy at a trailhead should be made accessible when replaced or if renovations are needed that offer an opportunity to make it accessible.

On Forest Service lands the connection between a parking lot and a trailhead is required to be accessible because parking lots and trailheads are considered to be facilities and so the connection between them is addressed in the accessibility guidelines. Because these facilities are not part of the trail itself, the pathway that connects them is an Outdoor Recreation Access Route (ORAR) and is to meet the accessibility requirements for an ORAR.

V. DESIGN PRINCIPALS FOR APPALACHIAN TRAIL

*"The Appalachian Trail in its entirety shall be kept forever open,
obvious, and narrowly passable for hiking.
The treadway shall pass lightly over the land
to provide for the least disturbance to the natural setting.
The trail shall be marked and cleared
to offer passage that may be both enjoyable
for the reasonably prepared and
in harmony with the natural environment."*

- The Appalachian Trail Conference Board of Managers, 1979

Creating a trail that meets all of the trail accessibility requirements is a process that only bears some resemblance to the practice of locating and constructing a traditional hiking trail. Accessible trails, once constructed, will more closely resemble a well-built, but narrow dirt road than a traditional hiking trail. Since the standard for an accessible trail is high, design, construction and maintenance costs will be much higher than the typical footpath through the woods. In all cases, it will be important for decision makers who are considering making a section of trail accessible to carefully analyze a number of factors early in the design phase. In many cases, particularly along the A.T., making a trail accessible would create a level of environmental disturbance that would change the character of the trail.

Following the FSTAG's analysis process will provide help for those who are looking to create an accessible section of the A.T. The FSTAG considers the suitability of terrain, the presence of an accessible trailhead, and the presence of a prominent feature that users would like to access, such as a waterfall.

Remember that working through the FSTAG requires that you go through the process of determination for accessibility, not that you make a trail in an impossible area accessible. In fact, the Forest Service's analysis process may be very helpful for determining if a proposed section of trail can be made to meet accessible standards, and will likely be helpful to decision makers.

However, the design philosophy of the ATC's board of managers in the quote above provides us with little guidance on accessibility. In virtually all cases where compliance with FSTAG

is voluntary, trail managers will need to decide for themselves if creating an accessible trail that meets the technical provisions of FSTAG still maintains the primitive setting for all users.

In most cases, it may not. In the vast majority of the A.T., the terrain is sufficiently rugged to create a serious conflict between meeting the technical provisions for accessibility and maintaining the "primitive character" of the A.T. In other cases, there is no good road access, no compelling physical, cultural, or historic features to share with the user, or a lack of public support. As the case studies show, a strong candidate for voluntary accessibility should have:

- suitable terrain
- a feature of some sort to share with the user
- road access at an accessible trailhead
- public support
- a trail club and partner fully behind the project.
- the support of funders, and
- the partners involved should know very clearly the commitment they will need to make to maintain the trail.

Very few projects will have the elements listed above. Does that mean you should forget about voluntary accessibility? Not necessarily. While you may not be able to meet the all of the technical provisions of the FSTAG, applying those that you can, without resulting in a change in the natural setting, will help you to incorporate universal design into your project.

Universal Design

Even if you do not create a trail that meets the technical provisions, universal design can help you to build a trail that will be usable by a much wider spectrum of folks. Universal design is trail design that meets the needs of the widest spectrum of trail users including those with physical disabilities. It doesn't mean importing gravel for the trail or providing benches for people to rest on, it just means considering a wider group of users.

What does that mean? It simply means finding ways around creating barriers for people as part of normal trail work. For instance, rather than using stone or wood steps to gain elevation on a trail, build trail on the sidehill if possible, where you can gain elevation gradually rather than all at once. Sidehill construction is much more sustainable than the traditional approach of "straight up the fall line" (see illustration pg. 56), which is prone to erosion. The inherent sustainability of universal design should result in a reduction of maintenance needs on any trail.

Here's another example: rather than building a beefy rock waterbar that will give folks who use a wheelchair or walker trouble, or may be a problem for someone who is visually impaired, instead use a wide and shallow drainage dip. The dip can work well on a trail with a very low grade, yet be very unobtrusive.

Terrain

There is no hard and fast rule to the type of terrain that can be made accessible, but obviously a flat section will be much easier than a steep hillside, and an area with stable soil that is free of large rocks will be easier than a boulder field. Places with average grades of less than 15% , with stable, dry soils would be a logical place to consider accessibility. Swampy and wet areas will require considerable expense in the construction of boardwalks and/or bridges. Steep, wet, rocky areas should be avoided if possible.

