Universal Access Trails and Shared Use Paths

Design, Management, Ethical, and Legal Considerations

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PENNSYLVANIA LAND TRUST ASSOCIATION

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Preface

We enjoy a diversity of landscapes in Pennsylvania. A trip around the state reveals a dizzying choice of recreational opportunities among forested mountains and agricultural valleys, urban parks, and suburban greenways. Given all the opportunities, it is not surprising that Pennsylvanians recreate outdoors frequently.

Pennsylvanians say that *walking* is their most popular outdoor recreation activity.[1] With many residents saying that they expect to increase their outdoor activity as time goes on, we can anticipate that the use of public trails will continue to rise.


Photo courtesy of Wildlands Conservancy

Fifteen percent of Pennsylvanians say that **age, health issues, or a physical disability is the most important factor limiting their outdoor recreation**.[2] According to the 2010 U.S. Census, 1 in 5 Pennsylvanians are 60 or older, and by 2020 Pennsylvania's 60 and older population is expected to be 25% of the total population—more than 3 million people.[3] In 2011 the overall percentage of Pennsylvanians of all ages with a disability was 13.4% (1,678,700 people of the 12,545,700 total state population). Among the six types of disabilities identified, the most common was an *ambulatory disability*, at 7.4 %.[4]

As the population ages and health issues and disabilities increase, a growing number of people will face limits to their outdoor recreational activities. However, these limits do not mean a reduction in the interest in nature, wildlife, physical exercise, and recreation; the limits do mean an increased challenge to those designing and providing trail experiences to the public.[5]

A person with a disability desires the same experiences, opportunities, and freedoms enjoyed by others. As former Olympic wheelchair racer Candace Cable shared in an interview:

> An outdoor sport does for people with disabilities exactly what it does for able bodied people—it gives us that connection with nature that is vital to our health and wellness. For people with disabilities, it's even more crucial, because we are told so often that our lives will be asphalt and concrete, and that we will be relegated to the smooth surface. We're told the natural environment, with its ups and downs and unpredictable places will not be a part of our lives anymore. We need that connection to nature. We need it to feel whole.[6]

When it comes to recreational pedestrian trails and shared use paths, every user brings his or her own unique set of needs and preferences. A disability does not necessarily eliminate a person's desire for outdoor recreational experiences. We *all* deserve access to lands open to the public, commensurate with our willingness to challenge ourselves and our desire to experience nature. This manual addresses the considerations involved with creating that access.

> Walking on walking, under foot earth turns.
> Streams and mountains never stay the same.
> —*Gary Snyder*[7]

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LEGAL DISCLAIMER

This manual includes information about federal statutes and regulations, which are constantly changing. This material is for informational purposes only and may not reflect the most current laws or regulations. These informational materials are not intended, and should not be taken, as legal advice. You should contact an attorney for advice on specific legal problems. Conservation Matters, LLC; Penn Trails, LLC; and the Pennsylvania Land Trust Association are not liable for damages resulting from your reliance on the information contained herein.

Foreword

Millions of people of all ages and abilities enjoy getting outside and going for a hike. Whether it's families pushing baby strollers, children, adults, seniors or people with limited mobility, trails often fit the shared interests of families or friends recreating together.

There's the physical aspect of exercise, but trails also provide so much more. Trails offer that opportunity to spend time away from daily pressures, surrounded by the natural world. Whether for a short or long hike, this time away helps us to better handle the emotional stressors in life.

Trails provide the opportunity to increase family cohesion by providing a place to go with children and to spend time together away from the constant electronic overload. Especially important are trails close to home—the local trail.

It's about kids in the woods. Unless youth get outside and experience the natural world, they will miss the health benefits and they are less likely to value the natural world and trails in the future.

A universally designed, sustainable pedestrian trail—one that stands up to years of use and serves a wide range of hikers—works with the environment and blends into the setting with the curves and reasonable slopes that make for an interesting hike. The surface needs to withstand the types of weather that occur in the area to minimize maintenance and have a tread width wide enough for the anticipated volume of expected hikers. Use of trail accessibility guidelines/standards result in trails that meet these goals while not requiring overdevelopment such as paving.

This manual provides lots of information to help you develop a trail that serves all people while fitting appropriately into the setting and being sustainable with low maintenance needs.

Shared use paths serve bicyclists and pedestrians. More guidance on the design and construction of these paths is expected from the U.S. Access Board. In the meantime, there are lots of questions for which this manual provides guidance.

The Department of Justice's rule on other power driven mobility devices raises concerns within the trails community as to how that rule applies in the outdoor recreation environment. This manual lays out what that law requires.

Many thanks to those who supported, developed and took this manual through the processes necessary to make it the useful tool it is.

Always keep in mind that by building, maintaining, and supporting a trail or route to serve all people, you contribute to the common good in many ways and for many years to come. Thank you for the work you do to open the joy of outdoor recreation to all.

Janet Zeller
National Accessibility Program Manager
U.S. Forest Service

Introduction

This manual reviews Best Management Practices ("**BMPs**") to utilize when planning, designing, constructing, and maintaining **pedestrian trails** for universal accessibility—for providing trails usable by all people, to the greatest extent possible, without separate or segregated access for people with disabilities. These BMPs, which derive from federal regulations, are mandatory for federal entities and those working on their behalf but voluntary for all others.

This manual also discusses accessibility BMPs applicable to **shared use paths** (including rail-trails). These BMPs derive from *proposed* federal regulations, which will, if and when finalized, be mandatory for all government entities but not for private organizations.

Neither of these sets of BMPs applies to trails or paths not intended for pedestrian use—for example, ATV, mountain biking or horseback riding trails.

Also discussed are the federal accessibility rules applicable to the pedestrian **routes** that connect parking lots, trails, shared use paths, and other accessible facilities to each other.

All trails and shared use paths—indeed, any areas open to pedestrians—that are owned or operated by a public or private entity covered by the Americans with Disabilities Act are subject to federal regulations on **Other Power-Driven Mobility Devices** ("**OPDMDs**"). These rules *potentially* greatly expand the types of vehicular devices that *must be permitted* on trails, shared use paths, other routes, and other areas open to the public. This publication discusses ways to manage access by these vehicles.

The manual also highlights as case studies several state-of-the-art trails among the many trails that provide universal access, as well as providing practical advice on technical standards, policies, and offering other helpful resources.

In summary, the manual:

- Explores who are the likely users of trails and shared use paths that provide universal accessibility;
- Identifies which entities are legally bound by the federal accessibility rules governing trails and the ones being developed for shared use paths, and which entities should regard these rules as BMPs;
- Reviews accessibility laws, regulations, exceptions, and BMPs relating to trails, shared use paths, and other pedestrian routes used in outdoor settings;

- Gives planning, design, and implementation guidance for developing trails and shared use paths that comply with accessibility standards and BMPs;
- Shares practical ideas for developing policies and implementing practices in support of accessibility;
- Reviews federal regulations governing OPDMDs and recommends what organizations may do to manage these devices;
- Presents case studies highlighting successful trail projects that incorporate universal design; and
- Recommends additional resources for trail and shared use path planning, design, construction, and maintenance.

There are many types of non-motorized, land-based recreational trails and shared use paths: hiker/pedestrian trails, mountain biking trails, equestrian trails, and multi-use trails designed for several user types.[8] The companion guide to this publication, the 2013 *Pennsylvania Trail Design and Development Principles: Guidelines for Sustainable, Non-Motorized Trails* (the "***Pennsylvania Trail Design Manual***"),[9] provides a great deal of guidance and detailed information about the characteristics of the various types of trails and paths. Readers should use that publication as a primary resource to help evaluate which specific type of route they want to plan, design, construct, and manage for their site. This publication focuses on the accessibility aspects of the most commonly constructed types.


Photo courtesy U.S. Access Board

Table 1: Overview of Guidelines for Routes, Paths, Trails, and Amenities

Which guidelines apply to which routes?				*To which amenities?*
Accessible Routes	**Shared Use Paths**	**Trails**	**Outdoor Recreation Access Routes (ORARs)**	**Outdoor Recreation Facilities**
U.S. Dept. of Justice	U.S. Access Board	U.S. Access Board	U.S. Access Board	U.S. Access Board
2010 ADA Standards for Accessible Design "2010 ADA Design Standards"	*(Proposed) Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way* "PROW Guidelines"	*2013 Outdoor Developed Areas Accessibility Guidelines* "Outdoor Guidelines" (or "ODAAG") Chapter 1017: Hiker and Pedestrian Trails ("Trail Accessibility Guidelines")	*2013 Outdoor Developed Areas Accessibility Guidelines* "Outdoor Guidelines" (or "ODAAG") Chapter 1016: Outdoor Recreation Access Routes	*2013 Outdoor Developed Areas Accessibility Guidelines* "Outdoor Guidelines" (or "ODAAG") Chapters 1011 through 1015
Required for all non-federal (Title II and III) entities (Note: The ABA Accessibility Standards are required on federal lands.)	Future requirement for all federal and other governmental entities (i.e., Title II agencies) Recommended as BMPs	Required for federal agencies and lands Recommended as BMPs for non-federal entities	Required for federal agencies and lands NOT recommended as BMPs for non-federal entities (see instead 2010 ADA Design Standards.)	Required for federal agencies and lands Recommended as BMPs for non-federal entities.
Applies to: All buildings and certain recreational amenities: • Administrative offices • Residences • Crew quarters • Visitor centers • Entrance stations • Parking lots Components such as: • Restrooms • Work stations • Doors • Operating controls Recreation	Applies to: Shared use paths located on either public or private land	Applies to: New or altered trails that are: • Designed for hiker or pedestrian use *and* • That connect either directly to a trailhead OR to another trail that substantially meets the requirements of the Outdoor Guidelines	Applies only to routes on federal lands that connect outdoor elements, spaces or facilities within a site	Applies to: • "Outdoor Constructed Features" • Parking Spaces within Camping Units and Picnic Units and Pull-Up Spaces at Dump Stations • Tent Pads and Tent Platforms • Camp Shelters • Viewing Areas

Facilities: • Boating and fishing facilities • Playground surfaces & equipment—ASTM				

1. Trails, Paths, and Routes: Applicable Regulations and BMPs

This chapter introduces key terminology and the federal regulations and best management practices applicable to trails, paths and accessible routes. The applicability and application of the regulations and BMPs are explored in greater depth in later chapters.

What Is It? The Nomenclature of Trails, Paths, and Routes

People typically use the generic word *trail* in describing a wide variety of paths over which one might travel. Federal regulators, in contrast, have assigned a narrow meaning to *trail* for regulatory purposes and have introduced other terms with very specific meanings. This manual, in order to be consistent with federal regulations and other publications, generally uses this federal nomenclature.

To make sense of the following chapters, readers must keep the following terminology in mind:

- **Trail** — "a route designed, designated, or constructed for recreational pedestrian use or provided as a pedestrian alternative to vehicular routes within a transportation system." [10] [11] This is the type of route most of us think of as a "hiking trail." The literature sometimes refers to this as a "hiker/pedestrian trail."
- **Shared use path** — a route providing an off-road means of transportation and recreation for **multiple types of users**, such as pedestrians and bicyclists. Shared use paths are different than trails from a regulatory, user, and construction perspective. They are typically located on an exclusive right of-way, with no fixed objects in the pathway and minimal cross-flow by motor vehicles. Portions of a shared use path may be within the road right-of-way but physically separated from the roadway by a barrier or landscaping. Some shared use paths provide very rural experiences while others pass through the heart of urban areas. Rail-trails are a primary example of a shared use path. On these types of paths, pedestrians share space with bicyclists, equestrians, or in-line skaters.[12]
- **Accessible route** — its purpose is to **connect an accessible facility** (e.g., a parking spot) to other accessible facilities (e.g., an accessible trail). The term is used in the context of regulations governing the work of non-federal entities.

- **Outdoor Recreation Access Route ("ORAR")** — a continuous, unobstructed path that **connects elements, spaces, or facilities within a site**, such as picnic areas, campgrounds, trailheads, and viewing areas. The term comes from regulations that are applicable only to federal entities.

Distinguishing one type of route from another—sometimes a challenging exercise—is critical in deciding which federal regulations or BMPs are applicable.

Table 1 above provides a brief overview of the various types of routes and their corresponding guidelines and scope.

(Note that this manual in places uses the word *trail* in its generic sense to avoid repeated use of the cumbersome string of terms "trail, shared use path, accessible route, or ORAR." The context should enable the reader to distinguish this generic use from the specialized one.)

Regulations vs. BMPs

For Trails

In 2013, the U.S. Access Board[13] issued the *Outdoor Developed Areas Accessibility Guidelines*[14] (*http://www.access-board.gov/outdoor/ outdoor-rec-app.htm*)[15] and in 2014 published its own guide, *Outdoor Developed Areas: A Summary of Accessibility Standards*.[16] This manual refers to these regulations as the "**Outdoor Guidelines**"; the literature also refers to them as "ODAAG."

The Outdoor Guidelines are legally binding only on:

- federal land management agencies (such as the Fish and Wildlife Service, the Army Corps of Engineers, and the National Park Service); and
- non-federal private or public entities building trails on federal land or on behalf of federal agencies.[17]

The Outdoor Guidelines are NOT binding on non-federal organizations or agencies simply because a project uses federal grant funds.

These guidelines are not applicable to trails primarily designed for use by equestrians, mountain bicyclists, snowmobile users, or off-highway vehicle users, even if pedestrians may use the same trails.[18]

This manual recommends that non-federal organizations use Chapter 1017 "Hiker and Pedestrian Trails" of the Outdoor Guidelines as BMPs for their trail projects.

In the future, the U.S. Access Board plans to develop outdoor recreation area standards specifically for state and local governments and private and non-profit

organizations. Until standards are developed, which could be years from now, the U.S. Department of Justice is not *requiring* private organizations and non-federal government entities to make their hiker/pedestrian trails accessible.[19] Until binding regulations are developed, the new Outdoor Guidelines provide an excellent roadmap for private entities and local government agencies that want to design and build hiker/pedestrian trails that offer accessibility.

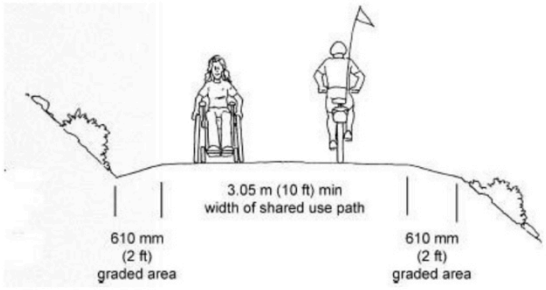
For Shared Use Paths

Shared use paths follow a different set of guidelines and suggested practices. The generally recognized authority for designing and constructing shared use paths has for several years been the American Association of State Highway Transportation Officials' ("**AASHTO**") *Guide for the Planning, Design, and Operation of Bicycle Facilities* (the "***AASHTO Guide***").[20]

The U.S. Access Board is developing accessibility standards for shared use paths. When finalized, the guidelines will be binding on all federal and non-federal governmental entities. The Access Board notes that the *Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way* (the "PROW Guidelines")[21] are consistent with the design criteria for shared used paths in the *AASHTO Guide.*

This manual recommends that governmental and non-governmental entities alike use the PROW Guidelines **as BMPs for their shared use path projects.**

SHARED-USE PATHS:
Shared use paths provide a means of off-road transportation and recreation for various users, including pedestrians, bicyclists, skaters, and others, including people with disabilities.



Graphic courtesy www.fhwa.dot.gov

For Accessible Routes and ORARs

Accessible routes and ORARs each have their own set of regulations:

- The 2010 ADA Standards for Accessible Design (the "**2010 ADA Design Standards**") cover **accessible routes**, both indoors and outdoors. These regulations (which also govern a number of outdoor amenities) are legally binding on private organizations and non-federal government entities.

- Chapter 1016 "Outdoor Recreation Access Routes" of the Outdoor Guidelines sets forth the requirements for all federal agencies in regards to **ORARs**. Specifications for ORARs are provided in the Appendix.

Even if following the ORAR standards as BMPs would make more sense in some instances (because they—unlike the 2010 ADA Design Standards—were specifically designed to provide technical specifications for routes in outdoor settings), non-federal entities are advised to follow the binding 2010 ADA Design Standards.

ACCESSIBLE ROUTES:
Accessible routes connect accessible onsite features (e.g., bus stop, parking) to the building entrance.

Graphic courtesy www.ada.gov

For Trailheads and Trail Amenities

Although many aspects of **trailhead** and **trail amenity design** (e.g., gates, parking spots) are addressed by the 2010 ADA Design Standards, Chapters 1011 through 1015 of the Outdoor Guidelines provide non-federal entities with BMPs for components that are not covered by ADA regulations.

OPDMD Regulations

Pursuant to the Americans with Disabilities Act, the U.S. Department of Justice issued regulations on OPDMDs effective in March 2011 that greatly expand the types of vehicular devices potentially allowed on trails, shared use paths, other routes, and any area open to the public. As explained in the OPDMD chapter, **unless organizations create policies governing the use of OPDMDs on trails and other publicly accessible lands, ALL such vehicles must be allowed without restriction**. This rule applies both to government agencies and to private organizations with trail systems and other lands open to the public.

2. Addressing Accessibility and Sustainability

The Wide Range of Trails[22] and Trail Experiences

Universal Design

When approaching the planning and design of a new trail, it is important to consider the potential range of experiences that people will bring to that trail, including people with disabilities. According to the Americans with Disabilities Act, an individual with a disability is a person who:

- has a physical or mental impairment that substantially limits one or more major life activities; or
- has a record of such an impairment; or
- is regarded as having such an impairment.[23]

Universal trail planning and design should take into account the major life activities, which include walking, seeing, hearing, speaking, breathing, and thinking. The best way to address accessibility is to use the principles of **universal design**. Universal design is designing programs and facilities to be usable by all people to the greatest extent possible, without separate or segregated access for people with disabilities.[24]

User Experience is the Purpose

All trails should have *a purpose* that underlies its design. Simply meeting accessibility guidelines, be they required by law or suggested as BMPs, does not a successful trail project make. **The primary purpose is the user experience.** Thus, the planning and design of a trail that complies with the accessibility guidelines is dependent upon what the users themselves desire for that specific location. "Often, a trail designer/advocate prematurely determines which groups will use a trail. It is usually wise not to limit your intended users until others have commented on the proposal."[25]

Every trail is unique in terms as to how it physically presents itself. Each trail has its own shape, look, feel, sound, and smell. People who enjoy (as well as dislike) a particular trail will describe what they like about it in terms of those characteristics. They may say; "I loved the way it felt under my feet," "It was too steep for me," or "I loved the sound and smell of those pines as I travelled along the trail." A professional trail design and construction process should result in a constructed trail that addresses these experiential and sensory factors.

The Federal Highway Administration notes that because "people are naturally most comfortable with their own needs, designers should attempt to create a connection between themselves and intended users of the facilities they create. If done successfully, this understanding will result in more accessible facilities and higher quality experiences on trails."[26]

Considerations in Planning and Design

Considerations to take into account when planning and designing a trail for universal access include:

- **Trail aesthetics**: Does the trail provide views, interesting terrain, shade, proximity to streams, lakes, wildlife, and plant life?
- Are there **other trails in the area** that are in similar terrain?
- Does the trail **create a loop or a connection** to another trail?
- How much energy and **money** would it take to make the trail accessible?
- If the trail were to be made accessible, **how accessible** would it be (i.e. easy, moderate, difficult, most difficult)?
- Would making a trail accessible to users with disabilities make it **less enjoyable** to other users?
- Would making the trail accessible make it more or **less sustainable**?
- Would making the trail accessible **impact flora or fauna** in the area?
- Are there other trail uses that may cause **conflict** (e.g., a high level of dog walking or bike usage)?

Who are the Users?

Before a trail is designed it is critical to identify what its *Managed Use* will be. Managed Use means asking the question: Who are the intended users? The diversity of landscapes and trail users in Pennsylvania means that we can expect a wide variety of what citizens seek regarding their trail experiences. Since different types of users have very different ideas as to what a trail experience should consist of, trail planners must understand who will be visiting and using a particular trail. For instance, if hikers decide to travel to a trail located in an area known for little development and scenic beauty, it makes perfect sense that a universally accessible trail would be designed and constructed to convey that experience. Likewise, a local neighborhood park that provides a shared use path for pedestrians and bicyclists should take into account the potentially higher user volume and the amenities that both user types would desire.

The *Pennsylvania Trail Design Manual* provides detailed information about the design factors that go into trails and shared use paths.

Sustainable Trails Can Provide Accessibility

Sustainability

All trails—whether designed for pedestrians only or for multiple types of users—ought to share one goal: to meet the recreational needs of the present generation without compromising the ability of future generations to meet their own recreational needs.[27] This is at the core of *sustainability*.

A great deal has been written over the past two decades about the importance of planning and constructing trails that are physically, ecologically, and economically sustainable: [28]

> **Physical Sustainability** — Designing trails to retain their structure and form over years of use and under human and natural forces is a key factor in sustainability. The more a trail is utilized, the more it is susceptible to wear and tear. Thus, a trail must be designed with anticipated usage in mind to ensure that it remains physically stable with appropriate maintenance and management.
>
> **Ecological Sustainability** — Minimizing the ecological impacts of trails and protecting sensitive natural and cultural resources is fundamental in sustainable trail design and development.
>
> **Economic Sustainability** — The implementing agency or advocacy group must have the capacity to economically support the trail over its life cycle. Developing and committing to a long-term maintenance strategy is a critical aspect of a successful trail program.

Universal Design Principles Encourage Sustainable Practices

Designing and building trails that are accessible requires adherence to specific design parameters; so too does designing and building for sustainability. For example, geological conditions such as steep slopes or habitat conditions such as wetlands present as much a challenge to planning and building a sustainable trail as they do in planning and creating a trail that is universally accessible.