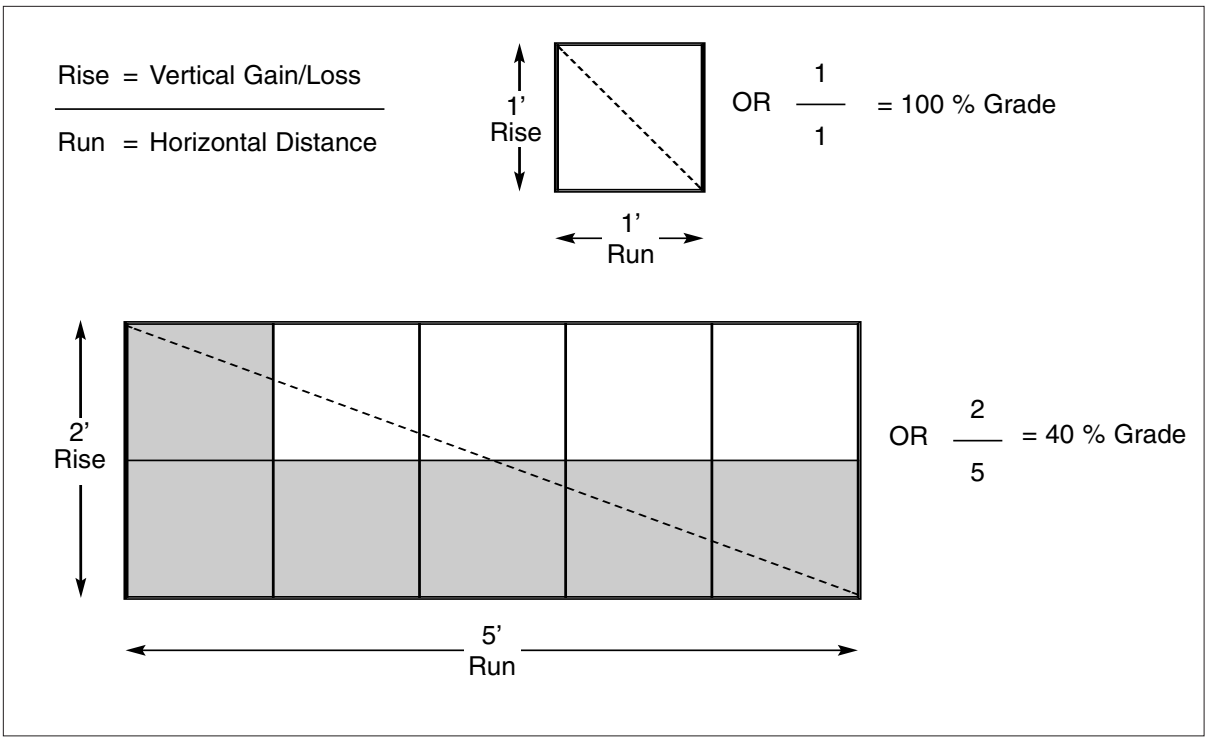
Keep in mind that construction of accessible trails can realistically require mechanized equipment that may not be familiar to trail volunteers. Mini-excavators are frequently used in constructing accessible trails as are small dump vehicles that can easily move the large quantities of gravel surfacing needed. The two main factors that will dictate the need for such equipment are the overall challenge of the terrain and the length of trail intended to be made accessible. Even on a quarter mile section of trail that is relatively flat, it may make the most sense to use qualified, experienced operators and equipment.

Grade

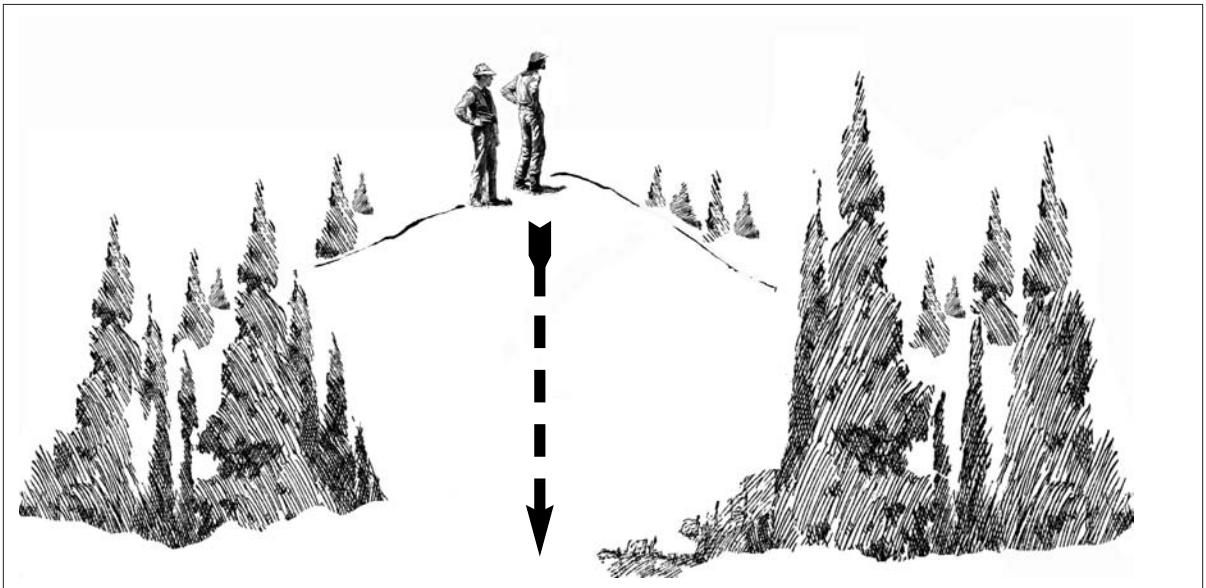
Grade is an expression of the vertical gain of a trail over a certain distance, or rise over run. By dividing the rise by the run, you end up with a number that describes the grade as percent. For example, a rise of one foot over a length of ten feet = 10%. A 100% grade would be 45 degrees in angle. Percent is used to give a more exacting expression of slope in the 45 degree and below range.

Regardless of FSTAG's requirements for slope, it is a sound practice to limit the grade of a trail to a maximum of 15%-20% for short sections whenever possible for two reasons: First, a trail with a low grade is more accessible to more people. For example, someone with a heart condition, knee problems, or other disability is more likely to be able to use a trail with a lower grade. Second: designing and constructing trails with lower grades makes excellent sense from a resource management standpoint. Trails with lower grades, particularly when they are located off the fall line (the fall line is the straightest, steepest way down a slope – the line that a volume of water or a bowling ball would follow), have fewer problems with erosion and require less tread work and maintenance once installed.

Since the FSTAG requirements for grade are quite stringent, many places along the A.T. will be difficult if not impossible to make accessible without drastically changing the experience of the user. Keep in mind that 70% or more of a trail's total length must have a running slope of less than 8.33%, or 1:12 rise/run to meet accessible standards. In fact, a running slope of 8.33 % maximum is only allowed for up to 200 feet at a time. Areas with steep slopes not only create problems with accessible grade requirements, but also with construction of bench or side hill trail to meet those requirements: the steeper the slope, the more of the hillside will need to be removed to create the bench for the tread way. For example, on slopes that sustain 25 or more percent slope, creating an accessible trail will be very difficult and in some cases impossible to bench without extensive cribbing and retaining wall construction, which in some cases could affect the desired experience. In fact, the greater the average slope of the area you



Percent is an expression of grade. By dividing the rise (vertical gain/loss) by the run (horizontal distance) you get an expression of grade in percent. Percent is a more precise expression than angle; a slope at a 45 degree angle would be equal to a 100 percent slope.



Fall Line – the most direct route down a slope.

The fall line follows the path of least resistance, where water and other materials will naturally make their way down a slope as a result of gravity. Trails located on, or parallel to the fall line are vulnerable to rapid erosion. Fall line grades are not generally suitable for accessible trails and universal design.

This trail requires cribbing, in this case made of stone, to prevent the backslope from sloughing on to the treadway. This cribbing is typical where bench construction is used on steep slopes.

wish to locate an accessible trail, the greater the environmental impact, because more soil will need to be disturbed to create a bench cut, and the trail will require more linear feet of construction due to grade restrictions.

To achieve the grade required for accessibility in areas with any steepness, accessible trails are built perpendicular to the fall line. They follow the contour of the slope and gradually gain elevation on the contour. This sort of design requires bench construction, and bench construction for accessible trails means full bench construction. Full bench involves removing all the soil needed to have a gently outsloping surface of 1-2% to allow for water coming onto the trail to flow off the trail in a direction perpendicular to the direction of travel.

Whether you are interested in building a trail that incorporates universal design or accessibility, these pointers for grade considerations will help you to build a trail that will help to minimize your maintenance headaches and help to maximize user interest:

- Avoid, to the largest extent possible, areas with ledges or terrain with slopes over 25%. Steeper slopes can be difficult to get around when designing any trail – this is particularly true with accessible trails. Steep slopes will offer little room to fit minimum widths and the flexibility required when designing trail. The steeper the slope, the greater the challenge in getting around it.

Note the full bench construction of this accessible trail at Pandapas Pond, Jefferson National Forest, Virginia. The hillside has been excavated below the dotted line to provide for a very gently outsloped trail surface. The gentle outsloping allows water to drain perpendicularly off the trail surface, sometimes called “sheet drainage”.

- Design trail on the sidehill, or perpendicular to the fall line. Use gentle increases or decreases on the sidehill to gain or lose elevation as needed.

- To ensure a good foundation for the imported gravel the trail will require, use full bench construction. This means fully excavating by hand or with a machine to a level cross slope the ground your trail will occupy.