Not surprisingly, **principles of universal design also encourage sustainable practices,** providing:

- **Paths that traverse along the side slope** — Trails should traverse side slopes instead of travelling down the fall line. The result is far less susceptibility to erosion and a more accessible path of travel.
- **Sustainable grades** — Reducing running (linear) grades of trails decreases erosion as well as creating greater access for a broader range of users.
- **Erosion resistance** — Firm and stable trail tread surfaces (as opposed to loose granular or soft soil surfaces) offer more sustainability as well as greater range of access for users.
- **Out-sloped tread** — This practice encourages sheet flow of runoff at low velocities, away from the trail, rather than down the trail.
- **Frequent linear grade reversals** — This BMP minimizes erosion by slowing the velocity of water (and the materials it carries) along the trail, thereby increasing sustainability of the trail's tread surface. Because linear grade reversals are meant to be gradual, they can easily accommodate the Outdoor Guidelines' trail design parameters for accessibility.
- **Positive user experiences** — Trail structures incorporated into the trail to protect natural resources (for example, boardwalks over wetlands) can also provide universal access to users.
- **Low maintenance needs** — One example is the use of rolling grade dips and grade reversals (rather than water bars and check dams) to control water and limit erosion of the trail tread. The former require little if any maintenance, whereas the latter require ongoing maintenance.

Appendix A: "Key Weblinks and Publications" points the reader toward a number of written materials, websites, and organizations to assist with further exploration of sustainable trail concepts. Pennsylvania entities should also utilize the *Pennsylvania Trail Design Manual* as a technical resource in their trail planning, design, construction, and management.

Utilizing a Unified Process for Trail Management, Planning, Design, Construction, and Maintenance

Trail planning and design professionals know that a comprehensive trail plan is essential to developing a trail that will withstand the rigors of weather and intended user traffic for many years.

Each Trail is Unique


Photo courtesy of Penn Trails

Trail plans should consider each trail as unique. For example, one plan could envision a hiking trail in a suburban park setting that needs to accommodate thousands of users on a single day, including people using accessibility devices. Because of that trail's Managed Use, its width may need to be much greater than hiking trails in other areas, and should be constructed with a highly stable tread surface resistant to high-volume user demands.[29]

By comparison, an accessible hiking trail that provides a secluded journey to a scenic overlook, undertaken by less than 100 people per day, would be narrower and may feature a compacted aggregate surface that provides occasional turnouts for resting and passage.

The goal of effective trail planning and design is to clearly take into consideration who will be using the trail in the near and long term, as well as the estimated frequency of usage, safety considerations, and major obstacles (which may require structures such as bridges). For example, the use of OPDMDs on a hiking trail could potentially increase tread surface wear if such devices had not been projected into the initial planning process. To meet the above goal, the trail plan and design should include clear objectives regarding both construction and materials that will meet such use in the long and short term.

Trail Fundamentals

Chapter 5 of the *Pennsylvania Trail Design Manual* recommends that land managers establish **trail management objectives** during the trail planning process. The Trail Management Objectives ("**TMOs**") process developed by the U.S. Forest Service in 2006, although technically applying only to its own lands, are recommended as BMPs for entities building sustainable trails on non-federal land. TMOs synthesize the management intention of a proposed or existing trail, providing a means of recording basic information for future trail planning, management, and reporting.

The cornerstones of TMOs are known as the *Trail Fundamentals*,[30] five concepts that are the cornerstones of solid trail management. Trail Fundamentals provide an excellent approach to undertaking any trail's plan, design, construction, management, and ongoing maintenance. Whether for pedestrian trails, or equestrian, mountain biking, or other trail uses, these BMPs provide a modern, integrated means to consistently determine, record, and communicate the intended design and management guidelines for sustainable trails. The **five fundamentals** for any type of user trail are:

- **Trail Type** — A category that reflects the predominant trail surface and general mode of travel accommodated by a trail.
- **Trail Class** — Trail classes apply to all types of trails—equestrian, OHV, biking, hiking, and others. Trail classes broadly organize trails by desired management characteristics and level of development. Trail classes take into account what user preferences are for a particular trail, its setting, protection of sensitive resources, and the land manager's trail management intent. Trail classifications range from Class 1 trails, which appear little different from a deer path and may disappear intermittently, to Class 5 trails, which are wide paths—frequently paved—associated with highly developed environments.[31]
- **Managed Use** — A mode of travel that is *actively* managed and appropriate on a trail, based on its design and management.
- **Designed Use** — The Managed Use of a trail that requires the most demanding design, construction, and maintenance parameters and that, in conjunction with the applicable trail class, determines which design parameters will apply to the trail.
- **Design Parameters** — Technical guidelines for the survey, design, construction, maintenance, and assessment of a trail, based on its Designed Use and trail class.

Together, these five BMPs help planners objectively site trails in the appropriate areas with the most sustainable use and design parameters determined, thereby delivering better performance, more public satisfaction, and less maintenance over the long term.

The U.S. Forest Service has been at the forefront of developing and utilizing trail design parameters for several decades. This included developing their own *Trail Accessibility Guidelines* ("**FSTAG**")[32] and *Outdoor Recreational Access Guidelines* ("**FSORAG**")[33] in 2006 and updated in 2013, which are nearly identical to the U.S. Access Board's Outdoor Guidelines.

3. Surface, Grade and Structures: Physical Keys to Accessibility

Tread Surface: Where the User Meets the Trail

Surface, along with grade, is the most critical structural component of a trail or shared use path that will provide accessibility. Substantial attention should be devoted to creating well-shaped, durable, firm, and stable surfaces:

- The surface must be firm and stable so that users with disabilities do not expend unnecessary energy that could be used enjoying the trail; and
- The chosen surface materials should, by addressing the above, enhance accessibility while not changing the desirable setting. Therefore, not only the functionality but the aesthetic of each surface material type should be carefully considered.[34]

Table 2: Considerations for Different Tread Surfaces

Trail Surface Material	**Relationship to Managed Use and Designed Use**	**Relationship to Design Parameters and Construction Practices**
Stone aggregate; rock.	Native material; more natural aesthetic; useful in more remote and/or steep terrain; easier to shape.	Smaller project footprint; higher tolerance for protrusions and obstructions; can be done by hand and with smaller equipment; specific construction techniques required to provide compact and uniform surface.
Wood; concrete; asphalt; recycled material; chemically modified soil or sand.	Lower profile terrain; useful in environmental settings such as wetlands; good durability in urban settings and heavy use areas.	Larger project footprint; tighter tolerances for protrusions and obstructions; conventional construction techniques and equipment.

Courtesy of Penn Trails LLC and Conservation Matters, LLC

Trail Tread Surfaces

When reviewing trail tread[35] surface material for a specific project, the National Center on Accessibility recommends addressing the following questions:

- **Who is the primary user group?** A trail should provide specific benefits for the users for whom it is managed. **What is the goal of the trail experience for that primary user group?** A trail should have at least one specific purpose.
- **What are your budget and maintenance parameters?** Look at a five-year period after completion of the trail project; create an annual budget and maintenance cycle.
- **What are the characteristics of the adjacent trail corridor?** There may be other connections to consider when planning the trail, such as visitor amenities, picnic areas, other trails, geological features, and more.[36]

The traffic volume and flow, along with geological, environmental, and typical weather conditions all factor into deciding what the most appropriate surface material will be for a chosen trail and the individual segments that comprise it.[37]

Slip resistance is not required for the surface of trails because leaves, dirt, ice, snow, and other surface debris and weather conditions are part of the natural environment that would be difficult, if not impossible, to avoid.

Shared Use Path Tread Surfaces

Unlike trails, the PROW Guidelines for shared use paths require a surface that is firm, stable, *and slip resistant*.

> A firm, stable, and slip resistant surface is necessary for persons with disabilities using wheeled mobility devices. Bicyclists with narrow-tired bicycles and in-line skaters also need a hard, durable surface. Shared use paths typically are comprised of asphalt or concrete and these surfaces are generally accessible for people with disabilities. These surfaces perform well in inclement weather and require minimal maintenance. Unpaved surfaces that are firm, stable, and slip resistant may be used; however, they may erode over time requiring regular maintenance.[38]

The proposed shared use path regulations do not *require* a paved surface. Many users, such as runners and equestrians, may actually prefer *unpaved* surfaces. Shared use path planners and designers should consider various user desires, accessibility requirements, construction material costs, surface longevity, and long-term maintenance costs when deciding which specific surface type is most appropriate for their project.

Aggregate Materials for Tread Surfaces

In Pennsylvania, limestone is widely available and provides an excellent natural aggregate material for constructing trails and shared use path treads. In a study sponsored by the U.S. Access Board, the National Center on Accessibility assessed the firmness and stability of 11 different types of natural aggregate and treated soil surfaces over a four-year period to determine their effectiveness after exposure to the elements, freeze and thaw cycles, and other factors. Researchers concluded that "a trail composed of an all-aggregate material, when constructed to specified parameters, could be maintained with little or no maintenance as a firm and stable surface."[39]

When considering natural aggregate surface materials, the following provide firm surfaces that also provide great stability:

- Crushed rock (rather than uncrushed gravel);
- Rock with broken faces (rather than rounded rocks);
- A rock mixture containing a full spectrum of sieve sizes (rather than a single size);
- Hard rock (rather than soft rock that breaks down easily);
- Rock that passes through a ½" (13 mm.) screen;
- Rock material that has been compacted into 3" to 4" (75 to 100 mm.) layers (not thicker layers);
- Material that is moist, but not too wet, before it is compacted (rather than material that is compacted when it is dry); and
- Material that is compacted with a vibrating plate compactor, roller, or by hand tamping (rather than material that is laid loose and compacted by use).[40]

With the above factors in mind, the following two tables provide examples of specific stone aggregate mixtures ("sieves") that achieve desirable firmness and stability. "The rock must be crushed into irregular and angular particles to allow interlocking into a tight matrix. The more angular the particles, the better. Rounded particles like pea gravel or decomposed granite never mechanically lock together. The crushed rock must have adequate fines and some natural binders in order to cement the particles together after the fines are moistened, compacted, and allowed to dry."[41]

3/8 Minus aggregate stone mixture	
Aggregate Sieve Size	***Aggregate Percent Passing***
3/8″	100%
#4	90 – 100%
#8	55 – 80%
#16	40 – 70%
#30	25 - 50%
#200	6 - 15%
Source: American Trails "Building Crusher Fines Trails," Lois Bachensky, USDA Forest Service.[42]	

The 3/8 Minus aggregate, available from many quarries, has typically been utilized on trails and shared use paths in Pennsylvania and throughout the United States.

Trail Surface Aggregate ("TSA")	
Aggregate Sieve Size	***Aggregate Percent Passing***
1/2″	100%
3/8″	96-100%
#4	75-90%
#8	55-75%
#16	35-50%
#200	12-20%
Source: The Center for Dirt and Gravel Road Studies, Larson Transportation Institute, Penn State University.[43]	

More recently, Penn State's Center for Dirt and Gravel Roads has developed a specific Trail Surface Aggregate ("**TSA**"). The TSA mixture achieves very high densities to withstand traffic and erosion, which can be useful when constructing shared use paths that call for a stone aggregate tread.

The Center for Dirt and Gravel Roads also provides an aggregate stone tread recipe[44] that mixes existing aggregate gradations, very similar to the 3/8 Minus mixture, commonly processed at Pennsylvania quarries. The recipe approach may be more cost effective when ordering small amounts of trail tread material for smaller jobs.

Quality control of materials is vital to a project's successful outcome. When using aggregate, visit the local quarry that will be used for the project. Select the material on-site and take time to test it first before applying it to the whole project.

Regardless of the surface material(s) chosen for a particular project, the finished tread needs to be properly shaped, compacted, and set to ensure a firm and stable surface. Grade and cross slope can potentially change after settlement occurs, especially with natural surface trails. In the case of other surfaces, obstructions (such as gaps between boards) may develop when the materials cure. It is best to establish a post-construction review and base it upon the materials used, typical seasons, and weather patterns, as well as projected use. Such monitoring also helps in establishing the ongoing maintenance process.

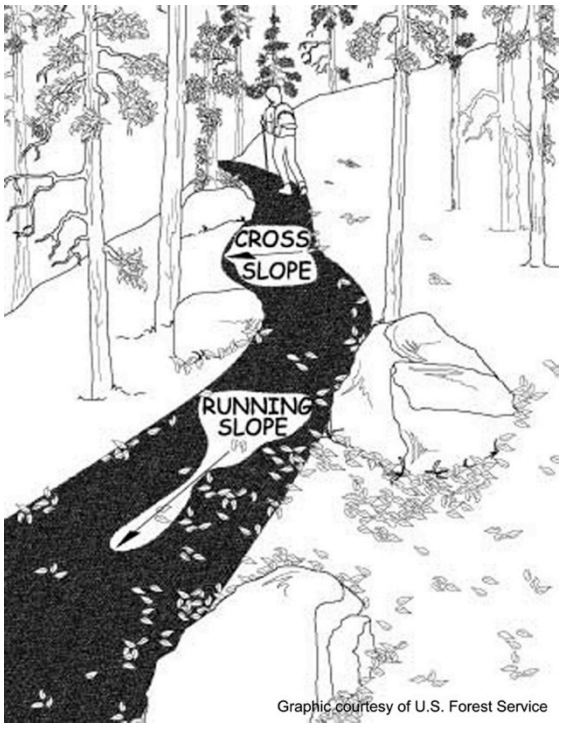
Determining *how hard* the surface needs to be is an important question. For instance, while asphalt provides a firm, stable, and slip resistant surface, it may not be appropriate for the designed and Managed Use. The design parameters for tread depth, width, and firmness should inform the proper material selected for construction of a given route's surface.

American Trails magazine noted the following about tread surfaces:

> [I]f the answer to both of the following questions is yes, the surface is probably firm and stable:
>
> - Could a person ride a narrow-tired bicycle across the surface easily without making ruts?
> - Could a folding stroller with small, narrow plastic wheels containing a three-year-old be pushed easily across the surface without making ruts?
>
> Firm and stable surfaces on trails prevent assistive devices from sinking into the surface, which would make movement difficult for a person using crutches, a cane, a wheelchair, or other assistive device. In the accessibility guidelines, the standard assistive device is the wheelchair because its dimensions, multiple moving surface contact points, and four wheels often are difficult to accommodate. If a person using a wheelchair can use an area, most other people also can use that area.[45]

Grade: Determining the Path of Travel

Running slope and *cross slope* will dictate a great deal in regard to (i) where a universally accessible trail or shared use path should be located, and (ii) the scale of construction needed to provide grade and cross slope that meet accessibility guidelines or BMPs. For trails, multiple options are possible. However, grade parameters for shared use paths are more stringent. Grade parameters for accessible routes, specified in the 2010 ADA Design Standards, are also more stringent than those permitted for ORARs.



Graphic courtesy of U.S. Forest Service

Structures on Universal Access Trails

Steep or wet terrain[46] does not necessarily eliminate the potential for an accessible trail. The use of various structures may enable a trail traversing this terrain to meet the Outdoor Guidelines.

Table 3: Constructed Features on Universal Access Trails

Constructed Feature	**Relationship to Grade, Cross Slope, and Tread**
Surface (see the table "Considerations for Different Tread Surfaces")	Defines the user's path of travel
Full bench trail construction	Controls grade and cross slope, solid foundation for firm and stable surface
Boardwalk and bridges	Firm and stable surface, defines path of travel, controls grade and cross slope
Retaining wall	Controls grade and cross slope, holds surface material
Ramp	Controls grade and cross slope, holds surface material
Climbing and switchback turns	Controls grade and cross slope
Turnpike	Controls cross slope, holds surface material

Should the impacts on the land or the costs associated with constructing structures that would provide universal accessibility exceed what an organization believes is practicable for a specific project, this may be a "condition for departure" from the regulations/BMPs for the particular trail segment or possibly the entire trail. (See below: "When Exceptions to Trail Regulations/BMPs Are Warranted." Note that for *accessible routes*, on the other hand, the binding 2010 ADA Design Standards may *require* built structures and components such as bridges, boardwalks, and/or ramps.)

4. What One Must Do: Regulations Addressing Accessibility

Federal regulations regarding accessibility and outdoor recreation are promulgated under two separate statutes, the Americans with Disabilities Act ("**ADA**")[47] and the Architectural Barriers Act ("**ABA**").[48]

The Americans with Disabilities Act

The Americans with Disabilities Act is a broad federal civil rights law that largely prohibits discrimination based on disability. The law defines "disability" as "...a physical or mental impairment that substantially limits a major life activity."[49]

The ADA has broad application. It has five main sections, or "titles," of which the relevant ones for this manual are:

- **Title II**—covering services and programs of state and local governments (such as public transportation, recreation programs, courts, buildings, and employment.); and
- **Title III**—covering "public accommodations."

Title II and III entities not only are bound by the ADA statute itself but by regulations that the U.S. Department of Justice issues interpreting the ADA—like the 2010 ADA Design Standards or the OPDMD rule (discussed later in this publication). Federal agencies and facilities, on the other hand, are covered by a different law: the ABA.

ADA's Applicability to Public Agencies

Title II addresses non-federal government entities.[50] This includes, among others, school districts, townships, boroughs, cities, counties, and states. For instance, county and municipal park and recreation departments and their programs fall under Title II of the ADA. Title II reads in part:

> No qualified individual with a disability shall, by reason of such disability, be excluded from participation in or be denied the benefits of services, programs, or activities of a public entity….[51]

The requirement that a public entity make its programs accessible to people with disabilities is termed "program access."[52]

ADA's Applicability to Private Organizations

Title III of the ADA provides that:

> [N]o individual may be discriminated against on the basis of disability with regards to the full and equal enjoyment of the … facilities … of any place of public accommodation by any person who owns, leases (or leases to), or operates a place of public accommodation.[53]

A *place of public accommodation* means a facility operated by a private entity whose operations affect commerce and fall within particular categories *including most places of recreation*, transportation, education, dining, commerce, and lodging. Trails open to the public, which a nonprofit land trust manages on private land via trail easements, for example, would constitute a place of public accommodation. In contrast, private land upon which hunters are allowed to enter generally would not be considered a place of public accommodation.

2010 ADA Design Standards

To provide guidance on how entities should make improvements to comply with the ADA, the U.S. Department of Justice has issued a number of regulations, including those identified in Chapter 1 as the 2010 ADA Design Standards**.**[54] The 2010 ADA Design Standards, which are binding on entities covered by Title II and Title III, are minimum accessibility standards for buildings and other structures. As of March 15, 2012, compliance with these regulations was required for new construction and alterations.

The 2010 ADA Design Standards contain technical specifications for building and site elements such as parking, accessible routes, ramps, stairs, elevators, entrances, drinking fountains, and bathrooms. It also specifies how many accessibility features must be incorporated in each facility (these are called "**scoping" requirements**[55]).[56]

The 2010 ADA Design Standards include scoping and technical specifications for a number of recreation-related amenities including: **play fields and courts; fishing piers; boat slips; drinking fountains; play areas; swimming pools; and fixed picnic tables**. (See generally, 2010 ADA Design Standards, Chapter 10, Recreation Facilities.[57]) These regulations also require Title II and Title III entities to provide **accessible parking and an accessible route to connect users to accessible recreation-related facilities that are subject to the 2010 ADA Design Standards.** (See generally 2010 ADA Design Standards, Chapter 4, Accessible Routes.[58])

A discussion of the requirements for facilities and elements covered by the 2010 ADA Design Standards is outside the scope of this manual. It is recommended

that park managers, planners, designers, contractors, and trail organizations refer to the regulations and the resources mentioned in the Appendix to this manual and become familiar with the provisions that relate to the specific recreation facilities associated with their parks and trails.[59]

The **2010 ADA Design Standards provide guidance on how certain developed recreation facilities should be made accessible but do not address trails or shared use paths**. Many of the technical standards appropriate for elements in developed areas would be inappropriate if applied to outdoor elements in parks and other natural settings. For instance, if grade and width requirements for accessible routes in the built environment were imposed on hiking trails, few would be able to qualify as accessible. In addition, the strict design requirements required of accessible routes might damage the very natural resources a trail was intended to highlight.

OPDMD Regulations

State and local government entities and private organizations are subject to regulations governing the use of OPDMDs on public land and land considered a place of public accommodation. These regulations are issued pursuant to Title II and III of the ADA.

Architectural Barriers Act and the Outdoor Guidelines

The U.S. Access Board in 2013 issued separate accessibility regulations for hiker/pedestrian trails, identified in Chapter 1 as the Outdoor Guidelines.[60]

The **Outdoor Guidelines were promulgated under the ABA**—the law governing accessibility of *federal* facilities—not the ADA. Consequently, the Outdoor Guidelines are binding only on:

- Federal land management agencies (such as the Fish and Wildlife Service, the Army Corps of Engineers, and the National Park Service)[61]; and
- Non-federal private or public entities building trails on federal land or on behalf of federal agencies.

The Outdoor Guidelines are not binding on organizations simply because they use federal funds or grants.

Future Extension of Trail Regulations to Non-Federal Entities

In the future, the U.S. Access Board plans to develop outdoor recreation area standards specifically for Title II and Title III entities. Once those federal regulations are developed and adopted, trails on public lands owned by Title II entities (i.e., local and state governments) will be subject to those future

regulations via the ADA requirement that a Title II entity's services and programs be accessible.[62] Additionally, to the extent that the general public is permitted onto trails owned, operated, or leased by *private entities* such as land trusts, those trails would be deemed "places of public accommodation" under the jurisdiction of Title III of the ADA and would be subject to future ADA regulations governing trails and outdoor recreation areas.[63]

When trail accessibility standards are developed and then incorporated into the ADA—which could be years from now—Title II and III entities will be bound by those regulations. **Until then, the Department of Justice is not *requiring* private organizations and local governments to make their pedestrian/hiker trails accessible.**[64] **But while the Outdoor Guidelines are not binding on non-federal entities, they nonetheless provide an excellent roadmap—and the BMPs—for private entities and local governments that want to design and build sustainable, accessible hiker/pedestrian trails.** These BMPs are discussed in detail below. This publication recommends that organizations and government agencies utilize these BMPs as their own guidelines for providing accessibility on trails.

Regulations Proposed for Shared Use Paths

The Outdoor Guidelines don't address shared use paths. According to the *Pennsylvania Trail Design Manual*, the current general authority for designing and building shared use paths is the *AASHTO Guide.* However, the U.S. Access Board is developing accessibility standards for shared use paths—the PROW Guidelines as introduced in Chapter 1. If and when finalized, the **guidelines will be binding on all federal and non-federal governmental entities but not private entities**. The regulations will apply whether the path is located on public or private land.