- The steeper the slope a trail moves across, the more likely that cribbing will be required to retain the tread or the bank above it.

- Expect trail lengths to be longer than with a conventional trail. Since grades will need to be lower, more linear trail will be needed to be built to gain elevation. This also requires you have the needed land to build this longer trail.

- Use a clinometer to help you better understand what a 15% grade is. Always use two people (the second with a clinometer or grade stake) to insure accuracy.

Left: Periodic pull outs are an important feature on longer accessible boardwalks like the Pochuck boardwalk on the A.T. in Vernon, New Jersey.

Right: Accessible trail and boardwalk. John Dillon Park, Long Lake, New York. This boardwalk is constructed from rough cut cedar with a rustic round cedar toe rail.

Wet Areas

Another substantial challenge for those designing trails is wet areas. In the case of a conventional trail, there are numerous ways to manage wet areas, but in the case of accessible trails, there are really only two ways of making a trail accessible: adding fill or building a raised trail above the wet area. Local permitting regulations may prevent you from using either of these techniques. Be certain you understand and abide by your localities regulations before proceeding. Depending upon your local laws, you may or may not be able to get a permit to cross wet areas.

To be considered accessible, a trail must have a "firm and stable" surface for the tread. Mud is neither firm nor stable. Creating a firm and stable surface in a wet area can be done in a few different ways, depending upon the depth of water or mucky soils, the amount of water flow, and if ice damage may be a factor.

Another reason to avoid wet areas is expense. Excavation, gravel, lumber, geotextile (landscaping fabric), carpenters and the other items needed to cross wet areas are expensive.

In the case of an area that is wet seasonally, and is unavoidable, installation of a "drainage lens" may be possible. This involves excavating the muck and wet soils down to mineral soil or bedrock. Geotextile, twice as wide, plus twice the depth of the excavated area is then laid into the excavated tread, and gravel is used to fill the excavated area to above the top of the wet soil area. The gravel is compacted and the fabric laid, from the sides, flat onto the top of the gravel. Then the surfacing gravel is added several inches thick on the top, with the excavated muck applied on the sides as a "soft edge."

Contracted drainage lens can cost between $20-$30 per lineal foot of trail, including geotextile, stone, initial excavation, and transport of material for the lens. The real variable is the

A DRAINAGE LENS UNDER CONSTRUCTION
Mount Independence State Historic Site, Vermont.

Above Left: The wet area was excavated and the downhill side cribbed with rock. Then a piece of geotextile, more than twice the width of the treadway was laid on the excavated area, with the other half of the fabric on the downhill side. Then the fabric covered treadway was filled with coarse gravel.

Above Right: Next, the other half of the fabric is wrapped uphill over the gravel.

Right: The completed lens. The fabric is covered with 3" of surfacing material and graded.

Photographs courtesy of Peter Jensen.

Accessible trailhead and kiosk, and bench at Pandapas Pond, Jefferson National Forest, Virginia.

distance the material will need to be moved. A trail section that needs a drainage lens and is far from the materials staging area will be more expensive.

Areas with standing water will have to be treated differently. The only viable technique for crossing them involves a raised causeway of either earth or lumber. A boardwalk, which is a causeway made of lumber, is mounted on piers that are anchored in the soil.

- Avoid wet areas if possible, but they are not necessarily a dealbreaker.
- Check with your local wetlands permitting agency before design, and consult with them on designs they see as favorable.
- Talk with your ATC field staff, and if necessary, find a designer or contractor who has experience in crossing wetlands to help with the design.
- Expect it to be expensive – crossing wetlands will often require extensive materials and skilled labor.
- Be certain to figure for depreciation in your project budget on any structure built from lumber – it will need to be replaced every 10-15 years.

Other Physical Considerations Aside From Terrain

Accessible trails should be located in places where they can serve as many people as possible. An accessible trail is by its very nature quite durable and should stand up to lots of use quite well. Trails in areas already popular with day hikers and families, that are readily accessible by good roads that are opened year round would be a good choice; as opposed to a little used trail in a remote area, on a seasonally open road without sufficient parking facilities.

Another consideration is access to a prominent feature. For example, a quarter mile section of trail that travels over gentle terrain from an accessible parking area to an attractive waterfall could be an excellent section of trail to make accessible, much better than one that goes from an accessible trailhead and is no longer accessible a quarter mile into the woods. Again, if you are making the investment to increase the accessibility of a section of the A.T., make sure it is in a place where people will use it.

Making the Decision

There is no formula for figuring out if a trail should voluntarily be made accessible. If a trail does not fall into the Forest Service's guidelines, no flow chart like the one found in Appendix A exists for the decision making process.

If you are considering making a trail accessible voluntarily, nothing takes the place of honest deliberations with the stakeholders of the project. Open discussions among the trail organization(s) responsible for creating an accessible trail is the first place to start. Talk with your state, federal, and non-profit partners, the community, and folks who might be willing to fund your project. Don't forget to include persons with disabilities in your discussions. Hearing from those who will be using the trail and are your constituency will be invaluable.

Any potential changes to a trail's intended experience and surroundings should be considered extremely carefully during the decision making process. Accessible trails require a much higher standard for both construction and maintenance. Be certain you take all expenses into account, and know the materials that will be used for construction, especially any surfacing material. Maintenance of a built trail will be an ongoing operating cost.

The Common Themes from the Case Studies section of this report covers the critical success factors for building and maintaining an accessible trail. If you can answer yes to each of the questions below, you will have a much higher likelihood of success:

- Are you considering the trail as part of a larger management challenge?
- Have you identified an experienced contractor to work with you throughout the design and construction process?
- Is the terrain able to accommodate an accessible trail without changing the experience the trail was intended for?
- Will the trail have road access at an accessible trailhead?
- Do you have strong community and partner support ?
- Will the trail make an attractive feature or features accessible?
- Do you have adequate funding for both construction and long-term maintenance?

If you've got the above issues buttoned up, you are well on your way. An accessible trail can be a great tool for broadening the appeal of the A.T. and your club to a whole new world of users and supporters. Good luck!!

The Trail community now has the option, or in some cases the requirement to consider accessibility in trail design. Some believe considering accessibility as part of the design process to be the right thing to do, but regardless of how you may feel about that, it is the inclusive thing to do. That doesn't mean every trail should be made accessible – quite to the contrary; it means simply this: accessibility can be considered in the design process. This design guide is intended to demystify this process and help the reader to consider all options. The cases studies establish some key considerations for when increasing the level of access of a section of the A.T. is appropriate, and this design guide is intended to help the reader consider both options and ramifications. As time marches on, new ideas about enhancing accessibility while protecting a trails character and experience will come forth, offering new opportunities for learning and welcoming new users to the Appalachian Trail.

Get the Word Out

One of the biggest challenges facing persons with disabilities is a lack of information on trails that may be appropriate for their use. Issue a simple press release to local television and print media when your accessible trail is completed. Find local people with disabilities who can help get the word out about your trail. You might also consider a UTAP assessment on sections of trail with very gentle grades and few obstacles. Even if you don't do a UTAP assessment, you can still publicize such sections of trail as "gentle" or "easier." Even if a trail isn't designated accessible, it may still be enjoyable to some persons with disabilities, but only if they know about it!

RESOURCES

Accessibility Guidebook for Outdoor Recreation and Trails,
USDA Forest Service, 2006.

This user-friendly, plain English guidebook has lots of design tips, illustrations and photos. It can be downloaded in PDF or it can be used online in the HTML (default) version. Both versions are available on the FS accessibility webpage:
www.fs.fed.us/recreation/programs/accessibility

Forest Service Trails Accessibility Guidelines (FSTAG)

Forest Service Outdoor Recreation Accessibility Guidelines (FSORAG)

These are the documents that cover accessibility on Forest Service lands only.
They are available at the Forest Service website above.

Local Management Planning Guide
Appalachian Trail Conference, Harpers Ferry, WV. 1997.

The LMPG provides policy direction for planning decisions regarding the A.T.

Backcountry Sanitation Manual
Appalachian Trail Conference and Green Mountain Club. 2002.

Appalachian Trail Design, Construction, and Maintenance
Birchard, William and Proudman, Robert.
Appalachian Trail Conference, Harpers Ferry, WV. 2000.

Accessible Gates for Trails and Roads
Groenier, James Scott, 2006
T&D Pub Number: 0623 2340

Accessible Gate Latch
Groenier, James Scott, 2006
T&D Pub Number: 0623 2331

The Forest Services' San Dimas and Missoula Technology and Development Centers have developed a number of publications in their popular and informative *Tech Tip* series dealing with accessibility. Of particular interest to trail managers are the two listed above. To view and download them, go to: www.fs.fed.us/eng/t-d.php Follow prompt to log on with user name and password “t-d”, then click “T&D Pubs”, then type “accessible” in the lower search box, click “All” button and submit your search.

APPENDIX A

Overview of the FSTAG Implementation Process

This provides a graphic summary of the FSTAG implementation process. The overview outlines FSTAG steps and process sequencing. The detailed information, definitions and technical provisions that are critical to understanding and implementing the complete FSTAG process are provided in the FSTAG preamble and technical provisions.

The FSTAG must be applied prior to initiating any project involving the new construction or alteration of any National Forest System trail with the designated of hiker/pedestrian.