Other Laws

A review of all possible state, county and local laws and regulations that may touch on accessibility issues is outside the scope of this manual. The *Pennsylvania Trail Design Manual* has a discussion of many regulatory requirements.[65] In addition, trail and shared use path builders should be aware that:

- If boardwalks or other stream crossing structures are necessary in wetland areas for accessibility purposes, they will need to obtain a permit from the Pennsylvania Department of Environmental Protection;
- Construction near Pennsylvania Natural Diversity Index ("**PNDI**") sites should be discussed with the appropriate state or federal agency;

- Government funders often have strings attached to their grants that may require trails, shared use paths, and related amenities to be built to stricter accessibility standards than regulations would require or BMPs would suggest;
- County Conservation Districts have Erosion & Sedimentation Controls that govern certain aspects of trail and shared use path construction; and
- Although to the best of the authors' knowledge there currently are no separate, state-issued accessibility regulations relating to hiker/pedestrian trails, shared use paths, or related amenities, the state Uniform Construction Code[66] (which has been adopted by most Pennsylvania municipalities) contains general construction standards for facilities, which might apply to amenities provided along trails and shared use paths (e.g., restrooms, shelters).

5. Crafting Policies To Address Accessibility

Organizations should consider ways to expand their inclusivity beyond what the law requires. Although trails and shared use paths are not currently covered by the ADA, it is recommended that entities incorporate the Outdoor Guidelines and PROW Guidelines into park master plans, trail network plans, transportation plans, etc. One reason is that future rulemaking by the U.S. Access Board likely will require shared use paths and non-federal trails to have a large degree of accessibility. The other reason is that it is the right thing to do.

For instance, although the Greater Albuquerque Recreational Trails Committee recognized that there are not yet binding regulations governing shared use paths, it voted to set a goal of making 1/3 of all shared use paths in the community accessible. Recently, it started its auditing process to determine which paths to select for accessibility improvements; decide how to prioritize the paths; inventory the specific accessibility improvements needed; and develop cost estimates.[67]

Organizations should set a goal of applying the BMPs to all new and altered trails they develop. As explained elsewhere in this publication, this means that certain new/altered trails will be able to be made accessible—*in full or in part*—and some will not (because of challenging terrain, high construction costs, or other "conditions for departure"). The same evaluation should be made with regard to shared use paths (keeping in mind that allowable exceptions to these BMPs/regulations will be more limited).

An organization could also determine as a policy matter that it should take every opportunity to make *existing* trails or shared use paths more accessible even if no alterations are planned. For example, if during routine trail maintenance staff needs to cut an opening through a downed tree across the trail, s/he could be directed as a matter of policy to make the opening wide enough for a wheelchair (32 inches) or the category of OPDMD allowed on that trail.

More generally, organizations may want to refer to a study conducted by the National Center on Accessibility that details practices in the field of parks and recreation accessibility management that exceed the minimum standards set forth by the ADA and other disability-related legislation.[68] The study defined best practices in accessibility as "those common, identifiable procedures, attitudes and behaviors, which exceed the minimum standard represented in the practice and delivery of accessible recreation programs and facilities." The study identified the BMPs as:

1. Provision of accessible information to patrons, in alternative formats, recognizing persons with visual, hearing, or cognitive impairments.
2. Practices that exceed the minimum standards/guidelines for accessibility established by the Americans with Disabilities Act Accessibility Guidelines.
3. An established set of policies which facilitate and promote inclusive and accessible programs, and facilities, in the delivery of recreation and leisure services.
4. Establishment of an ongoing, periodic training program for agency personnel and volunteers regarding accessible and inclusive concepts and practices for people with disabilities.
5. Establishment of an Accessibility Advisory Board (or similar group) which includes persons with disabilities.
6. Demonstrated support by administrators regarding accessible recreation programs.
7. Delivery of integrated recreation programs and activities for persons with and without disabilities if applicable, feasible, or desirable.
8. Marketing materials and program brochures that are accessibility-oriented for the promotion of inclusion of persons with disabilities.
9. Recruiting staff and volunteers with disabilities to develop and deliver public programs.
10. An organizational culture and attitude where recreation staff recognizes and promotes the rights of all persons to access fulfilling and enjoyable recreation activities, regardless of ability or disability.
11. Expenditures related to the purchase of adapted equipment, services, and/or accessibility improvement projects in the financial planning and budgeting process.
12. Public programming that reflects the diversity of communities to include people with disabilities.[69]

6. Technical Accessibility Guidelines for Trails

This chapter builds on Chapter 1's introduction to trail regulations and BMPs, looking closely at the technical accessibility provisions for trails[70] that are contained in Chapter 1017 of the Outdoor Guidelines. Trail designers and contractors often refer informally to Chapter 1017 as the "**Trail Accessibility Guidelines**."[71] These technical specifications and scoping requirements are discussed in detail below. (Information on shared use paths is found in the next chapter.)

Which Trails Are Covered by the Outdoor Guidelines as BMPs?

The first order of business for trail providers is to determine whether the Outdoor Guidelines regarding grade, surfacing, resting intervals, etc., even apply to a particular trail.

The Outdoor Guidelines only apply to federal agencies (and to trails on federal land), but even on federal land the Outdoor Guidelines only apply when the trail meets all three threshold criteria discussed below. State and local government agencies and private organizations that are using the Outdoor Guidelines as voluntary BMPs for their trails should **consider these criteria in determining whether to apply the accessibility guidelines.** Note that while a trail may not meet the threshold criteria, an entity may choose to apply the BMP, in whole or in part, anyway.

The Outdoor Guidelines only apply if:

1. **The trail is new or altered.**

- "Altering"means changing the design, function or purpose of the trail OR changing the overall grade, width, or surface of an existing trail OR significantly re-routing an existing trail.[72] The Outdoor Guidelines note that routine or periodic maintenance activities performed to return an existing trail to the condition to which the trail was originally designed do not trigger the accessible trail guidelines. (The Glossary provides a detailed explanation of routine and periodic maintenance.)
- Where practicable and feasible, resource managers should consider improving accessibility on trails through trail maintenance and repair activities. Every time a trail is maintained or repaired, the opportunity to improve access may be present.[73]

2. **The trail has a Designed Use of pedestrian-only.**

- The trail's primary Designed Use must be for pedestrians only. Trails whose primary design is for other uses, such as equestrian or mountain biking, would inherently be designed for *those* uses and would not be subject to the Outdoor Guidelines.

3. **The trail connects to a trailhead or to another trail that substantially meets the requirements of the Outdoor Guidelines.**

   This threshold criterion prevents the construction of "trails to nowhere."

Assuming that a trail being built on federal land meets the three threshold criteria discussed above, the Outdoor Guidelines generally would be applicable. Likewise, if a non-federal trail meets the three tests outlined above, it would be appropriate to apply the Outdoor Guidelines as BMPs.

When Exceptions to Trail Regulations/BMPs Are Warranted

The Outdoor Guidelines provide four possible exceptions (called "**conditions for departure**") to compliance with the technical trail accessibility standards:

- Compliance is not practicable due to terrain;
- Compliance cannot be accomplished with prevailing construction practices;
- Compliance would fundamentally alter the function or purpose of the facility or setting; or
- Compliance is limited or precluded by other law.

For non-federal entities, the conditions for departure provide a good screening process to determine how and why a particular trail's design might deviate from some or all of the technical standards suggested within this guide as BMPs.

The conditions for departure essentially reflect that the planning and design of pedestrian trails should "**seek to maximize accessibility while recognizing and protecting the unique characteristics of the natural setting of each trail**."[74] Accomplishing this balance between a trail's users and the trail's natural environment means that one must weigh the specific geological, topographical, environmental, and other project-specific issues in determining what the maximum accessibility may be for a specific trail or segment of trail. In some instances, this analysis will result in a trail being made accessible *to the extent feasible*. In other instances, an entire trail might be exempted from the Outdoor Guidelines.

Each of the conditions for departure is discussed below. Trail planners should note that Advisory 1019.1 in the Outdoor Guidelines cautions that entities should *consider all design options before using the exceptions*. (Section numbers at the end of each heading refer to the Outdoor Guidelines.)

1. Compliance is not practicable due to terrain *(§1019.2.1)*

This exception allows hiking trails to be developed in settings where existing physical (geological, hydrologic, environmental) conditions may prevent them from being made accessible.[75] The U.S. Access Board gave insight into this exception in its comments to an earlier draft of the Outdoor Guidelines:

> For example, complying with the technical provisions, particularly running slope, in areas of steep terrain may require extensive cuts or fills that would be difficult to construct and maintain, or cause drainage and erosion problems. Also, in order to construct a trail on some steep slopes, the trail may become significantly longer causing a much greater impact on the environment. Certain soils are highly susceptible to erosion. Other soils expand and contract along with water content. If compliance requires techniques that conflict with the natural drainage or existing soil, the trail would be difficult, if not impossible to maintain….
>
> The term "not feasible" [*ed. note*: the final draft of the Outdoor Guidelines uses instead the phrase "not practicable"] is used in this situation to specify what is "reasonably do-able". It does not refer to the technical feasibility or possibility of full compliance with the technical provisions. For example, it may be feasible to provide a trail with a 1:20 slope or less up a 1,500 foot tall mountain using heavy construction equipment, but the trail would be at least 5.8 miles long (rather than 2 miles long under a traditional back-country layout), and may cause inappropriate environmental and visual impacts. The intent of this conditional departure is to recognize that the effort and resources required to comply would not be disproportionately high relative to the level of access created. Although technically feasible, the effort and resources required are not "reasonable."[76]

2. Compliance cannot be accomplished because of prevailing construction practices *(§1019.2.2)*

All trail projects involve a variety of funding, labor, materials, resources, and environmental factors. This second exception to compliance with the technical trail standards recognizes that "prevailing construction practices" can vary a

great deal from one project to another, depending upon the entity seeking to plan and construct a new trail. Generally speaking, prevailing construction practices are those local methods typically used for construction or maintenance of a trail. Those methods are largely determined by the reality of what resources are available to a particular entity. This condition for departure helps land managers determine if they are undertaking a project that goes well beyond their available labor, equipment, and monetary resources. As always, it is important to carefully review all options before determining whether this exception should apply.

Many projects involve the use of volunteers and in-kind resources to plan, design, and construct trails. Using in-kind or volunteer resources may free up financial resources for equipment, materials, or professional construction for other project components. For example, an accessible boardwalk requires a great deal of skill and expertise to design and construct. A professional contractor could potentially take the plan, design, and construction up to the point where the decking is ready to be put on. Then, if local labor and construction practices can provide volunteers able to complete the decking installation, the accessible boardwalk can be completed with use of both professional and volunteer resources.

The U.S. Access Board noted the following (about an earlier version of this condition of departure):

> This condition may also apply where construction methods for particularly difficult terrain or an obstacle would require the use of equipment other than that typically used throughout the length of the trail. One example is requiring the use of a bulldozer to remove a rock outcropping when hand tools are commonly used.... For example, if the prevailing construction practices would not include the importation of a new surface material and the natural surface material could not be made firm and stable, the trail may not be able to comply with that specific provision….[77]
>
> Trail construction practices vary greatly, from the use of volunteer labor and hand tools, to professional construction with heavy, mechanized equipment. For alterations to an existing trail, the "prevailing construction practices" are defined as the methods typically used for construction or maintenance of the trail. For new trails, it is recognized that the land manager determines the construction practices to be used on each trail. However, the "choice" of construction practices are primarily determined by the available resources (e.g. machinery, skilled operators, finances) and the environmental conditions (e.g., soil type and depth, vegetation,

> natural slope). The intent of this conditional departure is to ensure that compliance with the technical provisions does not require the use of construction practices which are above and beyond the skills and resources of the trail building organization. It is not intended to automatically exempt organizations from the technical provisions simply because of a particular construction practice, (e.g. the use of hand tools or to suggest that hand tools should be used to avoid compliance) when more expedient methods and resources are available.[78]

3. Compliance would fundamentally alter the function or purpose of the facility or setting *(§1019.2.3)*

The Outdoor Guidelines (and thus the BMPs) do not require alterations that fundamentally impact the character and setting of a site simply to comply with accessibility guidelines. A trail ought to provide accessibility if it can accomplish this while also meeting an entity's managed and Designed Use criteria for that particular site. If the accessibility improvements would greatly alter the physical or recreational setting, the trail would not be consistent with the applicable land management plan. For example, even though the site topography of a wilderness area may allow for design of a trail that meets the Outdoor Guidelines, this level of development could be contrary to providing users with the wilderness experience for which the trail is managed.

The U.S. Access Board committee report (in an earlier draft of the Outdoor Guidelines) illustrates this exception:[79]

> Examples include a trail intended to provide a rugged experience such as a cross country training trail with a steep grade or a challenge course with abrupt and severe changes in level. If these types of trails were flattened out or otherwise constructed to comply with the technical provisions for accessible trails, they would not provide the intended and desired level of challenge and difficulty to users.
>
> Trails that traverse over boulders and rocky outcrops, are another example. The purpose of such a trail is to provide people with the opportunity to climb the rocks. To remove the obstacles along the way or reroute the rail around the rocks would destroy the purpose of the trail. The "nature of the setting" may also be compromised by actions such as widening for the construction of an imported surface on a trail in a remote location or removing ground vegetation in meadows or alpine areas.[80]

4. Compliance is precluded by other law *(§1019.2.4)*

Every trail planning process should include a review of federal, state, and local laws and ordinances that may impact the type of trail design and construction permitted within a given site. For instance, accessible-compliant trail alignments may negatively impact historic sites or rare, threatened, or endangered plants or animals protected by local, state, or federal laws such as the:

- Endangered Species Act (16 U.S.C. §§ 1531 et seq.);
- National Environmental Policy Act (42 U.S.C. §§ 4321 et seq.);
- National Historic Preservation Act (16 U.S.C. §§ 470 et seq.);
- Wilderness Act (16 U.S.C. §§ 1131 et seq.); or
- Other federal, state, or local law, the purpose of which is to preserve threatened or endangered species; the environment; or archaeological, cultural, historical, or other significant natural features.

If the Trail Accessibility Guidelines require construction methods or materials that are prohibited by particular laws and regulations, this would be a reason to depart from the BMPs. For example, if it were determined that a Pennsylvania PNDI site would be negatively impacted by a trail's location, state law might justify this condition for departure.[81]

When a Trail Cannot Be Made Fully Accessible

A primary design goal for sustainable pedestrian trails "is to **maximize accessibility without changing the setting**."[82] In cases where the land management entity decides that a trail project contains one or more conditions for departure, it should still apply the Trail Accessibility Guidelines to the extent practicable. The Outdoor Guidelines provide that:

> When an entity determines that a condition [of departure] in [section] 1019 does not permit full compliance with a specific [technical accessibility] provision in [section] 1017 on a portion of a trail, the portion of the trail shall comply with the provision to the extent practicable.[83]

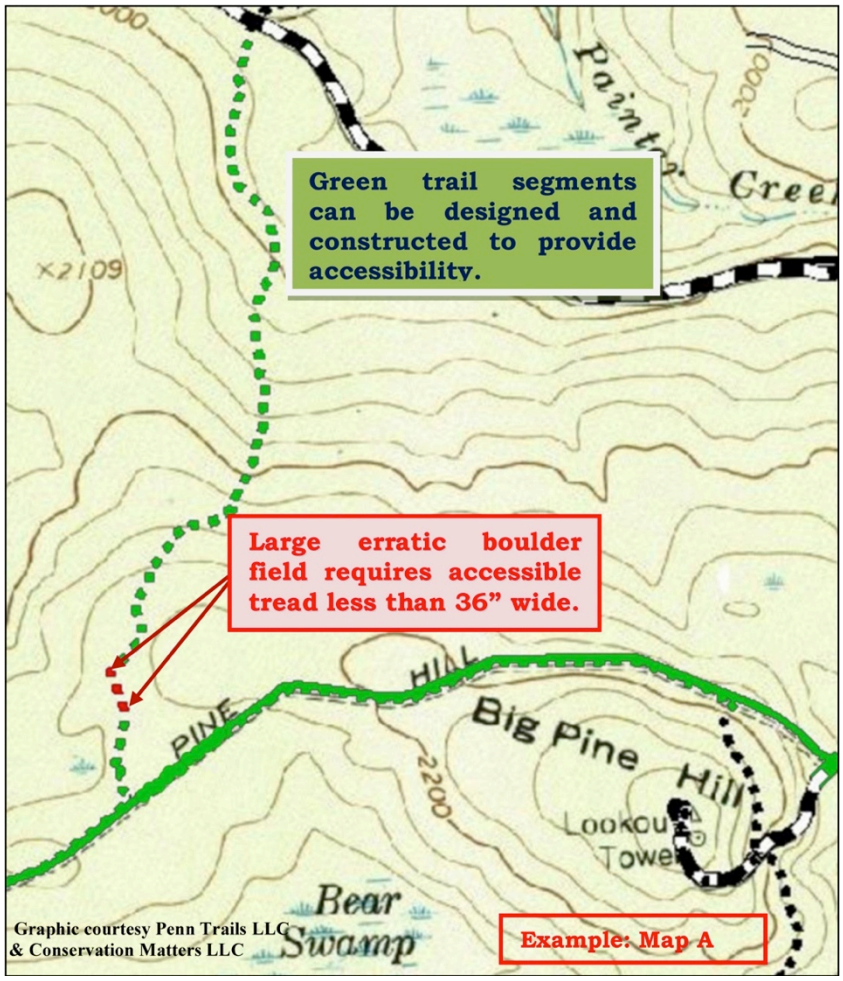
The regulations further explain that:

> On outdoor recreation access routes, trails, and beach access routes, **the exceptions apply only on the portion of the route where the condition applies**. The outdoor recreation access route, trail, or beach access route is required to fully comply with the provisions in [sections] 1016, 1017, and 1018, as applicable, at all other portions of the route where the conditions do not apply.[84]

In practice, this means that the conditions for departure should be applied on a case-by-case basis to determine where it is impractical to require a trail segment (or an entire trail, as noted below) to comply with all of the recommended BMPs. Where one or more of the conditions for departure limit the accessibility of the trail, deviation from the standards is permitted up to the point where the condition is no longer applicable (e.g., the narrow ledge that can accommodate only a 29" tread widens again to 36" or more).

For example, Map A shows that for a particular segment of the trail, geological features limit implementation of the BMP for recommended trail width. However, at the point at which it is feasible to once again meet the BMP for minimum width, this can and should be done.

Many trails will not be fully accessible because they cannot comply with all of the trail BMPs along the entire length of the trail, due to one of the conditions for departure.



Even a trail with non-compliant segments can still provide a large degree of access to many people with disabilities. Some people with disabilities enjoy the challenge of a trail that is not entirely compliant with all of the BMPs for universal access trails. According to the U.S. Forest Service:

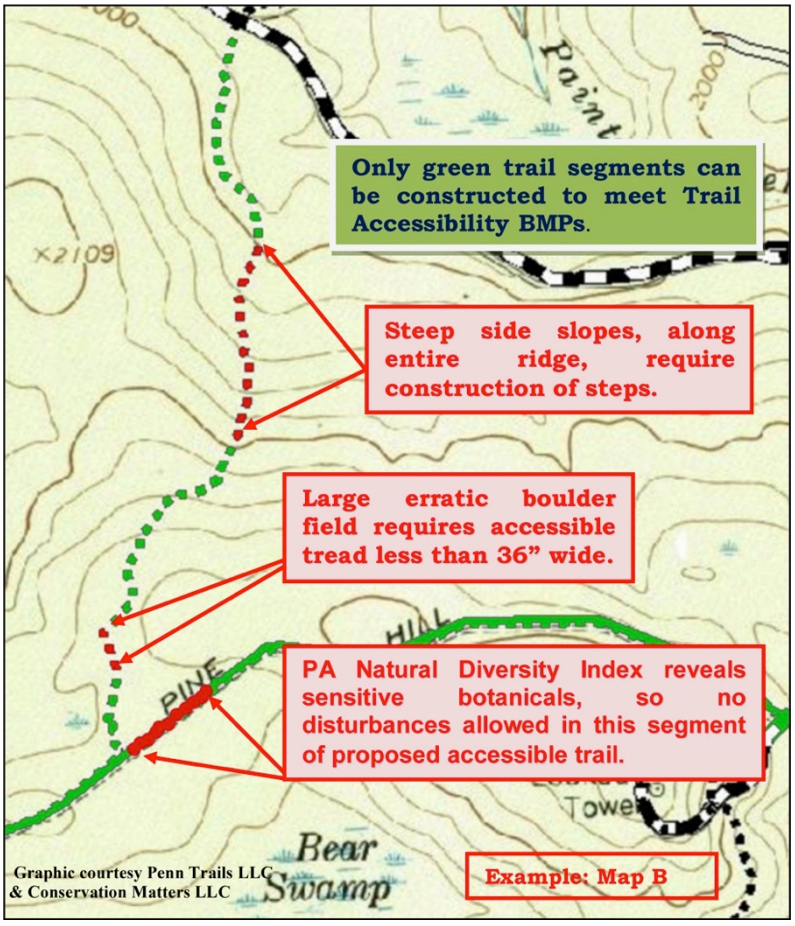
> Although accessible design is based on wheelchair dimensions, clear space, maneuvering room, and reach ranges, only 7 percent of people with disabilities use wheelchairs and 2.1 percent of people

> with mobility impairments use crutches, canes, walkers, or other assistive device. The majority of people with mobility impairments do not use a mobility device but are limited in the distance or grade they can walk without difficulty. They may be able to get around or over an obstacle without too much difficulty. Although steep terrain may be difficult, it may be manageable for a limited distance.[85]

In some cases deviations from the recommended standards are so numerous or substantial that it is "impracticable" for *any* portion to be made accessible. The Outdoor Guidelines provide that:

> After applying Exception 1 [requiring technical compliance to the extent "practicable"], **when an entity determines that it is impracticable for the entire trail to comply with [the technical trail specifications of section] 1017, the trail shall not be required to comply** with 1017.[86]

The example illustrated in Map B shows a trail assessment where the magnitude of exceptions makes it impracticable for the *entire* trail to comply with the BMPs. The entity would likely determine that the trail would not be designed for universal access.

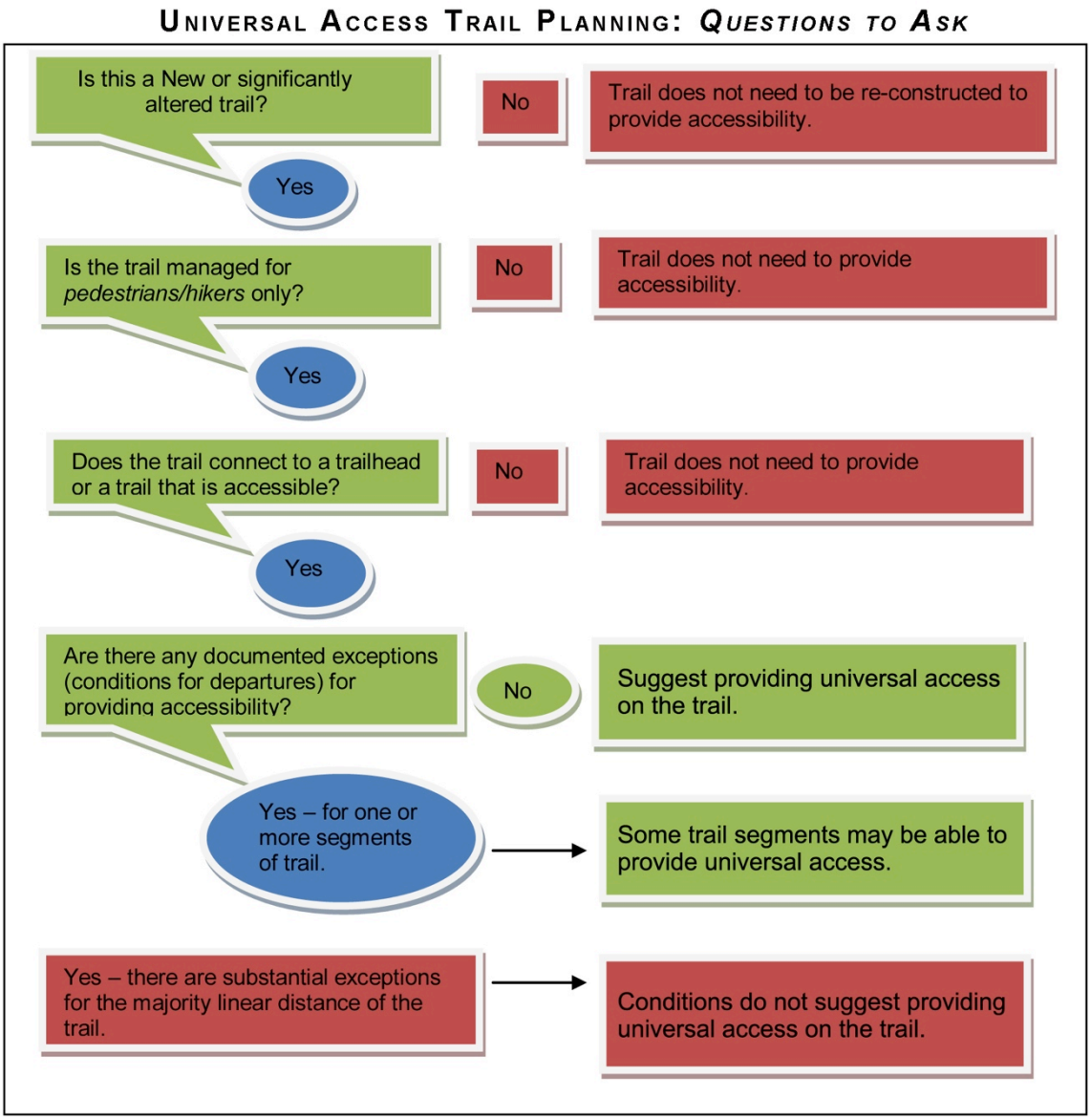


In short, it is recommended that trail providers:

- FIRST **apply the conditions for departure and determine what portions of a trail cannot fully comply** with the technical provisions and to what extent the trail still can comply with the technical provisions to the *maximum extent feasible*.[87]

- SECOND, *if necessary*, evaluate the entire trail and **determine whether it is impracticable for the *entire trail* to comply** with the Trail Accessibility Guidelines. This determination should take into account which portions of the trail can and cannot fully comply with the technical provisions and the extent of compliance where full compliance cannot be achieved.
- **Document the basis for the determination** and keep this documentation together with the trail's construction records. (The regulations do not require any particular format for substantiating the trail's non-compliance.[88])

Below is a simple chart illustrating this analysis:



Technical Specifications for Trails

The Outdoor Guidelines establish minimum accessibility requirements both for "technical specifications" and "scoping" for federal trails and outdoor facilities/elements associated with federal trails. These serve as BMPs for non-federal (Title II and III) entities. "**Technical specifications**" describe what accessible spaces and elements should look like, including slope, width, signage, etc. Interestingly, as noted above, many of the technical accessibility requirements parallel best practices for building *sustainable* trails. **"Scoping" provisions** specify *how many* of a particular element are required. For instance, if an agency constructs a new park, scoping provisions would dictate how many picnic tables in the park are required to be accessible.

Trails that are fully compliant with the Outdoor Guidelines are ones that meet all of the minimum technical standards explained below. Keep in mind that, as discussed above, in certain situations exceptions to these standards may be warranted for particular trail segments or even for entire trails.

At the end of this manual is a detailed flowchart entitled "Planning and Designing Trails for Access: Implementation Guide" illustrating how the previously discussed evaluation process works in tandem with the technical specifications discussed below.

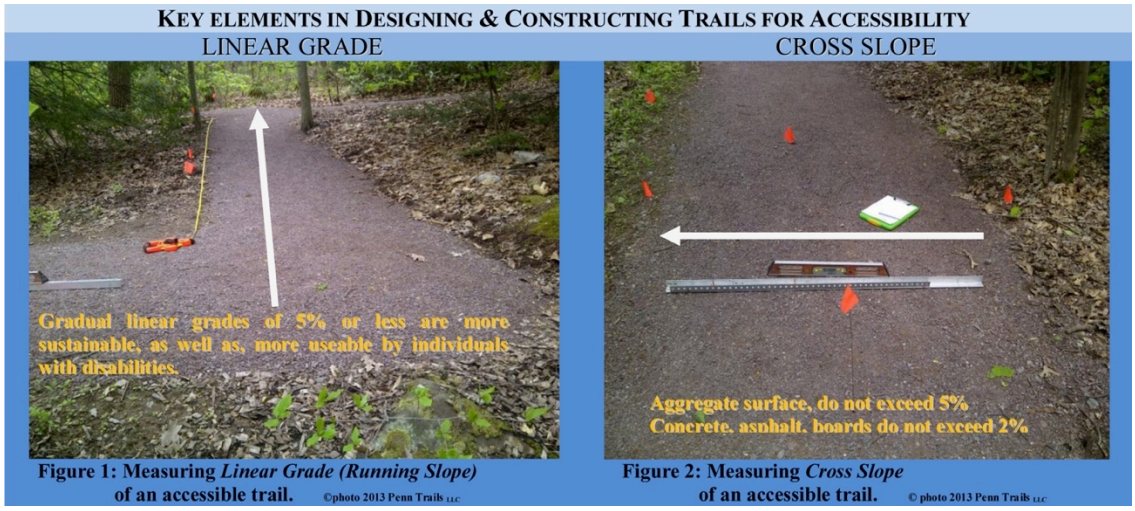


Figure 1: Measuring *Linear Grade (Running Slope)* of an accessible trail. ©photo 2013 Penn Trails LLC

Figure 2: Measuring *Cross Slope* of an accessible trail. © photo 2013 Penn Trails LLC

Summary of Technical Specifications for a Trail Providing Universal Access

The following summary is for a stone aggregate trail that incorporates technical specifications complying with the Outdoor Guidelines:

- Tread Surface: Clear, firm and stable with a minimum width of 36"
- Tread Obstacles: 2" high maximum
- Cross Slope: 5% maximum
- Running Grade must meet one or more of the following:

- 5% or less for any distance
- Up to 8.33% for 200' maximum
- Up to 10% for 30' maximum
- Up to 12.5% for 10' maximum
- For all running grades above 5%, a resting interval must be provided at both ends of the grade. Resting intervals and passing spaces may overlap
- No more than 30% of the total trail length may exceed a running grade of 8.33%

- Passing Spaces: 60" width, provided at least every 1000' where trail width is less than 60" wide, with a maximum 5% cross slope
- Signage must provide the following:
  - Length of the trail or trail segment
  - Surface type
  - Typical and minimum tread width
  - Typical and maximum running grade
  - Typical and maximum cross slope

1. Grade[89]

Grade, also known as linear grade, running grade, or running slope, is one of the key elements in the design and construction of trails that comply with the Outdoor Guidelines.

TRAIL LINEAR GRADE (RUNNING SLOPE) GUIDELINES

From	To	Maximum Distance
0%	5%	Any distance
5.0%	8.33%	200 feet
8.33%	10%	30 feet
10%	12%	10 feet

It is important from the start to establish and verify accurate grades in the field. Don't assume that contour maps and design drawings will provide error-free data. Flagging, for the corridor and the trail, as well as staking (when vertical control of grade or associated structures is needed), are critical to setting grades for both full bench construction and trail structures to be built according to

specification. Take the time to check and re-check flags before setting stakes, including grade marks.

The maximum allowable grade (see the white line in the "Trail Linear Grade Guidelines" illustration) for a trail that provides accessibility is shown in the table. No more than 30% of the trail's entire linear grade may exceed 8.33%.[90]

2. Cross Slope[91]

Cross slope refers to the slope *perpendicular* to the direction of travel (see yellow line in "Cross Slope" illustration). Sustainable trail construction practices always take cross slope into account. Per the Outdoor Guidelines, the maximum cross slope for trails surfaced with concrete, asphalt, or board is 2%. For all other surfaces, the maximum cross slope is 5%.

While a 5% cross slope may be advisable in cases where weather conditions warrant, such as frequent rain and greater sheet flow, it is important to remember that the trade-off for the steepest allowable cross slope is that all users will feel gravity tugging more on the downhill side of the trail tread.

3. Surfacing[92]

The surface of an accessible trail must be firm and stable.

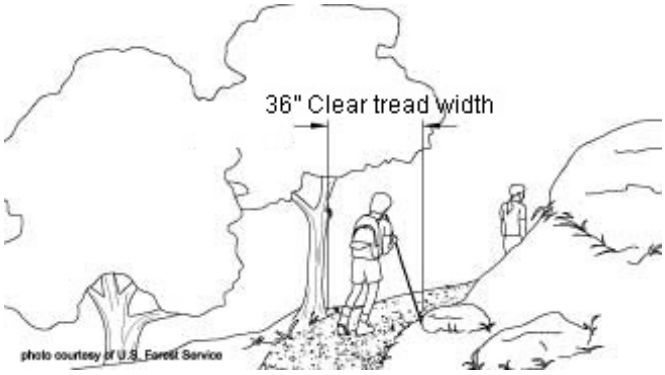
A "firm" surface is one that "resists deformation by indentations." This refers to the surface penetration that occurs when force is applied (for example, when stepped on). Surface firmness should be evaluated (and documented) for the main seasons for which the surface will be in use, under typically occurring weather conditions.

A natural tread consisting of a properly compacted limestone aggregate provides an excellent sustainable surface that can be easily repaired and maintained.

A **"stable" surface is one that is not permanently affected by normal weather conditions and can sustain typical wear and tear** from expected activities between planned maintenance visits. Depending on the intended use of the trail, surfaces could be permeable or some degree of impermeable.[93] For more information on surfacing for trails see the section on "Tread Surface: Where the User Meets the Trail" in this manual, as well as relevant sections of the *Pennsylvania Trail Design Manual*.

4. Clear Tread Width[94]

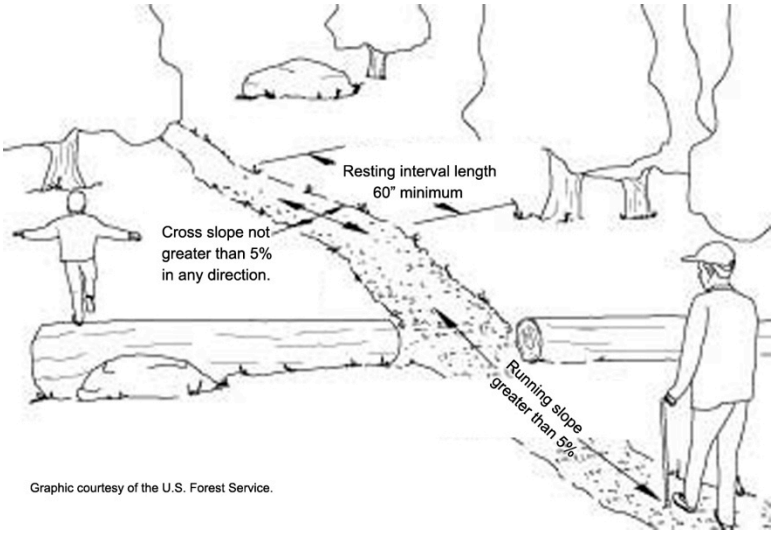
Tread width refers to the designed and constructed trail surface on which a person travels. The clear tread width of the trail should be a minimum of 36."



However, a clear tread width of 32" is permitted for a maximum length of 24" where the 36" minimum cannot be achieved.

5. Resting Intervals[95]

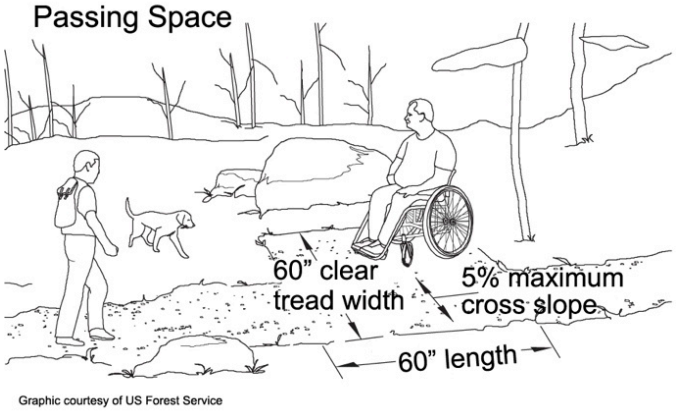
The Outdoor Guidelines require that trails providing universal access contain intervals for persons to be able to stop and rest, after a segment that is steeper than 5%, before they continue. These Resting Intervals should be at least 60" long and, if contained within the trail tread, as wide as the widest trail segment



leading into resting space. If provided adjacent to the trail tread, the resting interval's width should be at least 36."

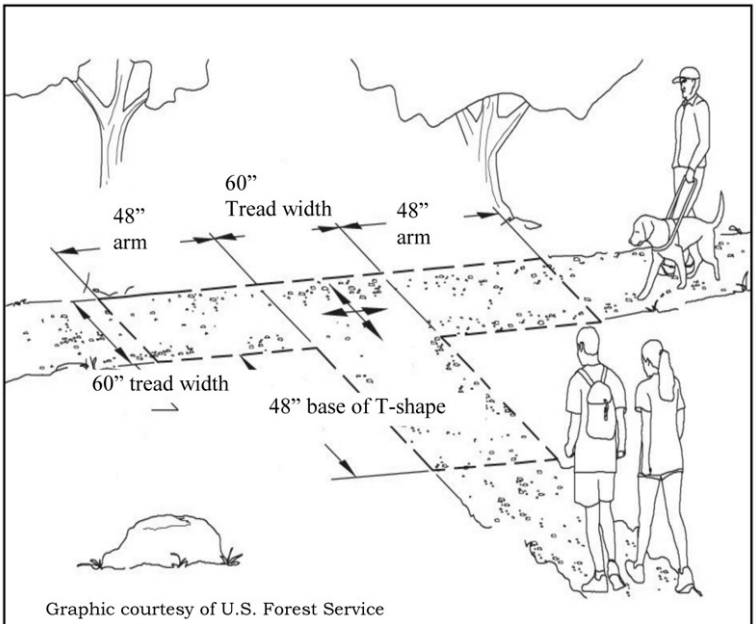
Resting intervals are required at the top and bottom of each trail segment that exceeds 5% in grade. The Outdoor Guidelines permit Resting Intervals and Passing Spaces to overlap.

6. Passing Spaces[96]



Graphic courtesy of US Forest Service

A 60" clear tread width would allow people to pass each other easily on a trail, including people who use accessibility devices. However, a trail's design parameters might not provide for this tread width throughout the entire length. In that case, a Passing Space, of at least a 60" x 60" dimension, needs to be provided at intervals of no more than 1000.' In addition, where the full length of a trail does not meet all of the Trail Accessibility Guidelines, a Passing Space should be located at the end of the trail segment that fully complies with the guidelines. This enables a person who uses a mobility device to turn and exit the trail.



Graphic courtesy of U.S. Forest Service

Example of a **T-Shaped intersection** that provides both a Passing Space (at least 60"x 60") and Resting Area (at least 60" in length). Note that the base and the arms of the T-shaped intersection extend 48" beyond the intersection. Where the passing space is the intersection of two trails, the intersection should be as flat as possible.

Passing Spaces and Resting Intervals are permitted to overlap. Alternatively, a T-intersection of two trails can provide an acceptable Passing Space.

7. Tread Obstacles[97]

Natural features such tree roots and rocks within a natural (e.g., soil, aggregate) trail tread can create tread

obstacles. Tread obstacles on a trail and its related resting spaces cannot exceed 2 inches in height, measured vertically to the highest point.

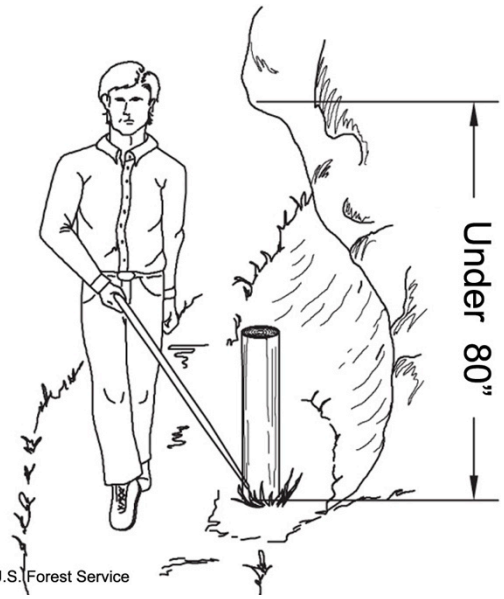
The vertical alignment of joints in concrete, asphalt, or board surfaces can be tread obstacles. Where the surface is made of boards, concrete, or asphalt, tread obstacles cannot exceed ½ inch in height measured vertically to the highest point.

For both types of trails, tread obstacles should be separated by a distance of 48" minimum when possible, so that persons using wheelchairs can maneuver around the obstacles.

8. Protruding Objects[98]

Protruding objects can be hazardous for individuals who are blind or have low vision. The Outdoor Guidelines require constructed elements—such as signs or post-mounted objects—to comply with section 307 of the ABA Accessibility Guidelines.[99] Specifically, objects with leading edges more than 27 inches and not more than 80 inches above the ground shall not protrude more than 4 inches into the trail treadway. For instance, when a cane is used and the constructed element is in the detectable range, it gives a person sufficient time to detect the element with the cane before there is body contact. Constructed elements mounted below 27" are allowed to protrude any amount so long as they don't reduce the clear trail width.

While natural elements, such as tree branches, do not need to comply with section 307 of the ABA Accessibility Guidelines regarding protruding objects, entities should maintain the vertical clearance along the trail tread, resting intervals, and passing spaces free from natural elements for 80 inches high minimum above the ground.



Graphic courtesy U.S. Forest Service

If vertical clearance is not possible (for instance as with a naturally occurring, over hanging rock formation protruding into the trail treadway, as shown in the illustration), a cane-detectible barrier to warn visually-impaired trail users could be warranted.

9. Openings in Trail Surfaces[100]

Trail structures are an important component of many trails. With regard to accessibility, a boardwalk can provide both a low-impact means to cross a wetland area as well as a firm and stable surface. The Outdoor Guidelines provide specific criteria for openings and objects on structures so that they do not present obstacles to pedestrians using accessibility devices.

Openings that run perpendicular to the direction of travel must be no greater than ½” wide. Openings in the trail surface that run parallel to the primary direction of travel cannot exceed ¼.”

In certain instances, a ¾” opening is permitted, where openings of ½” or less cannot be provided due to the exceptions noted earlier in this chapter.

7. Technical Accessibility Guidelines for Shared Use Paths

This chapter builds on Chapter 1's introduction to the proposed regulations for shared use paths that will be applicable to all governmental entities. These PROW Guidelines serve as useful BMPs for private entities and, until made mandatory as regulations, serve as BMPs for governmental entities as well.

How a Shared Use Path is Different than Other Routes

The PROW Guidelines define a shared use path as:

> [A] multi-use path designed primarily for use by bicyclists and pedestrians, including pedestrians with disabilities, for transportation and recreation purposes. Shared use paths are physically separated from motor vehicle traffic by an open space or barrier, and are either within the highway right-of-way or within an independent right-of-way.[101]

The *AASHTO Guide* notes that the primary factor that distinguishes shared use paths and sidewalks is the intended user**.** Shared use paths are designed for use by bicyclists and pedestrians, whereas sidewalks are designed for pedestrian use.[102]


Photo courtesy U.S. Access Board

Shared use paths differ from hiker/pedestrian trails mostly in that they are intended to accommodate a wider range of users.[103] There are different safety issues to consider by virtue of their mixed-user traffic. Passing slower users in the same direction and two-way traffic flow are two primary safety issues, particularly where there is a high volume of pathway users.[104] Given this, the minimum recommended width of a two-directional shared use path is 10 feet, compared to a 3-foot minimum width for universally accessible hiker/pedestrian trails.[105]

Proposed Accessibility Rules for Shared Use Paths

During its 2013 rulemaking on public rights-of-way, trails, and other outdoor developed areas, comments from the public urged the U.S. Access Board to address access to shared use paths separately from sidewalks and trails. In response, the **U.S. Access Board is supplementing the draft** PROW Guidelines[106] **to cover shared use paths.** The PROW Guidelines—which broadly address access to sidewalks, streets, and other pedestrian facilities—provide requirements for "pedestrian access routes" (a term referring to the portion of the public right-of-way that serves as an accessible route), including specifications for route width, grade, cross slope, surfaces, and other features. The U.S. Access Board proposes to apply these and other relevant requirements to shared use paths as well. The PROW Guidelines also contain provisions tailored specifically to shared use paths, including provisions that:

Graphic courtesy of Federal Highway Administration

- Require the full width of a shared use path to comply with the proposed technical provisions for the grade, cross slope, and surface of pedestrian access routes;
- Permit compliance with the proposed technical provisions for the grade of pedestrian access routes to the extent practicable where physical constraints or regulatory constraints prevent full compliance;
- Prohibit objects from overhanging or protruding into any portion of a shared use path at or below 8 feet measured from the finished surface; and
- Require the width of curb ramps and blended transitions in shared use paths to be equal to the width of the shared use path.[107]

Shared use paths likely will be subject to grade requirements similar to those that govern public rights-of-way, which are much stricter than those imposed on trails. The U.S. Access Board has proposed that exceptions to the strict grade requirements for shared use paths be permitted only in the following situations:

- *Physical Constraints.* Where compliance with the grade requirements is not practicable due to existing terrain or infrastructure, right-of-way

availability, a notable natural feature, or similar existing physical constraints, compliance is required to the extent practicable.