Overview of Process

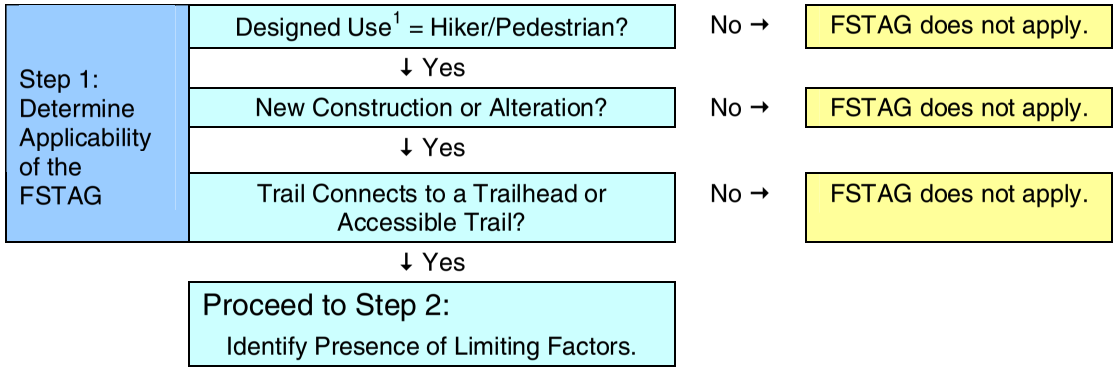
Assessment Pre-Work

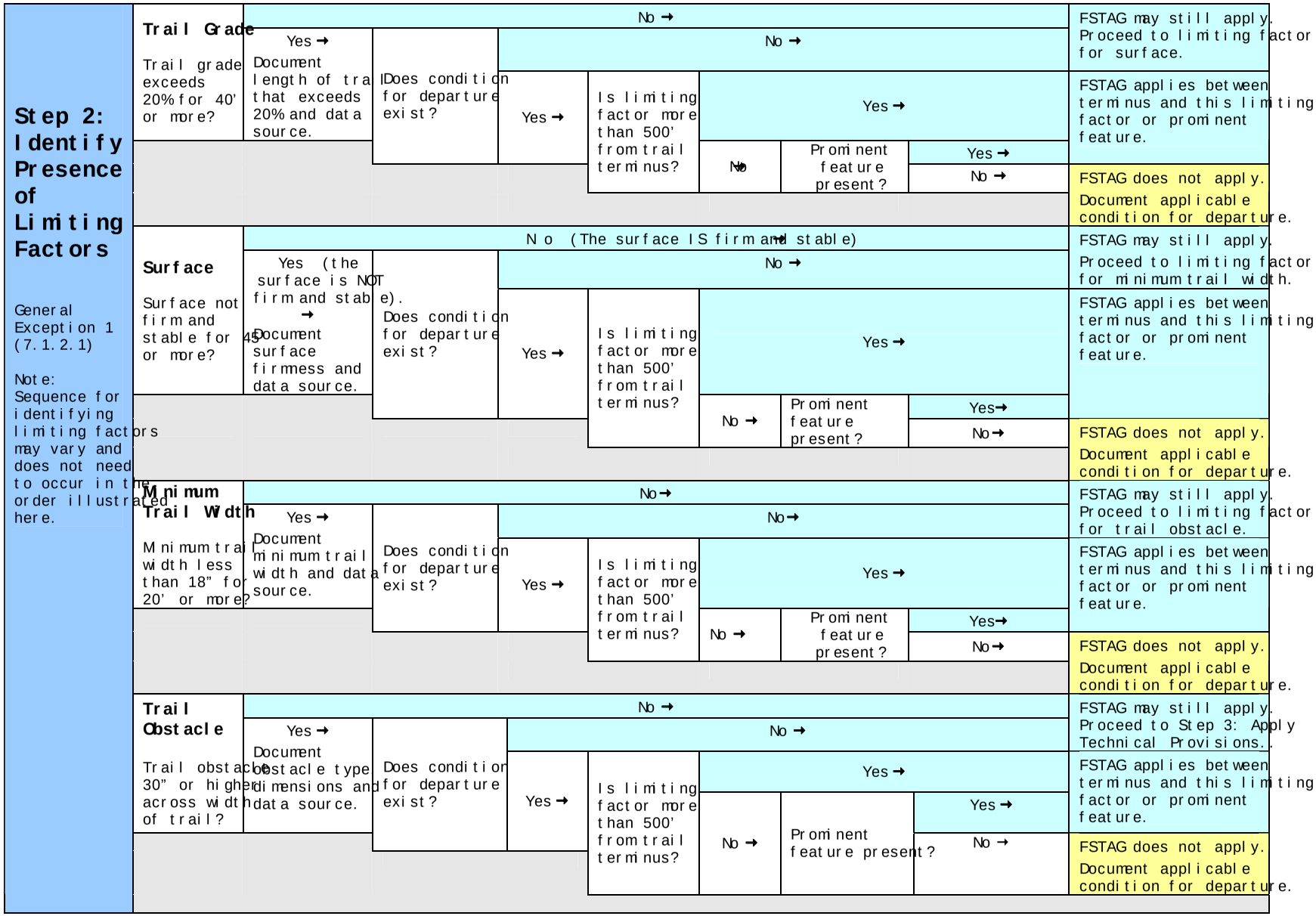
Before applying the FSTAG, assessment pre-work includes but is not limited to:

1. Analysis of existing conditions, including potential opportunities and constraints (e.g., NEPA analysis).
2. Identification/verification of the desired trail class for the trail or trail segment.
3. Identification/verification of the Designed Use of the trail or trail segment. [1]

↓

Key Steps and Sequence




Step 2: Identify Presence of Limiting Factors
General Exception 1 (7.1.2.1)
Note: Sequence for identifying limiting factors may vary and does not need to occur in the order illustrated here.
Trail Grade
Trail grade exceeds 20% for 40' or more?
Yes →
Document length of trail that exceeds 20% and data source.
Does condition for departure exist?
No →
Yes →
Is limiting factor more than 500' from trail terminus?
No →
Yes →
Prominent feature present?
Yes →
No →
FSTAG may still apply. Proceed to limiting factor for surface.
FSTAG applies between terminus and this limiting factor or prominent feature.
FSTAG does not apply. Document applicable condition for departure.
Surface
Surface not firm and stable for 45' or more?
No (The surface IS firm and stable)
Yes (the surface is NOT firm and stable). →
Document surface firmness and data source.
Does condition for departure exist?
No →
Yes →
Is limiting factor more than 500' from trail terminus?
No →
Yes →
Prominent feature present?
Yes →
No →
FSTAG may still apply. Proceed to limiting factor for minimum trail width.
FSTAG applies between terminus and this limiting factor or prominent feature.
FSTAG does not apply. Document applicable condition for departure.
Minimum Trail Width
Minimum trail width less than 18" for 20' or more?
No →
Yes →
Document minimum trail width and data source.
Does condition for departure exist?
No →
Yes →
Is limiting factor more than 500' from trail terminus?
No →
Yes →
Prominent feature present?
Yes →
No →
FSTAG may still apply. Proceed to limiting factor for trail obstacle.
FSTAG applies between terminus and this limiting factor or prominent feature.
FSTAG does not apply. Document applicable condition for departure.
Trail Obstacle
Trail obstacle 30" or higher across width of trail?
No →
Yes →
Document obstacle type, dimensions and data source.
Does condition for departure exist?
No →
Yes →
Is limiting factor more than 500' from trail terminus?
No →
Yes →
Prominent feature present?
Yes →
No →
FSTAG may still apply. Proceed to Step 3: Apply Technical Provisions.
FSTAG applies between terminus and this limiting factor or prominent feature.
FSTAG does not apply. Document applicable condition for departure.

Step 3: Apply Technical Provisions Technical Provisions (7.3.1 to 7.3.8)	**Trail Grade** Trail grade complies with 7.3.1.1?	Yes →				Comply with trail grade technical provision 7.3.1.1.	
		No →	Does condition for departure exist?	Yes →	Deviation permitted.[2] Measure and record length of deviation.	→	Proceed to Step 4: calculate cumulative deviation percentage.
				No →	Deviation not permitted. →	Comply with trail grade technical provision 7.3.1.1.	
	Trail Cross Slope Trail cross slope complies with 7.3.1.2?	Yes →				Comply with trail cross slope technical provision 7.3.1.2.	
		No →	Does condition for departure exist?	Yes →	Deviation permitted.[2] Measure and record length of deviation.	→	Proceed to Step 4: calculate cumulative deviation percentage.
				No →	Deviation not permitted. →	Comply with trail cross slope technical provision 7.3.1.2.	
	Resting Interval Resting intervals comply with 7.3.2?	Yes →				Comply with resting interval technical provision 7.3.2.	
		No →	Does condition for departure exist?	Yes →	Deviation permitted.[2] Measure and record length of deviation.	→	Proceed to Step 4: calculate cumulative deviation percentage.
				No →	Deviation not permitted. →	Comply with resting interval technical provision 7.3.2.	
	Surface Surface complies with 7.3.3?	Yes →				Comply with surface technical provision 7.3.3.	
		No →	Does condition for departure exist?	Yes →	Deviation permitted.[2] Measure and record length of deviation.	→	Proceed to Step 4: calculate cumulative deviation percentage.
				No →	Deviation not permitted. →	Comply with surface technical provision 7.3.3.	
	Clear Tread Width Clear tread	Yes →				Comply with clear tread width technical provision 7.3.4.	
		No →	Does condition for departure	Yes →	Deviation permitted.[2] Measure and record length of deviation.	→	Proceed to Step 4: calculate cumulative deviation percentage.