- *Regulatory Constraints.* Where compliance with the grade requirements is precluded by federal, state, or local laws the purpose of which is to preserve threatened or endangered species; the environment; or archaeological, cultural, historical, or significant natural features, compliance is required to the extent practicable.[108]

When the final shared use path guidelines are issued, it is probable they will require that once the constraint that precludes compliance is no longer applicable, the remainder of the shared use path must follow the accessibility requirements regarding linear grade and cross slope.

Comparing PROW to AASHTO Guidelines

According to the U.S. Access Board, the proposed guidelines for shared use paths are "consistent with the design criteria for shared used paths" in the *AASHTO Guide*.[109] The U.S. Access Board notes on its website that the proposed guidelines are "not expected to increase the cost of constructing shared use paths for state and local government jurisdictions that use the AASHTO Guide."[110] Following is a side-by-side comparison (from the U.S. Access Board website) of the existing AASHTO shared use path guidelines and the draft U.S. Access Board provisions specifically relating to shared use paths:[111]

Table 4: Comparison of PROW and AASHTO Guidelines

Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way **Proposed Technical Provisions Applicable to Shared Use Paths**	**AASHTO Guide for the Development of Bicycle Facilities (2012)** **Chapter 5: Design of Shared Use Paths**
R302.3.2 Shared Use Paths. A pedestrian access route shall be provided for the full width of a shared use path.	*5.2.1 Width and Clearance* The minimum paved width for a two-directional shared use path is 10 ft (3.0 m). . . . In very rare circumstances, a reduced width of 8 ft (2.4 m) may be used . . . . Wider pathways, 11 to 14 ft (3.4 to 4.2 m) are recommended in locations that are anticipated to serve a high percentage of pedestrians (30 percent or more of the total pathway volume) and higher user volumes (more than 300 total users in the peak hour).
R302.5 Grade. The grade of pedestrian access routes shall comply with R302.5. *R302.5.1 Within Street or Highway Right-of-Way.* Except as provided in R302.5.3, where pedestrian access routes are contained within a street or highway right-of-way, the grade of pedestrian access routes shall not exceed the general grade established for the adjacent street or highway. *R302.5.2 Not Within Street or Highway Right-of-Way.* Where pedestrian access routes are not contained within a street or highway right-of-way, the grade of pedestrian access routes shall be 5 percent maximum. *R302.5.3 Within Pedestrian Street Crossings.* Where pedestrian access routes are contained within a pedestrian street crossing, the grade of pedestrian access routes shall be 5 percent maximum. *R302.5.4 Physical Constraints.* Where compliance with R302.5.1 or R302.5.2 is not practicable due to existing terrain or infrastructure, right-of-way availability, a notable natural feature, or similar existing physical constraints, compliance is required to the extent practicable. *R302.5.5 Regulatory Constraints.* Where compliance with 302.5.1 or 302.5.2 is precluded by federal, state, or local laws the purpose of which is to preserve threatened or endangered species; the environment; or archaeological, cultural, historical, or significant natural features, compliance is required to the extent practicable.	*5.2.7 Grade* The maximum grade of a shared use path adjacent to a roadway should be 5 percent, but the grade should generally match the grade of the adjacent roadway. Where a shared use path runs along a roadway with a grade that exceeds 5 percent, the sidepath grade may exceed 5 percent but must be less than or equal to the roadway grade. Grades on shared use paths in independent rights-of-way should be kept to a minimum. Grades steeper than 5 percent are undesirable because the ascents are difficult for many path users, and the descents can cause some users to exceed the speeds at which they are competent or comfortable. . . . Grades on paths in independent rights-of-way should also be limited to 5 percent maximum.
R302.6 Cross Slope. Except as provided in R302.6.1 and R302.6.2, the cross slope of pedestrian access routes shall be 2 percent maximum. *R302.6.1 Pedestrian Street Crossings Without Yield or Stop Control.* Where pedestrian access routes are contained within pedestrian street crossings without	*5.2.5 Cross Slope* As described in the previous section, 1 percent cross slopes are recommended on shared use paths, to better accommodate people with disabilities and to provide enough slope to convey surface drainage in

yield or stop control, the cross slope of the pedestrian access route shall be 5 percent maximum. *R302.6.2 Midblock Pedestrian Street Crossings.* Where pedestrian access routes are contained within midblock pedestrian street crossings, the cross slope of the pedestrian access route shall be permitted to equal the street or highway grade.	most situations.
R302.7 Surfaces. The surfaces of pedestrian access routes and elements and spaces required to comply with R302.7 that connect to pedestrian access routes shall be firm, stable, and slip resistant and shall comply with R302.7. *R302.7.1 Vertical Alignment.* Vertical alignment shall be generally planar within pedestrian access routes (including curb ramp runs, blended transitions, turning spaces, and gutter areas within pedestrian access routes) and surfaces at other elements and spaces required to comply with R302.7 that connect to pedestrian access routes. Grade breaks shall be flush. Where pedestrian access routes cross rails at grade, the pedestrian access route surface shall be level and flush with the top of rail at the outer edges of the rails, and the surface between the rails shall be aligned with the top of rail. *R302.7.2 Vertical Surface Discontinuities*. Vertical surface discontinuities shall be 13 mm (0.5 in) maximum. Vertical surface discontinuities between 6.4 mm (0.25 in) and 13 mm (0.5 in) shall be beveled with a slope not steeper than 50 percent. The bevel shall be applied across the entire vertical surface discontinuity. *R302.7.3 Horizontal Openings*. Horizontal openings in gratings and joints shall not permit passage of a sphere more than 13 mm (0.5 in) in diameter. Elongated openings in gratings shall be placed so that the long dimension is perpendicular to the dominant direction of travel. *R302.7.4 Flangeway Gaps*. Flangeway gaps at pedestrian at-grade rail crossings shall be 64 mm (2.5 in) maximum on non-freight rail track and 75 mm (3 in) maximum on freight rail track.	*5.2.9 Surface Structure* Hard, all-weather pavement surfaces are generally preferred over those of crushed aggregate, sand, clay, or stabilized earth. . . . Unpaved surfaces may be appropriate on rural paths, where the intended use of the path is primarily recreational, or as a temporary measure to open a path before funding is available for paving. Unpaved pathways should be constructed of materials that are firm and stable. . . . It is important to construct and maintain a smooth riding surface on shared use paths. . . . Utility covers (i.e., manholes) and bicycle-compatible drainage grates should be flush with the surface of the pavement on all sides. . . . Railroad crossings should be smooth and should be designed at an angle between 60 and 90 degrees to the direction of travel to minimize the possibility of falls.
R210.3 Shared Use Paths. Objects shall not overhang or protrude into any portion of a shared use path at or below 2.4 m (8.0 ft) measured from the finish surface.	*5.2.1 Width and Clearance* The desirable vertical clearance to obstructions is 10 ft (3.0 m). Fixed objects should not be permitted to protrude within the vertical or horizontal clearance of a shared use path. The recommended minimum vertical clearance that can be used in constrained areas is 8 ft (2.4 m).
R304.5.1.2 Shared Use Paths. In shared use paths, the width of curb ramps runs and blended transitions shall be equal to the width of the shared use path.	*5.3.5 Other Intersection Treatments* The opening of a shared use path at the roadway should be at least the same width as the shared use

R305.1.4 Size. Detectable warning surfaces shall extend 610 mm (2.0 ft) minimum in the direction of pedestrian travel. At curb ramps and blended transitions, detectable warning surfaces shall extend the full width of the ramp run (excluding any flared sides).	path itself. If a curb ramp is provided, the ramp should be the full width of the path, not including any flared sides if utilized. . . . Detectable warnings should be placed across the full width of the ramp.

Monitor Regulatory Status

Entities planning shared use paths should check the regulatory status of the PROW Guidelines before finalizing their designs. When adopted, the PROW Guidelines **will apply to all government agencies and to all shared use paths that they build or operate, whether located on public or private land**.[112] Non-government entities may continue to use them as BMPs to the extent they do not conflict with ADA regulations.

2010 ADA Design Standards Apply

Note that, as with trails, the 2010 ADA Design Standards apply to structures, facilities, and amenities provided along the shared use path.


Photo courtesy Penn Trails LLC

8. Technical Accessibility Guidelines for Other Pedestrian Routes

In addition to trails and shared use paths, other types of pedestrian routes that can provide accessibility, as classified by federal regulations, include **accessible routes** and **ORAR**s.[113]

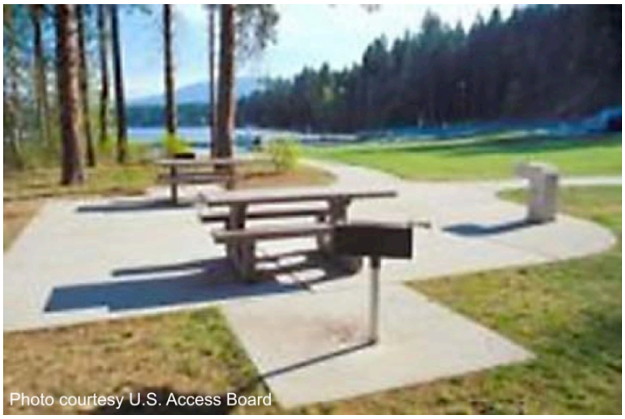
Accessible routes are the most developed, or "built," routes for persons with disabilities. The 2010 ADA Design Standards (and not the Outdoor Guidelines) provided scoping and technical specifications for this type of route. As per the ADA Design Standards, at least one accessible route must be created to provide access for built elements such as public parking spaces, passenger loading zones, and buildings.


Photo courtesy of U.S. Access Board

A full discussion of accessible routes is outside the scope of this manual; for detailed information on scoping and technical specifications for accessible routes refer to Chapter 4 of the 2010 ADA Design Standards.[114] Government agencies may impose design requirements on grantees constructing accessible routes that are more stringent than the specifications in the 2010 ADA Design Standards.

If a structure or facility governed by the 2010 ADA Design Standards is within the path of travel, what might otherwise be viewed as a hiker/pedestrian trail might actually be classified as an accessible route that must meet the more stringent 2010 ADA Design Standards. For example, fishing piers are addressed by the 2010 ADA Design Standards. A route connecting a fishing pier to another structure or route that falls within the 2010 ADA Design Standards, such as a parking lot, therefore would have to meet the more stringent standards governing accessible routes rather than utilizing BMPs for a trail or ORAR.[115]

Likewise, in a state or county park, accessible routes are appropriate to connect elements within a specific picnic use area, such as from picnic tables to the public restroom and parking area. However, an accessible route would not be needed, or desired, for a trail that leads people on a recreational hike in the adjacent forest. That trail could utilize the Outdoor Guidelines for BMPs regarding technical specifications for accessibility.



ORARs are continuous, unobstructed pedestrian paths that connect elements in a picnic area, campground, or trailhead. They are subject to more stringent grade and other requirements than "trails," thereby providing greater accessibility—but their design parameters are **less stringent than those governing accessible routes.** The concept of ORARs was developed for the Outdoor Guidelines, which as noted above, applies only to federal entities or groups building trails on federal land on behalf of federal agencies. In many cases it would appear to make more sense from a design standpoint in outdoor recreation areas to build to the more flexible ORAR standards than to the highly developed accessible routes standards. But because non-federal entities are governed by the 2010 ADA Design Standards, the technically correct and thus "safest" approach is for non-federal agencies and organizations to follow the standards for accessible routes rather than use the ORARs as BMPs. **(**However, certain trail providers, such as the New York State Department of Environmental Conservation, have determined as a matter of policy to adopt the ORAR standards for outdoor recreation areas, at least until the U.S. Access Board adopts separate outdoor recreation area standards for non-federal entities.[116]) Should a non-federal entity decide to use the technical specifications for ORARs rather than those for accessible routes, it should clearly document why it is doing so, maintaining those records for future reference.

Chapter 1016 of the Outdoor Guidelines sets out scoping and technical specifications for ORARs, including: grade; cross-slope; surfaces; clear tread

width; resting intervals; passing spaces; tread obstacles; openings in surfaces; and protruding objects. This information is provided as an Appendix to this manual.

9. Technical Accessibility Guidelines for Trailheads, Related Amenities, and Signage

Trailheads and Related Amenities

Trailheads are the public points of access to trails and shared use paths. They are developed sites, designed and constructed with the primary purpose of providing user amenities and staging for the trail or shared use path.

The following do NOT constitute trailheads:

- Junctions between trails where there is no other access.
- Intersections where a trail crosses a road or users have developed an access point, but where no improvements have been provided beyond minimal signage for public safety.[117]

Trailheads servicing trails or shared use paths may offer one or more of the following amenities:

- Parking
- Information kiosk
- Passenger loading/unloading
- Bicycle racks
- Lighting
- Drinking water
- Toilets

- Benches
- Picnic shelters and tables
- Barriers, such as gates, fences, and buffers
- Trash and recycling containers

While it is beyond the scope of this manual to go into detail about the features mentioned above, trail and shared use path planners should note that the standards to follow regarding these amenities largely depends on whether the entity falls under the ADA or the ABA.

The binding 2010 ADA Design Standards govern many aspects of trailhead design and construction for non-federal entities. For instance, the 2010 ADA Design Standards provide requirements for the number and dimensions of parking spots and access isles, specifies maximum slope, and mandates that parking areas have a stable, firm, and slip resistant surface. The 2010 ADA Design Standards specify that a minimum of one accessible route must connect the accessible parking area to the accessible facilities. At least one accessible parking space must be provided for every 25 standard parking spaces. A good discussion of regulations governing accessible parking can be found at ADA Design Guide I: Restriping Parking Lots, *http://www.ada.gov/restripe/htm*, as well as in Chapter 5, General Site and Building Elements, of the 2010 ADA Design Standards.[118]

The 2010 ADA Design Standards also provide specific requirements governing the design, construction, and quantities of other amenities frequently found at trailheads.[119] Chapter 3: Building Blocks, of the 2010 ADA Design Standards, deals with a wide range of design and construction parameters related to

surfaces, ramps, barriers and gates, turning spaces, protruding objects, and more. For example, the design and construction of a kiosk located at a trailhead would be informed by standards contained within that chapter of the 2010 ADA Design Standards.

Entities building trailheads also should consult Chapter 3 of the *Pennsylvania Trail Design Manual* for design details relating to trailheads and associated amenities.

For federal entities, the Outdoor Guidelines come into play to the extent that the trailhead contains "outdoor constructed features."[120] These include picnic tables, fire rings, grills, fireplaces, wood stoves, trash and recycling receptacles, water hydrants, utility and sewage hookups, outdoor rinsing showers, benches, telescopes, and periscopes.[121] These facilities are subject to the applicable Outdoor Guidelines scoping and technical specifications *regardless of whether the trail itself is accessible*. When outdoor constructed features are provided at trailheads or along a trail, at least 20%—but not less than one of each feature—must be accessible. Technical specifications for these facilities are found in the Outdoor Guidelines, Chapter 10.11 through 10.15; their scoping requirements are contained both in the Outdoor Guidelines and in the ABA Chapter 2.[122]

Trail Signage and Accessibility

Signage is Crucial

The National Park Service points out that "signs are probably the quickest and easiest way to leave the trail user with a positive impression."[123] Their importance in overall planning and design cannot be underestimated. All pedestrians and hikers rely on some level of navigation to find their way along a given route. A remote wilderness trail may provide only subtle clues as to the path of travel; nonetheless, clues are there by which the experienced user can navigate. Highly developed trails feature defined tread and structures that assist navigation, yet users still need signage to provide direction and information.

Although the need to find one's way is universal, some people need more assistance than others. As one expert noted:

> Unfortunately, for people with disabilities, including those with vision loss, options for exercise may be limited by the built environment. . . . [O]utdoor structures have a major effect on participation in physical activity among people with vision loss. Structures such as gyms, fitness centers, outdoor trails, parks, and swimming pools often have poor signage, lack detail on how to use the equipment or participate in a program, or provide poorly

> delineated access routes to and from the facility or program. These issues can have a major effect on whether or not a person with vision loss chooses to be physically active.[124]

Trail planning and design should include trail signage as *part of the planning process*, not as an afterthought. Objectives should include:

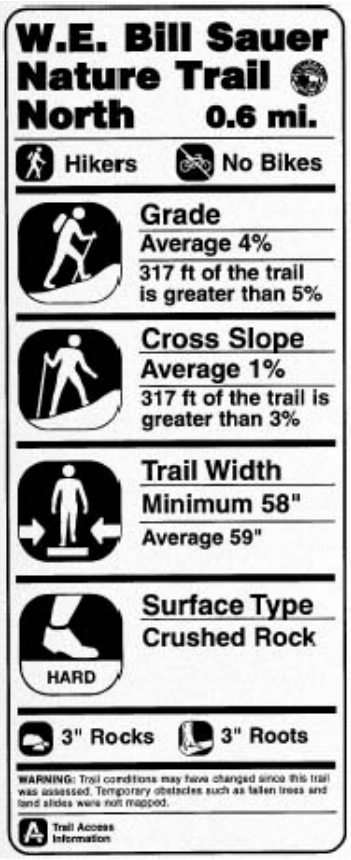
- **Attracting more users** by making the trail more appealing;
- **Educating users** about the trail by way of the trailhead kiosks;
- **Reassuring users** that they are on the right trail and will not get lost; and
- **Controlling trail usage** and creating a safer, more enjoyable, environmentally friendly experience.

With the above in mind, trail signage should incorporate accessible features that are commensurate with the needs of the particular user. For example, signage that features tactile maps, raised characters, or audible information creates a more enjoyable and safe recreational experience for people who are blind or have vision impairments.[125]

Trail Access Information

Signs, maps, and other trail guide products can provide potential users with the information needed to determine which trails can best meet their desired experiences and abilities. According to the *Pennsylvania Trail Design Manual*:

> Signs identifying trails and trail segments that have been officially assessed and designated as accessible to persons with disabilities should be placed at the trailhead and at all designated access points. Display the official symbol designating that the trail or trail segment is accessible, include the total distance of that trail or trail segment that is compliant, and the distance to the location of the first point of exception to those accessibility standards. Use marker posts to display accessibility information at access points without trailhead signs. Decals are readily available to attaché marker points. The size of the trailhead sign



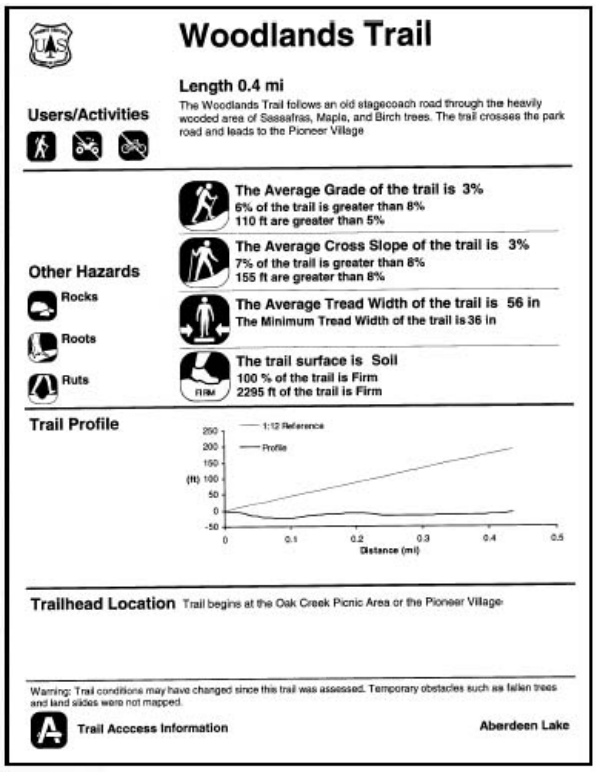
should be such that both text and graphics are easily readable. The minimum size should be 12" x 18." Background colors, margins, and sizes of text and images are subject to change.[126]

The following BMPs for signage are from the Outdoor Guidelines. The five components addressed below are information that most, if not all people would enjoy knowing *regardless* of disability:

- **Length of the trail or trail segment;**
- **Surface type;**
- **Typical and minimum tread width;**
- **Typical and maximum running slope; and**
- **Typical and maximum cross slope.**

To convey the above information, a system of symbols and trail signage layouts has been developed to convey Trail Access Information ("**TAI**") in attractive and easy-to-use formats. Providing the information in multiple formats, such as large print or audio, will benefit people of all abilities. The following are examples of how TAI can be disseminated:

- **Trailhead signage**—A trailhead map containing text, grade profiles with surface information, a top view map with symbols showing the location of major obstacles, and other critical information.



- **TAI strip**—A trail map summarizing TAI with symbols and measurement numbers formatted as a slim strip that can be attached to trail posts and located at trailheads or trail intersections.[127]
- **Trail information sheets**—An informational flier that can be provided at the trailhead or visitor center summarizing TAI with symbols and measurement numbers, trail grade profile, description of the trail, and location of trailhead.

- **Audio descriptions**—A short audible narrative with descriptions of trail conditions and details about the trail environment. This format may benefit individuals who have vision impairments or who have limitations reading in English.
- **Pocket map**—A trail map featuring trail descriptions, TAI, and a grade profile that folds up to fit into a pocket.
- **Guidebook**—A trail manual containing TAI, interpretive information, scenic photographs, directions to the trailhead, and other information about trails within a given recreational area.
- **Computerized visitor kiosk**—An interactive accessible computer display at a visitor center providing trail selection tools, TAI, and visual and audio descriptions of images at selected destinations. Guidelines for making kiosks accessible to people with mobility and vision impairments are available through the U.S. Access Board.