	width complies with 7.3.4?		exist?	No →	Deviation not permitted.	→	Comply with clear tread width technical provision 7.3.4.	
Passing Space Passing spaces comply with 7.3.5?	Yes →						Comply with passing space technical provision 7.3.5.	
	No →	Does condition for departure exist?	Yes →	Deviation permitted. [2] Measure and record length of deviation.		→	Proceed to Step 4: calculate cumulative deviation percentage.	
			No →	Deviation not permitted.	→	Comply with passing space technical provision 7.3.5.		
Tread Obstacles Tread obstacles comply with 7.3.6?	Yes →						Comply with tread obstacle technical provision 7.3.6.	
	No →	Does condition for departure exist?	Yes →	Deviation permitted. [2] Measure and record length of deviation.		→	Proceed to Step 4: calculate cumulative deviation percentage.	
			No →	Deviation not permitted.	→	Comply with tread obstacle technical provision 7.3.6.		
Protruding Objects Protruding objects comply with 7.3.7?	Yes →						Comply with protruding objects technical provision 7.3.7.	
	No →	Does condition for departure exist?	Yes →	Deviation permitted. [2] Measure and record length of deviation.		→	Proceed to Step 4: calculate cumulative deviation percentage.	
			No →	Deviation not permitted.	→	Comply with protruding objects technical provision 7.3.7.		
Openings Openings comply with 7.3.8?	Yes →						Comply with trail grade technical provision 7.3.8.	
	No →	Does condition for departure exist?	Yes →	Deviation permitted. [2] Measure and record length of deviation.		→	Proceed to Step 4: calculate cumulative deviation percentage.	
			No →	Deviation not permitted.	→	Comply with openings technical provision 7.3.8.		

<table>
<tr><td rowspan="6">Step 4: Calculate Cumulative Deviation Percentage

General Exception 2 (7.1.2.2)</td><td rowspan="6">Cumulative Deviation Percentage

Do permitted deviations occur on less than 15 percent of total trail length?</td><td colspan="4">Yes ➞</td><td>Apply FSTAG technical provisions to entire trail.[3]</td></tr>
<tr><td rowspan="5">No, deviations occur on more than 15%. ➞</td><td colspan="3">Yes ➞</td><td>Apply FSTAG technical provisions to segment of trail between terminus and first point of deviation. [3]</td></tr>
<tr><td rowspan="4">Is first deviation located more than 500' from trail terminus?</td><td rowspan="3">No ➞</td><td rowspan="3">Does prominent feature exist?</td><td>Yes ➞</td><td>Apply FSTAG technical provisions to segment of trail between terminus and prominent feature. [3]</td></tr>
<tr><td rowspan="2">No ➞</td><td rowspan="2">FSTAG does not apply.

Document cumulative deviation percentage.</td></tr>
<tr></tr>
<tr></tr>
</table>

[1] Excerpt from Forest Service Trail Fundamentals (www.fs.fed.us/r3/measures/Inventory/Trails.htm)

Definition of Designed Use: "The intended use that controls the desired geometric design of the trail, and determines the subsequent maintenance parameters for the trail…. Of the actively Managed Uses that the trail is developed and managed for, the Designed Use is the single design driver that determines the technical specifications for the trail."

Excerpt from Access Board Recommendations for Accessibility Guidelines: Outdoor Developed Areas, Final Report (page 11):

"The accessibility guidelines for trails apply to those which are designed and constructed for pedestrian use. These guidelines are not applicable to trails primarily designed and constructed for recreational use by equestrians, mountain bicyclists, snowmobile users, or off-highway vehicle users, even if pedestrians may occasionally use the same trails. People use these categories of trails by means of transportation other than foot travel or personal mobility device. Design and constructed requirements for equestrians, mountain bikes, OHVs, and snowmobiles are based on the specific requirements for the intended mode of transportation. For the safety of trail users, pedestrian use may not always be permitted on these trails in order to minimize conflicts between motorized and non-motorized recreation. These trails do not preclude use by a person with a disability since it is planned that all trail users would be using the one or more alternative means of transportation for which the trail is designed and constructed. The design and construction of pedestrian trails without consideration of these proposed guidelines, by contrast, could present barriers to some trail users because the intended use is by foot or personal mobility device. For these reasons, the committee intentionally limited the application of the proposed guidelines to pedestrian use trails.

It should be noted that the definition used in these proposed guidelines is not the only definition used by trail designers and manager. Rather, it was developed to specifically define the scope of these guidelines.

[2] If at any point during Step 3 the occurrence of one or more conditions of departure results in permitted deviations from technical provisions on more than 15% of the trail length, proceed to Step 4.

[3] Refer to the FSTAG for detailed instructions, definitions, and technical provisions 7.0 through 7.3.10.