Trail managers are encouraged to consider other information and details for their trails that may be useful to users to know before they set out on a particular trail. The *Pennsylvania Trail Design Manual* (pages 133-141) provides much information with regard to required and or recommended trail and shared use path signage and markings. This includes good graphic examples of common warning and regulatory signs, as well as blazing and markers, use of colors, and construction elements.

10. Other Power-Driven Mobility Devices

Summary of the OPDMD Rules

In March 2011, the U.S. Department of Justice issued regulations interpreting the ADA that greatly expand the types of vehicular devices potentially allowed on trails, shared use paths, and other lands open to the public that are owned/operated by Title II or Title III entities.[128] **Unless nonprofit organizations and county and local government agencies create specific written policies governing the use of motorized vehicles on their lands open to the public, ALL such vehicles must be allowed without restriction!**

The regulation applies to non-federal[129] government entities (under Title II) and to private entities operating "places of public accommodation" (under Title III). It covers trails and shared use paths open to the public even on *private land*, whether or not the landowner has agreed to such vehicles; the critical factor is not consent of the landowner or land manager but the appropriateness of OPDMD usage on such lands, evaluated in accordance with the U.S. Department of Justice assessment factors discussed below.

The regulations distinguish between wheelchairs and "Other Power-Driven Mobility Devices" ("**OPDMDs**"). Wheelchairs—devices specifically designed for use by people with mobility impairments—must be permitted in *all areas* open to pedestrian use. On the other hand, OPDMDs—devices not designed for disabled individuals but which *can* be used by mobility-impaired people for mobility purposes—also are to be permitted in all areas open to pedestrians *unless* the trail provider establishes that their use would change the provider's programs or activities or create a safety hazard or threat.

These regulations may significantly impact the operations of many parks, preserves, and natural areas. **Trail and park managers and land trust staff must understand these regulations in detail and create policies and procedures to address this rule.** Below is an explanation of the regulations and as well as excerpts from sample policies.

Wheelchair vs. OPDMD

The U.S. Department of Justice categorizes mobility devices for individuals with mobility related disabilities as either a wheelchair or an OPDMD. A wheelchair generally is reimbursable by insurance and is defined as:

> [A] manually-operated or power-driven device designed primarily for use by an individual with a mobility disability for the main purpose of indoor or of both indoor and outdoor locomotion.[130]

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Wheelchairs must be permitted to be used anywhere on a property that is open to pedestrians.

In contrast, almost any vehicle can be used as an OPDMD. Anything with a motor, from ATVs to Segways, from golf carts to large trucks falls within the definition of "OPDMD," which is defined in the rules as:

> [A]ny mobility device powered by batteries, fuel, or other engines—whether or not designed primarily for use by individuals with mobility disabilities—that is used by individuals with mobility disabilities for the purpose of locomotion, including golf cars, electronic personal assistance mobility devices (EPAMDs), such as the Segway® PT, or any mobility device designed to operate in areas without defined pedestrian routes, but that is not a wheelchair within the meaning of this section….[131]

In sum, an OPDMD is any motorized device that may be driven, regardless of size, width, weight, or horsepower, if it is driven by someone who has a mobility-related disability.

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Unlike wheelchairs, the use of OPDMDs on publicly accessible property owned or operated by entities covered by ADA's Title II or Title III **may be restricted—but only if the restriction is based on one of the assessment factors discussed below.**

The Assessment Factors

The U.S. Department of Justice regulations require that public entities and public accommodations make "reasonable modifications" in their "policies, practices, or procedures" to permit the use of OPDMDs by persons with mobility disabilities UNLESS those entities can show that a particular class of OPDMD "cannot be operated in accordance with legitimate safety requirements" that the public accommodation or public entity has adopted. The factors that organizations may use to evaluate whether a certain type of OPDMD can be accommodated on a particular trail, shared use path, or other area is spelled out in the regulations. The 5 assessment factors are:

1. The type, size, weight, dimensions, and speed of the device;
2. The facility's volume of pedestrian traffic (which may vary at different times of the day, week, month, or year);
3. The facility's design and operational characteristics (e.g., whether its business is conducted indoors or outdoors, its square footage, the density and placement of furniture and other stationary devices, and the availability of storage for the OPDMD if needed and requested by the user);
4. Whether legitimate safety requirements (such as limiting speed to the pace of pedestrian traffic or prohibiting use on escalators) can be established to permit the safe operation of the OPDMD in the specific facility; and
5. Whether the use of the OPDMD creates a substantial risk of serious harm to the immediate environment or natural or cultural resources, or poses a conflict with Federal land management laws and regulations.

(28 CFR § 36.311; 28 CFR § 35.137)

The regulatory guidance issued by the U.S. Department of Justice goes on to state that:

> It is important to understand that these assessment factors relate to an entire class of device type, *not* to how a person with a disability might operate the device… All types of devices powered by fuel or combustion engines, for example, may be excluded from indoor settings for health or environmental reasons, but may be deemed acceptable in some outdoor settings. Also, for safety reasons, larger electric devices such as golf cars may be excluded from narrow or crowded settings where there is no valid reason to exclude smaller electric devices like Segway.®

> Based on these assessment factors, the Department of Justice expects that devices such as Segways® can be accommodated in most circumstances. The Department also expects that, in most circumstances, people with disabilities using ATVs and other combustion engine-driven devices may be prohibited indoors and in outdoor areas with heavy pedestrian traffic.[132]

The regulations do not *require* that Title II and Title III organizations conduct such an assessment, but if trail managers do not do so, by default ALL OPDMDs will be permitted on ALL their publicly accessible trails, shared use paths, and other lands open to pedestrians!

Creating an OPDMD Policy

If an entity decides not to allow certain types of (or any) OPDMDs on one or more trails or shared use paths, it needs to:

- Create a written policy on OPDMD use that establishes adequate reasons for banning or limiting the vehicle(s) pursuant to the U.S. Department of Justice assessment factors; and
- Inform the public in advance about its OPDMD policy.

An organization may wish to retain an expert to help it assess its lands as well to prepare a written policy, although this is not required. Several sample OPDMD policies are included in the Appendix; many others are available on the American Trails website.[133] These policies show a variety of restrictions that different organizations have imposed on OPDMD use on their lands, together with how each limitation has been substantiated vis-à-vis the assessment factors. These policies should not be adopted or excerpted by any organization without it first evaluating and documenting how the assessment factors apply to each of *its own trails*. The U.S. Department of Justice has not yet given a stamp of approval on any particular OPDMD policy, so there is no guarantee that any of these policies would be deemed legally compliant. Moreover, a written policy alone—without supporting assessments tailored to each trail or shared use path (or perhaps to each specific trail/path type)—will NOT meet the U.S. Department of Justice's legal requirements.

Most OPDMD policies include the following:

- A **purpose statement** explaining why the policy is being implemented and providing that OPDMD usage (to the extent permitted at all) is limited only to individuals with mobility disabilities.

- **Definitions** defining "OPDMDs"; "wheelchairs" or other manual-powered mobility devices; "electric-powered" vs. "gas-powered" mobility devices (to the extent the two categories are treated differently under the policy); and other terms used in the policy.
- A description of the **process** used to assess an organization or agency's trails (such as whether a committee was formed, who staffed the committee, the time period over which the author/committee drafted the policy).
- A summary of the assessment factors.
- **Prohibitions/limitations** in the policy that might restrict:
  - a specific class or type of OPDMD (e.g., "all gas-powered vehicles are prohibited");
  - OPDMDs over a certain, size, weight, and/or dimension (e.g., "only electric vehicles weighing less than 1 ton and no more than 5 feet in length are permitted"); and
  - OPDMD use on particular areas of the property (e.g., "use of OPDMD off-trail is not permitted").

  In each case, an explanation of the limitation or prohibition should be provided together with a reference to the assessment factor upon which the decision is based.
- **Trails and shared use paths (or groups of trails/paths) to which the limitations apply**.
- **Safety rules** may be imposed. For instance, the policy might:
  - set a maximum speed limit and require that all users yield to pedestrians;
  - state that users of OPDMDs and wheelchairs must exercise reasonable caution and operate the devices in a safe way based on trail/path conditions, user volume, other uses, weather conditions, etc.;
  - recommend that OPDMD users wear protective gear and require minors to wear helmets;
  - require OPDMDs to remain on marked trails/paths.
- Other **time, place and manner restrictions**. If the policy restricts the time periods during which OPDMDs may be used (for instance, prohibiting them during certain high-traffic times of the day or during certain weather conditions), it needs to justify this by referencing one or more of the assessment factors.

- Legal **disclaimer** noting that adoption of the policy does not constitute an endorsement that the trails or other lands are safe for wheelchair or OPDMD use. It may note that any outdoor activity, such as hiking, carries inherent risks and that persons who use the organization's trails or shared use paths do so at their own risk.
- **How the mobility disability will be validated**. The policy should explain how the organization will validate an OPDMD user's claim that s/he needs to use the mobility device due to a mobility disability (discussed below).
- If storage facilities are available for OPDMDs, the policy should state this.

Assessment by Trail Type vs. Specific Trail

Until the U.S. Department of Justice issues further guidance, the safest approach would be to evaluate each trail individually to substantiate the application of the assessment factors. But some organizations with extensive trail networks have chosen to evaluate **categories** of trails (i.e., unpaved single-tracks; unpaved service roads; paved trails), because the sheer task of assessing each trail individually is not deemed feasible. For instance, unpaved service roads may be able to accommodate wheelchairs and electric-powered mobility devices that do not exceed a 36" maximum width and 6' in length, whereas nature trails may be able to accommodate only devices that do not exceed 32" in width and 5 feet in length.

Given that conditions vary from trail to trail, it remains to be seen whether the U.S. Department of Justice will view this form of group assessment as sufficient to comply with the OPDMD rules.

Vehicle Use by Organization vs. Disabled Users

It is unclear how the fact that **the administrative entity itself occasionally uses motorized vehicles on its trails** or shared use paths (e.g., construction trucks on service roads or ATVs to maintain wilderness trails) would affect the U.S. Department of Justice's view of that entity's OPDMD policy banning use of these same vehicles by disabled users.[134] Until the Department issues further guidance, organizations that use vehicles that are prohibited as OPDMDs may want to limit this use as much as possible and carefully document why such use may be necessary.

Notifying the Public About the OPDMD Policy

The regulations require that information as to which classes of OPDMDs are allowed in specific locations must be available before the user arrives at the

park/trail/shared use path. Typically, this would involve posting the guidelines on the organization's website and offering to make the policy available in printed form upon request. The rule does not *require* information about OPDMD use restrictions to be posted on signs, but where feasible, managers may want to do so. (For instance, information about tread width would help OPDMD users make informed decisions regarding use of their device on a particular trail/path.) Signage could also inform the public that wheelchairs are permitted in all locations.

It is not clear that a policy requiring individuals to check in at the park office first, to obtain a key or a permit or speak with staff, would comply with the regulations.

Verifying Mobility Disabilities

The U.S. Department of Justice regulations state that anyone who has a mobility disability may use an OPDMD. To validate that a person who is using an OPDMD has a disability, trail/path managers or volunteers:

- May ask the OPDMD user for "credible assurance" of disability.
- **May NOT ask** about the nature and extent of disability.[135]

The regulations require that a state-issued disabled parking placard or card, or other state-issued proof of disability, be accepted as "credible assurance" of the disability. However, the regulations also require that if the person does not offer proof and the staff member/volunteer does not observe the person performing physical activities that generally would contraindicate the existence of a mobility disability, the staff member/volunteer **must accept the person's word** that the OPDMD is being used for a mobility disability.[136]

Note that many disabilities are not obvious. According to the American Trails website, only 8 million people with mobility limitations actually use canes, wheelchairs, canes, or crutches. Another 20 million people have mobility disabilities such as heart or breathing disorders, or joint and muscle-related disabilities that restrict the distance they can comfortably walk.

Verifying Vehicle Conformance

Regarding verification of whether the vehicle itself meets an organization's restrictions on a particular type of OPDMD (e.g., on size or weight), staff generally can determine this by using common sense. Detailed measuring is not necessary to determine whether the device has a combustible engine; appears to be significantly larger or heavier than allowed; or is going faster than the speed

limit allowed. A ranger or police officer should be contacted if there is any doubt about how to handle a possible conflict situation.

Consequences of Non-Compliance

If a disabled OPDMD user were to bring a lawsuit under the ADA claiming that a trail/path provider did not properly apply and/or document the assessment factors—and thus possibly violated her civil rights—what would be the consequence to the trail/path provider?

As of September 2014, there is no case law interpreting the regulations. But it is likely that infractions of OPDMD regulations would be handled in the same manner as violations of other ADA provisions. Aggrieved citizens who feel that a facility is non-compliant may file complaints with the U.S. Attorney General or with other federal administrative agencies identified in the ADA. That law does not provide for money damages for plaintiffs who win an ADA violation suit (under either Title II or Title III). The ADA does, however, **permit prevailing parties to recover their attorneys fees**, consultant costs, and other litigation-related expenses. No proof of wrongful intent on the part of the defendant is needed for the plaintiff to win her case.[137]

In addition to lawsuits brought by private parties, the U.S. Department of Justice can initiate compliance reviews on its own under the Project Civil Access initiative. It is unclear at this point whether this authority will be brought to bear on compliance with OPDMD regulations. As part of this initiative, Department of Justice investigators, attorneys, and architects survey state and local government facilities, services, and programs in communities across the country to identify modifications needed to comply with ADA requirements. The settlement agreements address the specific steps needed to improve access for the disabled. Under general rules governing lawsuits brought by the federal government, the U.S. Department of Justice may not file a suit unless it first has tried to settle it via negotiation. Courts may award money damages and impose civil penalties of up to $50,000 for a first violation in lawsuits filed by the Department.

Considerations in Trail Design and Management

The U.S. Department of Justice OPDMD regulations **do not require that new trails accommodate OPDMDs or that existing trails be retrofitted** so that OPDMDs can be used. The OPDMD rules only relate to the *use* of publicly accessible lands, not to the construction of trails or shared use paths.

With the ever-growing range of assistive technologies on the horizon, it is important to factor in OPDMD use on trails/paths when considering their Managed and Designed Use. Regardless of whether it is a pedestrian/hiking-only trail or a shared use path, "during the design process, it is helpful to have knowledge about the many types of assistive technologies that could be used on sidewalks and trails."[138] The term "one size fits all" does not apply to trail/path users, mobility devices, or trail/path design. Assistive devices are now technologically capable of carrying users over a wide range of terrain, from the mildest grades to the most challenging terrain that may push the limits of many people even without disabilities.

Managed Use, as discussed elsewhere in this manual, must always be determined first, prior to determining a route's design. Allowing anything other than pedestrian use on a trail means that the other use must be taken into account in design and construction. The planning process for a trail or shared use path that will allow the Managed Use of motorized vehicles and devices (including OPDMDs), should incorporate that management decision into the Designed Use and resulting design parameters for that trail or path's construction and ongoing maintenance.

Therefore, an entity that has an OPDMD policy allowing specific types of vehicles on trails or shared use paths should utilize that policy as part of its criteria in determining that trail or shared use path's design, construction, and maintenance. A good Managed Use policy will include an OPDMD policy that addresses user hierarchy on trails and shared use paths (e.g., "pedestrians have the right-of-way") as well as establishing time/place/manner restrictions (e.g., speed limits, helmet usage, and which specific trails and shared use paths are available for OPDMD use).

If an entity allows the use of OPDMDs upon existing trails and shared use paths, then the existing barriers and related devices (e.g., bollards, gates, latches, handles) will need to be modified or removed so as not to inhibit or block the permitted OPDMD use. It must be noted that even if an entity assesses its trails and shared use paths and determines that *all* OPDMDs will be prohibited, wheelchairs still must be permitted in all locations where pedestrians are allowed.

11. Accessibility and Access Easements

Acquiring land for a trail (the term is used in this chapter to include shared use paths as well) that will comply with the accessibility BMPs is no different than acquiring land for any trail. A trail corridor can be created by purchasing the land in *fee simple* (i.e., owning the corridor); by purchasing or accepting donation of a stand-alone *trail corridor easement* or *access easement;* by purchasing or receiving a donation of a conservation easement that contains within it a public access provision; or by license or lease. Trails can be created on public property or private property; be stand-alone paths; or be part of a broader local or regional trail network. When the trail provider owns the fee interest in the underlying trail, the accessibility issues are straightforward.[139] But when trails are being constructed over private property using access easements, leases or licenses there are a number of additional considerations.

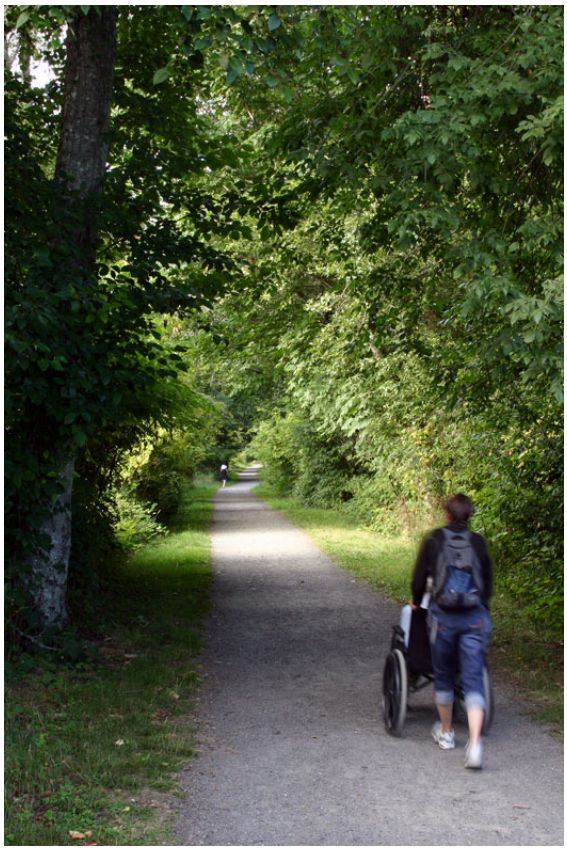


Photo provided by American Trails. AmericanTrails.org

Easement Drafting Considerations

Flexibility to Conform with Accessibility Regulations and BMPs

PALTA offers several model documents on its *ConservationTools.org* website providing guidance on how to create public trails. The primary trail-creating model document—the "Trail Easement Agreement" (the "**Model Trail Easement**")—contains provisions that give easement holders the flexibility to build trails that provide accessibility:

- Holder can determine the desired trail surfacing (§2.02);
- Holder can post informational signage (§2.01(a)(ii);

- Holder can construct railings, bridges, and other access structures (§2.01(a)(i);
- Holder can erect gates and barriers (§2.01(a)(iii); and
- Holder may make the trail right-of-way available for public use, including OPDMD use by persons with mobility impairments (§ 3.01(a)(ii).

It is recommended that trail providers discuss the OPDMD rules with landowners who are considering granting trail easements. The Model Trail Easement is written so that the landowner grants to the *easement holder* (and *not* to the public) the right to permit use of the trail by persons who may need to use OPDMDs as assistive devices.[140] The Model Trail Easement structures this as one of the easement holder's *rights* rather than a use requiring prior written consent by the landowner (see §3.01). Even if a landowner is concerned about OPDMDs, it is recommended that §3.01(a)(ii) of the Model Trail Easement (granting holder the right to permit use of OPDMDs by persons with mobility impairments) *not* be deleted from the trail easement. **The fact that this provision is contained in an easement document does not *require* an easement holder to allow any or all OPDMDs on the trail.** If the trail contemplated to be constructed will be unsuitable for one or more types of OPDMDs because of one of the U.S. Department of Justice assessment factors discussed above (e.g., it will be a narrow hiking trail through a sensitive, erosion-prone natural area), the trail provider would create the appropriate policy to manage or prohibit OPDMD use. But including §3.01(a) in the easement document explicitly assures that the landowner has granted the trail provider the legal right to permit OPDMDs if advisable.

In addition to the Model Trail Easement, the Pennsylvania Land Trust Association also publishes a short-form trail easement document (the "**Grant of Trail Easement**") that addresses several aspects of trail accessibility. This short form expressly grants easement holders the right to install signage and to cover the surface with "stone, wood or other materials," which could include the "firm and stable" surface required for accessibility. It also grants the easement holder the right to establish a trail for "public use," which arguably includes the right to make the trail compliant with accessibility regulations.

Assessment Prior to Easement Execution?

If, prior to execution of the trail easement, the landowner and trail organization are in agreement that all or some OPDMDs should be banned from a prospective trail *based upon a preliminary evaluation of the assessment factors as applied to that specific proposed trail*, these restrictions could be incorporated into the trail easement document. However, the validity of a trail assessment conducted *pre-construction* has not yet been opined upon by the U.S. Department of Justice, so

any such agreement between the landowner and the trail organization should be made contingent on conformance with applicable law and regulations.

OPDMDs Unacceptable to Landowner

A trail easement document that bans OPDMDs is not sufficient, in and of itself, under the regulations to ensure that OPDMDs may legally be barred from the trail. Limiting or prohibiting OPDMDs requires an evaluation of the assessment factors applied to the particular trail in question.

Managing Existing Trail Easements

The OPDMD regulations do not include an exception for trails on private property. These trails are required to comply with the OPDMD rules to the same extent as any other publicly accessible area.

Given how recent the OPDMD regulations are, many trail easement documents are silent regarding OPDMD usage. To the extent the easement provisions don't expressly prohibit motorized vehicles on the public trail, the language generally should be interpreted to permit use of OPDMDs where the assessment indicates such usage is appropriate. Easement language needs to be evaluated on a case-by-case basis, of course, and trail/path providers should consult with legal counsel.

Alternatively, existing trail easements may prohibit the use of motorized vehicles by the general public or permit them only in case of emergency or permit only motorized "wheelchairs." But pursuant to the OPDMD rules, prohibitions on motorized devices that could serve as OPDMDs must be warranted by the U.S. Department of Justice assessment factors for a particular trail. Moreover, a blanket prohibition on the use of *all* motorized devices in areas otherwise open to pedestrians would run afoul of the requirement that wheelchairs be permitted in all areas open to pedestrians.

If a trail easement precludes the use of motorized vehicles for accessibility, the easement holder and landowner may want to amend it to incorporate permission for certain categories of OPDMDs where appropriate given the assessment factors—or they could prepare a simple limited waiver of the "no motorized vehicles" easement provision as it applies to certain OPDMDs, without having to formally amend the trail easement document.

Indemnity for ADA Violations

An aggrieved, disabled user may file a civil rights action for violation of an ADA-based accessibility requirement. With regard to trails, shared use paths,

and related amenities, the lawsuit may be premised on: OPDMD regulations; the 2010 Standards; program access by public entities; future PROW Guidelines governing shared use paths; the Outdoor Guidelines (federal entities); or future trail accessibility standards adopted to govern non-federal entities. Analogous to the legal theory that holds both landlord and tenant liable for ADA violations, it is possible that the landowner as well as the holder of an easement for a trail or shared use path could be named as a defendant in an ADA-based civil action and might conceivably be held liable for a violation. To address such a possibility (whose likelihood is unknown at the date of this writing), the landowner and trail organization could allocate liability between each other by drafting the trail easement document to include indemnity provisions.[141]

12. Management and Maintenance for Continued Access

Continued Attention to the Design Parameters

Building a trail (the term is used in this chapter to include shared use paths as well) that takes into account the regulations and BMPs identified in this manual is only the first step in providing people with an enjoyable recreational opportunity. Just as important is the care for the trail and the management and maintenance plan to deliver that care.

The *Pennsylvania Trail Design Manual* provides a chapter on contemporary trails management and maintenance. As stated in that publication:

> A management plan is an important component to ensure a positive user experience and to effectively manage the potential risk associated with a trail. Those responsible for managing a trail should adopt a trail management plan before a trail is opened. . . . [DCNR encourages] all trail managers to develop a management plan by adopting policies and procedures in a written document. A management plan establishes expectations for the operations, maintenance and security of the trail.[142]

It is important to manage and maintain the original design parameters to which the particular trail was constructed. There should be no arbitrary maintenance decisions. Information about the original tread materials, grades, structures, natural features, and constructed amenities should be easily available to avoid departures from the original design parameters.

For example, seasonal maintenance of natural surface hiking trails that have *not* been built to provide universal access often consists of filling ruts and eroded areas or removing obstructions along the trail. Simply filling the ruts and repairing the erosion with the proper soils is all that is required. Removing the obstructions, such as downed tree limbs, is an easy matter of cutting up the material and removing the bulk to outside the trail corridor. However, in the case of a trail that has been designed and constructed to the recommended accessibility BMPs, such filling needs to include careful establishment of the proper grade and cross-slope, as well as firm and stable surface that contains no obstructions or protrusions that exceed the tread surface design parameters. The

specifications for that are provided by the original design documents and the management/maintenance plan that should be developed directly from those.

Trail Condition Assessments

The goal of a trail assessment is to gather ground-truthed information about a specific trail. This physical evaluation of a trail and its related corridor should result in objective, detailed documentation of the inventoried trail's condition in reference to its identified managed and Designed Use parameters.

Chapter 5 of the *Pennsylvania Trail Design Manual* provides detailed information on establishing assessment processes and procedures for trails. As pointed out in that chapter, any entity that manages trails needs to establish a clear program and schedule of monitoring and maintaining its trails, documenting "the trail maintenance practices in writing to ensure you have the work force, materials, and finances to maintain your trail properly."[143]

An assessment covers a trail's "productivity factors," which should be derived from the trail's original design and use parameters. Productivity factors are the physical factors influencing the trail and its compliance with the trail BMPs. These include:

- linear grade
- cross slope
- width
- surface
- obstructions and protrusions

In addition, it is recommended that signage and amenities associated with the specific trail be included when assessing universal access. Sign and amenity inventories provide detailed descriptions of the condition of each sign or structure within a specified trail and related corridor. GPS and photo records are helpful to accompany a trail assessment, especially when describing the locations and conditions of structures and amenities.

Well-executed trail assessments result in objective and reliable data that provides the necessary information to create the specific work tasks for the trail's maintenance and management. The assessment and associated work tasks in turn inform the estimates for materials, resources, equipment, tools, expertise, and labor that are needed.

Trail Maintenance

As stated succinctly in the *Pennsylvania Trail Design Manual*:

> [T]rail degradation will occur quickly without an effective maintenance program, no matter how well you plan, design, and construct a trail.[144]

Normal wear and tear (such as tread cupping), wildlife impacts, vegetation growth, storm events, and unauthorized uses all create trail maintenance issues. Trails can become victim to poor maintenance very quickly. **Trail grade, cross slope, and surface are the three most critical performance factors for a trail that meets accessibility guidelines, and they are also the most susceptible to problems** that may arise due to use and weather. Berming, entrenchment, sloughing, and erosion can have a great impact on an accessible trail unless planned maintenance addresses potential issues. Trails that meet accessibility BMPs are very sustainable, but sustainability does not mean being totally free from maintenance.

Chapter 5[145] of the *Pennsylvania Trail Design Manual* includes a host of resources related to managing and maintaining trails. This includes the importance of establishing a maintenance schedule or cycle. That schedule should be based upon the specific environment where the trail is situated, with frequency determined by weather, hydrological activity, plant growth, and the degree of seasonal use of trails.

With regard to trails and shared use paths, the maintenance schedule should minimally cover the following categories for both the trail corridor and trail itself:

- **Corridor Perimeter and Overhead Clearance.** Remove obstacles and protrusions by clearing the defined corridor of material that creates barriers to accessibility, such as encroaching brush or grasses, debris from downed trees and broken tree limbs.
- **Trail Tread.** Maintain and firm and stable surface, using the same materials as the trail was originally designed to incorporate. When maintaining and repairing surfaces, make sure to remove or reduce protrusions and obstructions, smoothing surface indentations and erosion that alter original design parameters.
- **Tread Grade, Cross Slope, and Width**. Check and maintain the originally-designed grade and cross slope, making sure that any maintenance or repairs to the particular segment in question are correct, and do not alter segments before or after that area. For instance, if the grade is arbitrarily altered in a particular segment, it may appear to be ok for that area of the trail. However, taken within the whole of the trail, it could alter the overall grade average intended by the original design and construction.

- **Drainage**. Drainage maintenance includes dips, swales, and culverts. Removing debris, such as leaves, is an easy task. However, left undone, one season of leaf fall can lead to clogged drainage, poor sheet flow of water from the tread surface, and thus obstructions and erosion on the trail tread. Clean and repair scuppers on bridges and boardwalks, fencing, railings, and transition points between structures and trail. This is a matter of making sure that both poor drainage, as well as build up of debris on trail surfaces, is kept to a minimum.

Managing Public Use of a Trail

Managing public use of a trail that meets accessibility guidelines is no different than managing any other trail. The bottom line is that every trail should be managed for the use for which it was planned and designed. Again, Chapter 5 of the *Pennsylvania Trail Design Manual* devotes itself to the many management considerations and techniques that providers of trails and shared use paths should familiarize themselves with, including:

- Trail Management Objectives (TMOs)
- User safety
- Managing natural and cultural resources
- Managing the physical corridor
- Programming
- User conflicts
- Volunteers
- Policies
- Maintenance
- Training

13. Case Studies

Fallingwater Overlook and Nature Trail

Location: 1478 Mill Run Road, Mill Run, Pennsylvania 15464
Length: 480 feet
Status: Completed Spring 2013

Project Background and Managed Use


Photo courtesy Penn Trails LLC

The Western Pennsylvania Conservancy (WPC) is a nonprofit organization dedicated to protecting the region's exceptional natural places. Since its founding in 1932, WPC has conserved more than 233,000 acres in Western Pennsylvania, restored watersheds, and saved wildlife. WPC maintains and operates Fallingwater,[146] the name of a unique house built over a waterfall on Bear Run. Frank Lloyd Wright designed and built the house for his clients, the Kaufmann family, between 1936 and 1939. A National Historic Landmark, it was voted the most important building of the 20th century in a poll conducted by the American Institute of Architects. The house and surrounding 1,543 acres was entrusted to the WPC by Edgar Kaufmann, Jr., in October 1963. The surrounding Bear Run Nature Reserve has since been enlarged to over 5,000 acres. Open to the public, Fallingwater receives about 150,000 visitors per year.[147]

Funded partially by a DCNR Community Conservation Partnerships Program—Environmental Stewardship Fund grant, WPC envisioned an accessible trail that would allow universal access to an overlook that affords a spectacular view of the house and adjacent water features. As part of a larger WPC Trail Master Plan, the primary goals of the project were to create a universal access trail that would:

- Foster a conservation ethic by allowing visitors to directly experience the natural world;

- Be sustainably maintained by WPC staff and volunteers in accordance with BMPs; and
- Minimize recreational impact to ecologically sensitive areas.

Along with the Trail Master Plan, WPC developed detailed site plans and drawings for the accessible trail project.

Project Designed Use and Design Parameters

The trail's most demanding Designed Use combined a universally accessible, aggregate surface trail that could sustainably handle up to 1,000 users per day, while also delivering an intimate nature trail experience as people travel to Fallingwater's scenic overlook. The trail was designed to meet the Outdoor Guidelines, with the caveat that field modifications might be necessary. That was an important factor during construction, since the trail's most demanding design parameters related to determining its alignment as well as addressing existing grades and slopes.

With regard to alignment, the trail corridor winds through a hydrologically active, mature forest setting with large stands of rhododendron. Many trees, plants and shrubs were carefully identified as important not to remove or disturb. Corridor width was therefore limited to cause as little disturbance as possible. Stipulations included that any machinery used in construction be restricted to a width equal to or narrower than the finished accessible trail tread. In addition, parameters included a $500 per incident penalty, assessed to the contractor, should there be unnecessary nicks, scrapes, and de-barking that damaged trees.

With regard to grade and slope, a matter of only a few feet made a great difference as to whether the trail would meet accessibility guidelines or not. The planned alignment had to be modified several times in the field in order to provide a universally accessible path of travel from the trailhead to the scenic overlook. Linear grade was carefully flagged and staked at short intervals to closely monitor grade and cross slope as the trail construction proceeded through each phase to final completion.

Project Challenges and Outcomes

The major project challenge was encountered during the construction phase. As is often the case in trail building, excavation can reveal features that are not readily apparent during the planning and design phases. Even with good ground-truthing of proposed trail corridors and related structures, it is not possible to determine everything that might be encountered just below the surface.

This was the case for this project, as excavation revealed a very active seep that ran across almost 50 linear feet of the newly created trail corridor. Unanticipated during the planning and design, the corridor alignment could not be changed without then causing the majority of the trail's desirable linear grade to fall outside of accessibility guidelines.

The challenge was met by using a previously unplanned construction tool. A French drain[148] created a way for the seep to drain under the trail itself and then continue down the hillside below the trail. Encapsulating clean 3" to 4" stone inside the geotextile and then running it the 50' length of the seep created a clog-free structure that would not need maintenance as culvert pipes would have.

Ongoing Maintenance and Management of the Completed Trail

The following are the key maintenance items for the trail:

- **Corridor brushing:** keeping the defined corridor clear of encroaching understory tree branches and shrubs; removing debris such as leaf litter, broken branches, or material that exceeds ½" obstruction height.
- **Trail tread care:** removing or reducing protrusions caused by wear and tear on the aggregate trail tread, smoothing surface indentations and erosion that alter original design parameters; monitoring for any new hydrologic activity, such as seeps or run-off from structures above the trail; checking and maintaining originally designed grade, cross slope, and resting areas.
- **Drainage:** monitoring area where the French drain is installed, deberming the downhill edge of trail tread and bottom of swales.

Trexler Nature Preserve's Covered Bridge Trail

Location: 4935 Orchard Rd., Schnecksville, PA 18078 (Park Office)
Length: 1.2-mile loop trail
Status: Started in 2005; completed and fully compliant in 2009


Photo courtesy of Wildlands Conservancy

Project Background and Managed Use

The Wildlands Conservancy (WC) has created lasting connections to nature in the Lehigh Valley since 1973 through land protection, environmental stewardship and education. WC's mission is to protect and restore critical natural areas and waterways and educate the community to create a legacy of a healthy, sustainable environment for future generations. WC has preserved more than 48,000 acres of open space, educated more than 300,000 children and adults about the importance of conservation, developed and maintained significant trail systems, and created and implemented several watershed-management plans.

The development of trails and greenways is a priority for WC, which has a long working relationship with Lehigh County. This includes overseeing the development of the Master Site Plan for the 1,108-acre Trexler-Lehigh County Game Preserve, completed in 2006, and implementing recommendations, including trail construction and improvements for what now is known as the Trexler Nature Preserve. WC saw the importance of creating an opportunity for an accessible trail beside the iconic Jordan Creek Ford along an abandoned road next to the Creek. With input from Good Sheppard Rehabilitation Hospital, plans for trail design were developed and approved for construction.

Project Designed Use and Design Parameters

The first phase of construction involved improving the existing road to create nearly 2,500 feet of accessible trail along the Jordan Creek between the ford and one of the Preserve's historic covered bridges. Project development included resurfacing of the trail, construction and installation of several boardwalk areas over wet spots, and the construction and installation of two small bridges.

The new trail was opened and appropriately named the "Covered Bridge Trail." The trail quickly gained popularity due to its ease, location, and central location within the Preserve.

A second phase for trail construction began shortly thereafter. By building a new trail segment on the other side of the creek and improving two creek crossings, the trail could be expanded and developed into a fully accessible loop trail. This phase of construction involved approximately 2,500 feet of new trail, developing an accessible pathway across the existing covered bridge, and modifying the pedestrian bridge over the Jordan Creek fairly significantly to install appropriate ramps. When completed, the Covered Bridge ADA Trail totaled 1.2-miles. As the pedestrian bridge was modified, it also allowed for accessibility to continue away from the loop trail via another old road that had since been paved and developed into a picnic area as another part of the Master Site Plan Implementation. This section provided paved access along the creek with several opportunities for accessible fishing. Wildlands Conservancy and Lehigh County then worked to further enhance accessible picnic opportunities in this area, and also worked with the PA Fish and Boat Commission to designate this stretch of creek for fishing only for children and persons with disabilities, stocking regularly and hosting events with great attendance and success.

Project Challenges and Outcomes


Photo courtesy of Wildlands Conservancy

The biggest challenges of developing the trail were all related to ADA requirements. As with most accessible trail projects, there were several features that needed to be addressed in order to make the trail fully compliant with the BMPs. These features included the surface of the covered bridge, several wet spots along the trail, and historic pedestrian steps on the south end of the trail and leading up to the existing pedestrian bridge. The trail route was already in place. However, several physical upgrades were necessary to provide greater accessibility. The biggest challenge was raising and allocating funds for these upgrades given that the trail was already open to the public and being used. Wildlands and Lehigh County saw the value and the importance in making these upgrades to allow for accessibility, and were able to secure funding for the improvements. The result was resurfacing of the covered bridge,

boardwalks and bridges over wet spots on the trail, and a series of ramps on the south end of the trail to make the trail compliant. Today the trail is the most used in the entire Preserve, and upgrading to compliance with the trail BMPs and the 2010 ADA Design Standards (for the built components) was crucial to that success.

Ongoing Maintenance and Management of the Trail


Photo courtesy Wildlands Conservancy

Maintenance demands have been relatively minimal due to the sustainable design, proper construction, and appropriate use of the trail. As the trail was opened first as a non-compliant trail, several upgrades were made to bring the trail up to ADA compliance over the first few years. Following that, maintenance has consisted mainly of tree removal and a few areas of resurfacing as a result. There has been minimal wood replacement on the ramp feature as well as the applications of protectant materials. Due to the proximity of the trail to other features, the trail itself has become a focal point and a main attraction for the entire Preserve. Management has been focused on accommodating increased use by adding amenities such as additional parking, picnic areas, kiosks, and connections to other trails. The trail is used for educational programming and special events. Lehigh County and Wildlands Conservancy have successfully worked together to manage and maintain the trail with its heavy use based on previously developed management guidelines and continued evaluation of the trail's sustainability.

Middle Creek Trail—Strawberry Hill Nature Preserve

Location: 1537 Mount Hope Road, Fairfield, Pennsylvania
Length: 630 feet
Status: Completed Spring 2013

Project Background and Managed Use

Strawberry Hill Nature Preserve and Environmental Center is a non-profit education and conservation organization located on 609 acres in the South

Mountain region above the Pennsylvania/Maryland border. Strawberry Hill is a community resource for diversified environmental education, outdoor nature exploration, and sustainable resource management. Utilizing the open space as a living classroom for people of all ages in the community, visitors include pre-school to 8th grade students, hikers, birders, families, and Scout groups.

In 2010, Strawberry Hill Nature Preserve was awarded a DCNR grant for construction of a trail and planned to implement the new Outdoor Guidelines as BMPs within the core programming area of the campus. The new trail would replace an older path that travelled near Middle Creek, just south of the campus. The old trail was narrow and subject to seasonal water retention, making it difficult to utilize for groups. In addition, the old trail did not provide universal access to the increasing number of visitors who wanted such a trail.

Photo courtesy Strawberry Hill Nature Preserve

The primary project goals were to create a sustainable, natural surface hiker/pedestrian trail that would:

- Connect to the main campus and travel north of the Middle Creek corridor;
- Provide universal access for trail users;
- Provide outdoor environmental education experiences for groups (up to 20 adults and/or children) travelling and stopping along the trail;
- Utilize compacted natural surface materials and constructed boardwalk for people to walk on.

Project Designed Use and Design Parameters

The trail's most demanding use was to provide a trail experience for groups of up to 20 adults or children walking and stopping along the path of travel for educational programs. With this in mind, the trail tread design width was 60" wide, along with 12' diameter spaces constructed at specific locations along the trail. While 60" accommodates two-way traffic, including two wheelchairs passing one another, the 12' diameter spaces provided locations for both large group programming as well as passing and resting.

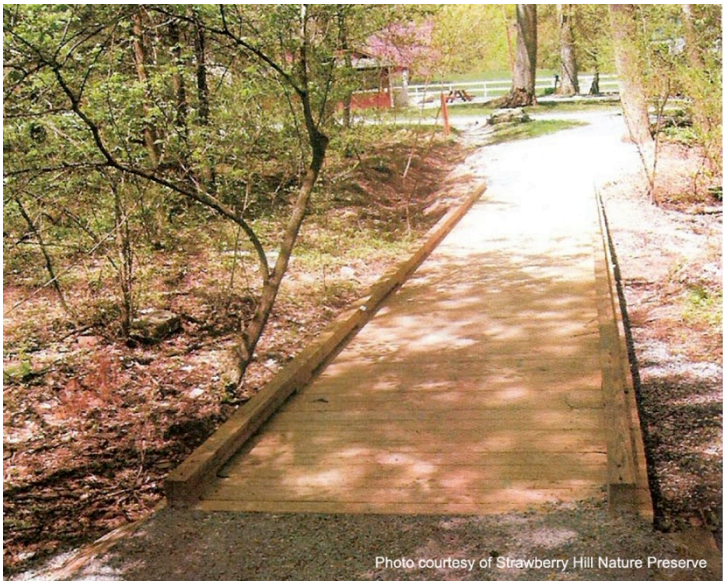


Photo courtesy of Strawberry Hill Nature Preserve

Another key design consideration related to the old trail's proximity to a 100-year flood plain. The new trail alignment solved most of the location challenges presented by the old path of travel. One short segment required the design and construction of a 20' boardwalk that spanned over the floodplain. Another 20' boardwalk was constructed over a drainage area that is especially active in the spring.

In addition, a dry-stone retaining wall (or "crib wall"), approximately 3' high and 25' in length, was utilized to align and hold the trail structure around a toe above the flood plain.

The trail alignment was located within an area that had gentle grade changes, mostly below 6%. Naturally occurring rolling contours were utilized, as well as construction of gentle grade reversals at design specified intervals, to increase sheet flow while maintaining a running grade that provides universal access. Cross-slope of the entire trail did not exceed 2%. For segments where the flood plain or swale increased linear grade, the two boardwalks and retaining wall also provided the means to reduce grade change and provide universal access.

Project Challenges and Outcomes

The major project challenge related to weather conditions. During the conceptual planning, field assessment, and planning stages (in 2011), several major rain events took place in the region. Soils that normally drained quickly showed signs of pooling and running water. In addition, as part of another project adjacent to the site, it was revealed that a large parking area might be constructed in the future. That parking lot could potentially produce more storm water runoff into the swale, located below the northern trailhead, than was historically encountered. Therefore, given


Photo courtesy Strawberry Hill Nature Preserve

the potential for such weather and water related activity, the boardwalk was slightly elevated during construction and a drainage swale containing rip-rap was added to further reduce the potential for water entering or eroding the trail in the future.

Weather was also a factor in construction of the trail, as rain in the fall of 2012 made it more difficult to apply and compact the final aggregate tread surface material. This lead to the anticipated 2012 completion date being moved to the spring of 2013.


Photo courtesy of Strawberry Hilil Nature Preserve

Ongoing Maintenance and Management of the Completed Trail

Following are the key maintenance items for the new trail:

- **Corridor brushing:** The site is subject to heavy autumn leaf falls, so clearing the corridor of dead leaves before winter freeze and spring melt is critical. Removing debris such as broken branches is important because the route is utilized for programs year-round.
- **Trail tread care:** Monitor for surface indentations and repair with same tread surface aggregate per design parameters. Avoid creating indentations during winter trail snow removal, by setting snow blower to remove snow at least 2 inches above the surface to avoid scouring and gouging the aggregate tread material.
- **Checking and maintaining** originally designed grade and cross slope. Check trail tread transitions with boardwalk approaches.
- **Drainage maintenance**, including debris that might build up under the boardwalk, and deberming the tread to maintain sheet flow in this relatively flat site.
- **Cleaning trail boardwalks**, including scuppers, to maintain good drainage off of these structures.

Black Rock Sanctuary Interpretive Loop Trail

Location: 953 Black Rock Road, Phoenixville, Pennsylvania
Length: 0.8 miles
Status: Completed 2010; additional construction planned

Project Background and Managed Use

The Black Rock Sanctuary is a 120-acre public park, owned and maintained by Chester County. The Sanctuary is located along the Schuylkill River, about 30 miles west of Philadelphia. The project began when the Chester County Commissioners decided to purchase a decanting basin that had been declared surplus by the Pennsylvania Bureau of Mines.

Photo courtesy of KLM Design Group, LLC

This manmade basin was created to contain the silt build-up behind the Black Rock Dam, which was making the river un-navigable. In the early 1930s, the Pennsylvania Bureau of Mines undertook a massive public works program to construct twenty-seven basins along the river. The basins were designed to accommodate some 33,000,000 tons of silt and other materials dredged from the river. Their purpose was to permit continued operation of the river as a slack water transportation canal connecting Schuylkill County coal mines with Philadelphia-based manufacturers to fuel the industrial revolution of the late-1800's and early-1900s.

Located along the Atlantic Coast Flyway, the basin was identified as an ideal location for a sanctuary to provide breeding and nesting habitat for rare or endangered migratory waterfowl. In addition, a carefully crafted trail could allow schoolchildren and other visitors the opportunity to see and learn about the importance of wetland environments in a fun and interactive way. Chester County secured several grants to enable the project's design and construction. Black Rock Sanctuary was born.

The initial project included design and construction of a comprehensive network of high quality wetland habitats suitable for breeding and rearing young ducks, herons, and many other species of birds. Design began in 1999 and the wetland

construction work was completed in 2002. The basin is now home to over 47 acres of high quality wetlands that many bird and animal species use for breeding and nesting; a trail that is used by families, joggers, dog walkers, and bird watchers; and a series of unique interpretive stations explaining the complexities of wetland environments.

Once the wetland creation/enhancement project was completed, the focus changed to developing an interactive interpretive trail that would educate visitors of all ages in an engaging way. Designed to reinforce the environmental education goals of Pennsylvania's Department of Education, the trail's interpretive program begins by explaining the basic concept of habitat, food and shelter, gradually introducing more complex ideas as the trail progresses, finally describing the concepts of stormwater management and erosion prevention.

In 2003, the first phase of the interpretive trail was completed and dedicated by the County. The 0.8-mile trail and five of the proposed thirteen interpretive stations were constructed during this first phase. The second phase included construction of a butterfly garden, three interpretive stations, and exhibits/activities for three more stations along with pavement upgrades to the trail and parking lot surfaces. The second phase design began in 2007 and construction was completed in 2010.

Project Designed Use and Design Parameters


Photo courtesy of KLM Design Group, LLC

Initial design work for the trail and several of the interpretive stations began in 2000. The trail and interpretive stations were designed to meet ADA guidelines adopted in 1996. Except for one-way loop trails into interpretive stations, the crushed stone trail is at least six feet wide, permitting two-way travel and accommodating the golf-cart type vehicles that the County maintenance department uses for access.

Through wetland areas, a boardwalk made of recycled plastic was constructed and placed slightly above grade to reduce interference with water flow.

Project Challenges and Outcomes

Major design and construction challenges included the need to descend from the upper meadow area almost twenty feet into the basin at the beginning of the interpretive loop trail, followed by the need to climb a fifteen-foot high berm, all the while incorporating several interpretive stations on both sides of the trail and providing accessibility.

During the late summer of 2002, while the trail was under construction, southeastern Pennsylvania experienced two severe rainstorms within one week. The rain caused major washouts and required reconstruction of over one hundred feet of the trail and construction of a stone-lined swale to handle the significant amount of stormwater coming from off site.

In addition, due to steep slopes along parts of the trail and the quantity of stormwater flowing from adjacent subdivisions, the County's maintenance personnel found that sections of the crushed stone trail needed constant replenishment. Therefore, during the upgrade work, the trail was paved with asphalt and upgraded to meet the 2010 ADA Design Standards for accessible routes.

Ongoing Maintenance and Management of the Trail

The Chester County Department of Parks and Recreation performs daily site visits and weekly maintenance. Trail and amenities maintenance tasks include:

- Visual inspection of the trail surface
- Periodic pruning to maintain clearance around the trail
- Removal of debris
- Snow removal
- Visual inspection of interactive interpretive exhibits
- Maintenance of decks, wetlands, and meadow
- Care of butterfly garden plantings and removal of invasive plants

Glossary

The following definitions are utilized frequently in the planning, design, construction, and management of trails, shared use paths, and other routes. They are derived from several sources, including the USDA Forest Service (www.fs.fed.us); the United States Access Board (www.access-board.gov); the Federal Highways Recreational Trails Program (www.fhwa.dot.gov); the National Trails Training Partnership (www.americantrails.org/nttp/); and the Pennsylvania Department of Conservation and Natural Resources (www.dcnr.state.pa.us).

AASHTO. American Association of State Highway Transportation Officials.

AASHTO Guide. *AASHTO Guide for the Planning, Design, and Operation of Bicycle Facilities.*

ABA. Architectural Barriers Act.

ABAAS. Architectural Barriers Act Accessibility Standards.

Accessible. In compliance with the accessibility guidelines at the time the facility or other constructed feature was built or altered.

Access Board. U.S. Architectural and Transportation Barriers Compliance Board.

Accessibility Evaluation Survey. Comparing each portion of a structure to the accessibility standards and recording compliance and deficiencies.

Accessible Facilities. Facilities that comply with the accessibility guidelines.

ADA. Americans with Disabilities Act.

ADAS. 2010 ADA Standards for Accessible Design.

Alteration (trail). A change in the original purpose, intent, function or design of a trail.

Alteration (recreation site, building, or facility). A change to a portion of a recreation site, building, or facility that is addressed by the accessibility guidelines and that affects the usability of the site, building, or facility.

BMP. Best Management Practice.

Conditions for Departure. Specific circumstances found in natural environments that may make it difficult to comply with the accessibility guidelines.

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

Constructed Feature. A constructed element associated with a trail that provides support for trail users, but is not a part of the trail tread. Examples include overnight shelters, toilets, fire rings, picnic tables, and tent pads.

Cross Slope. The percentage of rise to length when measuring the trail tread from edge to edge perpendicular to the direction of travel. *Typical Cross Slope* is normally encountered cross slope found along the length of a trail. Measurement intervals become more frequent as the trail class increases.

Disability. A medically definable condition that causes a limitation in one or more major life activities such as walking, seeing, hearing, speaking, breathing, thinking, and so forth.

Design Parameters. The Designed Use that controls the geometric design of a trail and determines the level to which it should be maintained.

Designed Use. The Managed Use of a trail that requires the most demanding design, construction, and maintenance parameters and that, in conjunction with the applicable trail class, determines which design parameters will apply to a trail. There is only one Designed Use of a trail.

Federal Trail Data Standards (FTDS). FTDS are applicable to all trails managed by federal entities. However, they can also be applied to trails managed by state or local governments and other entities. The FTDS enable trail managers and the public to use mutually understood terminology for recording, retrieving, and applying spatial and tabular information. This makes it easier for trail information to be accessed, exchanged, and used by more than one individual, agency, or group. The FTDS does take accessibility into account as part of the data collection and reporting process for trails.

Firm and Stable Surface. A surface that is not noticeably distorted or compressed and that doesn't shift during the passage of a device that simulates a person using a wheelchair.

FHWA. U.S. Department of Transportation Federal Highway Administration.

Full Bench (construction). Trail professionals almost always prefer *full-bench* construction. A full bench is constructed by cutting the full width of the tread into the hillside and casting the excavated soil as far from the trail as possible. Full-bench construction requires more excavation and leaves a larger backslope than partial-bench construction, but the trail bed will be more durable and require less maintenance. Full-bench construction should be used whenever possible.[149]

Guardrail. A railing designed to protect people from accidentally falling off an edge where the immediate dropoff is over 30 inches.

Handrail. A narrow railing to be grasped with the hand for support.

Hiker/Pedestrian Trail. A trail that is designed, constructed, and maintained for hiker/pedestrian use (see *Design Parameters*) or that is actively managed for hiker/pedestrian use (see *Managed Use*).

Limiting Factor. An extreme, uncorrectable environmental barrier that makes the trail beyond the barrier unreachable for many people with mobility limitations.

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

- Repairing or replacing deteriorated, damaged, or vandalized trails, facilities, or components, such as repainting, removing graffiti, and repairing or replacing components of facilities with new components similar to the original ones. Components can be sections of bridges or boardwalks, signs, fencing and railings, siding, windows, and roofing.
- Removing debris and vegetation, such as fallen trees or broken branches; clearing encroaching vegetation from trails, pathways, lawns, or landscaped areas; and removing rock slides.
- Maintaining trail tread and access routes, such as filling ruts, reshaping a trail bed, replacing or reshaping surfacing material, repairing washouts, installing riprap to retain cut and fill slopes, constructing retaining walls or cribbing to support trail tread, and repairing concrete or asphalt paving.
- Performing erosion control and drainage work, such as replacing or installing drainage dips or culverts and realigning sections of trail to reduce erosion or avoid boggy areas.[150]

Managed Use. The managed use of a trail that requires the most demanding design, construction, and maintenance parameters and that, in conjunction with the applicable trail class, determines which design parameters will apply to a trail.

OPDMD. Other Power-Driven Mobility Device, which is defined in the 2011 U.S. Department of Justice regulations interpreting the ADA.

Outdoor Guidelines. The *Outdoor Developed Areas Accessibility Guidelines,* September 26, 2013, issued pursuant to the Architectural Barriers Act.

Outdoor Recreation Access Route (ORAR). A continuous, unobstructed path for pedestrian use that connects elements in a picnic area, in a campground, or at a trailhead. See Chapter 1016 of the Outdoor Guidelines.

Program Accessibility. Providing all people, including people with disabilities, the opportunity to participate in a program—an activity in which someone may participate or the reason someone visits an area.

Point of Deviation. The location on a trail where one or more technical provisions in the ADA Trail Accessibility Guidelines cannot be met due to the presence of a condition for departure enumerated therein.

Prominent Feature. A natural, cultural, or historic feature located along or adjacent to a trail that is determined by a trail designer or manager to have national, regional, or local distinction or significance. A prominent feature may be the focal point, main attraction, or destination of a trail, or it may simply be an interesting secondary feature. Examples include but are not limited to boulder outcrops, waterfalls, groupings of old or unique trees or other vegetation, vistas that may or may not be part of a developed overlook, and cultural or historic structures.

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

Protruding Object. An object, such as a tree, branch, or rock ledge, that extends into a trail from beside or above it.

PROW Guidelines. Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way; currently in draft form, these guidelines will be issued by the U.S. Access Board.

Public Right-of-Way. Public land acquired for or dedicated to transportation purposes, or other land where there is a legally established right for use by the public for transportation purposes.

Recreation Site. A discrete area that provides recreation opportunities, receives use, and requires a management investment to operate and/or maintain to standard.

Rotational Penetrometer. A precision surface-indenter measuring tool for evaluating the firmness and stability of ground and floor surfaces.

Scoping. The term used for the process of figuring out when, how much, and where the guidelines apply.

Scoping Requirement. Specification of where, when, and how much of a constructed feature must be accessible to comply with the ADA Trail Accessibility Guidelines.

Sieve. A sieve is a device for separating desired aggregate stone sizes from unwanted sizes. A *sieve analysis* is a procedure used to assess the *gradation* of the

aggregate stone and the percentage of material that is retained or discarded. The stone sizes and gradation is critically importance to the way the material will perform in use.

Setting. The term used to describe the natural surroundings of a trail or recreation area.

Slope Ratio. A ratio of vertical distance to horizontal distance, or "rise" to "run."

Surface. The top layer of ground on a recreation site, accessible route, shared use path, or trail.

- ***Firm.*** Not noticeably distorted or compressed by the passage of a device that simulates a trail user in a wheelchair. Surface firmness should be determined and documented during the planning process for the seasons for which a trail is managed, under normally occurring weather conditions.
- ***Stable.*** Not permanently affected by normally occurring weather conditions and able to sustain normal wear and tear caused by the uses for which a trail is managed, between planned maintenance cycles.

TAI. Trail Access Information.

Technical Provision. State the specific numbers, conditions, and measurements that are required (percent that must comply, dimensions, reach ranges, grades, trail width, and so forth to meet accessibility guidelines.

Trail. A route that is designed, constructed, or designated for recreational pedestrian use (or provided as an pedestrian alternative to vehicular routes within a transportation system). A trail is not an outdoor recreation access route (ORAR).

Trail Accessibility Guidelines. Chapter 1017 of the Outdoor Guidelines.

Trail Class. The prescribed scale of trail development, indicating the intended design and management standards for a trail.

Trail Constructed Feature. A Trail Constructed Feature is a constructed feature that functions as part of the trail tread. Examples include puncheon, trail bridges, boardwalks, waterbars, and switchbacks.

Trail Grade. The consistent vertical distance of ascent or descent of a trail expressed as a percentage of its length, commonly measured as a ratio of rise to length.

Trail Head. A site designed and developed to provide staging for trail use. 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 have been provided beyond minimal signage for public safety.

Trail Segment. The portion of a trail being planned, evaluated, or constructed.

Trail Terminus. The beginning or ending point of a trail or trail segment, where a trail assessment or trail work begins or ends.

Tread (*or* **Treadway).** The surface portion of a trail upon which users travel, excluding backslope, ditch, and shoulder. Tread surfaces can consist of native soil material, aggregate, asphalt, concrete, recycled materials and native materials that are modified with soil stabilizers.

Tread Width. The visible trail surface measured perpendicular to the direction of travel.

- ***Clear Tread Width***. The width of the usable trail tread and adjacent usable surface.
- ***Minimum Tread Width***. The width of the usable part of the tread width at the narrowest point on a trail.
- ***Minimum Trail Width***. The width of the trail tread and the adjacent usable surface at the narrowest point on a trail.

Universal Design. Programs and facilities designed to be usable by all people, to the greatest extent possible, without separate or segregated access for people with disabilities.

Wheelchair. A device, including one that is a battery-powered, that is designed solely for use by a mobility-impaired person for locomotion and that is suitable for use in an indoor pedestrian area. A person whose disability requires use of a wheelchair or mobility device may use a wheelchair or mobility device that meets this definition anywhere foot travel is permitted.

Appendices

Appendix A: Key Weblinks and Publications

Web Links

Access Board—main website: *http://www.access-board.gov/*

Access Board Guide for Outdoor Developed Areas *http://www.access-board.gov/guidelines-and-standards/recreation-facilities/outdoor-developed-areas/a-summary-of-accessibility-standards-for-federal-outdoor-developed-areas*

Accessibility Guidebook on Outdoor Recreation and Trails—*http://www.fs.fed.us/recreation/programs/accessibility/pubs/htmlpubs/htm12232806/index.htm*

Accessibility Guidebook for Outfitters/Guides Operating on Public Lands—*http://www.fs.fed.us/recreation/programs/accessibility/*

Accessibility Guidebook for Ski Areas Operating on Public Lands—*http://www.fs.fed.us/recreation/programs/accessibility/*

ADAS Accessibility Checklist for Buildings and Facilities—*http://www.access-board.gov/ADAS/checklist/a16.html*

American Trails—*http://www.americantrails.org*

Americans with Disabilities Act (ADA)—*http://www.access-board.gov/about/laws/ADA.htm*

Americans with Disabilities Act/Architectural Barriers Act Accessibility Guidelines—*http://www.access-board.gov/ada-aba*

Architectural Barriers Act (ABA)—*http://www.access-board.gov/about/laws/ABA.htm*

Architectural Barriers Act Accessibility Standard (ABAAS)—*http://www.access-board.gov/ada-aba/*

Beneficial Designs—*http://www.beneficialdesigns.com/*

Designing Sidewalks and Trails for Access

> Part 1, Review of Existing Guidelines and Practices—*http://www.fhwa.dot.gov/environment/sidewalks/index.htm*
>
> Part 2, Best Practices Design Guide—*http://www.fhwa.dot.gov/environment/sidewalk2/index.htm*

Facilities Toolbox—*http://fsweb.mtdc.wo.fs.fed.us/toolbox/*

Federal Highway Administration/USDA Forest Service recreational trail publications and videos— *http://www.fhwa.dot.gov/environment/fspubs/index.htm*

Federal Trail Data Standards—*http://www.nps.gov/gis/trails/*

Forest Service National Trail Specifications—
http://www.fs.fed.us/database/acad/dev/trails/trails.htm

Forest Service Outdoor Recreation Accessibility Guidelines (FSORAG)—
http://www.fs.fed.us/recreation/programs/accessibility/

Forest Service Trail Accessibility Guidelines (FSTAG)—
http://www.fs.fed.us/recreation/programs/accessibility/

Forest Service Trail Design Parameters—
http://www.fs.fed.us/r3/measures/Inventory/trails%20files/National_Design_Parameters_1_31_2005.doc

International Building Code (IBC)—*http://www.iccsafe.org/*

Professional Trail Builders Association—*http://www.trailbuilders.org/*

Public Rights-of-Way Accessibility Guidelines—*http://www.access-board.gov/prowac/*

Recreation Opportunity Spectrum (ROS)—
http://fsweb.wo.fs.fed.us/eng/facilities/recopp.htm

Rehabilitation Act Section 504—*http://www.access-board.gov/enforcement/Rehab-Act-text/title5.htm*

Soil Stabilizers on Universally Accessible Trails—
http://www.fs.fed.us/eng/php/library_card.php?p_num=0023 1202 and
http://www.fhwa.dot.gov/environment/fspubs/00231202/

Trail Construction and Maintenance Notebook—
http://fsweb.mtdc.wo.fs.fed.us/php/library_card.php?p_num=0423 2825P and
http://www.fhwa.dot.gov/environment/fspubs/00232839/

Uniform Federal Accessibility Standards Accessibility Checklist—
http://www.access-board.gov/ufas/UFASchecklist.txt

Universal Design Forest Service Policy, Forest Service Manual Section 2330.5—
http://www.fs.fed.us/im/directives/fsm/2300/id_2330-2005-2.doc

Universal Trail Assessment Process—
http://www.beneficialdesigns.com/trails/utap.html#overview%20background

Wetland Trail Design and Construction—
http://fsweb.mtdc.wo.fs.fed.us/php/library_card.php?p_num=0123 2833 and
http://www.fhwa.dot.gov/environment/fspubs/01232833/

Wilderness Access Decision Tool—
http://carhart.wilderness.net/docs/wild_access_decision_tool.pdf

Other Resources

Outdoor Developed Areas: A Summary of Accessibility Standards for Federal Oudoor Developed Areas. United States Access Board, May 2014

Birkby, Robert C., Peter Lucchetti, and Jenny Tempest. *Lightly on the Land: The SCA Trail Building and Maintenance Manual*. New York: Mountaineers Books, 2006.

Covington, G.A., Hannah, B. (1997). *Access by Design.* New York: International Thomson Publishing Inc.

Dimensions of Adult-Sized Wheelchairs, Information and Technical Assistance on the Americans with Disabilities Act. Dec. and Jan. 2009, *http://www.ada.gov/descript/reg3a/figA3ds.htm*

"Fishing piers and platforms." United States Access Board. 3 Dec. 2008, *http://www.access-board.gov/recreation/guides/fishing.htm*

McConnell, Robert L., and Daniel C. Abel. *Environmental Issues: An Introduction to Sustainability. 3rd ed.* Upper Saddle River: Prentice Hall, 2007.

Parker, Troy S. *Natural Surface Trails by Design*. Boulder: Natureshape, 2004.

Ground and Floor Surfaces." American Trails, 3 Dec. 2008, *http://www.americantrails.org/resources/accessible/adasurfaceMtg.html*

"Trail Surfaces: What Do I Need to Know Now?" National Center on Accessibility. Access Today, Fall 2001—Special Volume, Issue 1, *http://www.indiana.edu/~nca/monographs/1trail-surfaces.shtml*

Accessible Gates for Trails and Roads. Groenier, James Scott, 2006 TandD Pub Number: 0623 2340, USDA Forest Service, Missoula Technology and Development Center

Accessible Gate Latch. Groenier, James Scott, 2006 TandD Pub Number: 0623 2331, USDA Forest Service, Missoula Technology and Development Center

U.S. Access Board
1331 F Street, NW, Suite 1000
Washington, DC 20004-1111
Voice (800) 872-2253
TTY (800) 993-2822
info@access-board.gov
http://www.access-board.gov./outdoor/outdoor-rec-rpt.htm

The Center for Universal Design, North Carolina State University, P.O. Box 8613, Raleigh, NC 27695-8613, Telephone and TDD: (919) 515-3082, Info. Requests: (800) 647-6777.

The National Center on Accessibility
2805 E. 10th St, Suite 190
Bloomington, IN 47408
Voice (812) 856-4422
TTY (812) 856-4421
nca@indiana.edu
http://www.ncaonline.org

Appendix B: Planning and Designing Trails for Access: Implementation Guide[151]

The U.S. Access Board defines a pedestrian *trail* as *a pedestrian route developed primarily for outdoor recreational purposes*.[152] It is recommended that an entity considering the design or alteration of a trail, begin with that Managed Use and Designed Use in mind. Just as importantly, note that a pedestrian route developed primarily to connect elements, spaces, or facilities within a site is not a trail. Remember, a trail's Designed Use is the intended use that *controls* the desired geometric design of the trail, and determines the subsequent maintenance parameters for the trail. The Designed Use is the *single design driver* that determines the Design Parameters (technical specifications) for the trail.

The information, definitions and technical specifications that are critical to understanding and implementing the complete process below are discussed in other chapters of this manual. It is recommended that entities undertaking universal design trail projects have familiarity with the BMPs identified in this manual (regulations for federal lands and entities).

Land managers should also be familiar with the 2010 ADA Standards for Accessible Design ("2010 ADA Design Standards") because recreational facilities and amenities are often associated with hiker-pedestrian trails. For Title II and Title III entities, these facilities are subject to the 2010 ADA Design Standards. In addition, land managers should be familiar with state, county and municipal standards and guidelines that may apply to their new trail planning, design and construction.

Per this guide's recommended BMPs, a land manager may choose to ask themselves four questions regarding whether a new or altered trail could incorporate universal design parameters to provide accessibility:

1. Is the trail project for *new* construction, creating a new trail?
2. If not new trail construction, is the construction intended to alter an existing trail from its original use?
3. Is the Designed Use "Hiker/Pedestrian" use only?
4. Does the proposed trail connect to a trailhead, or to a trail that substantially complies with trail accessibility BMPs in this guide?

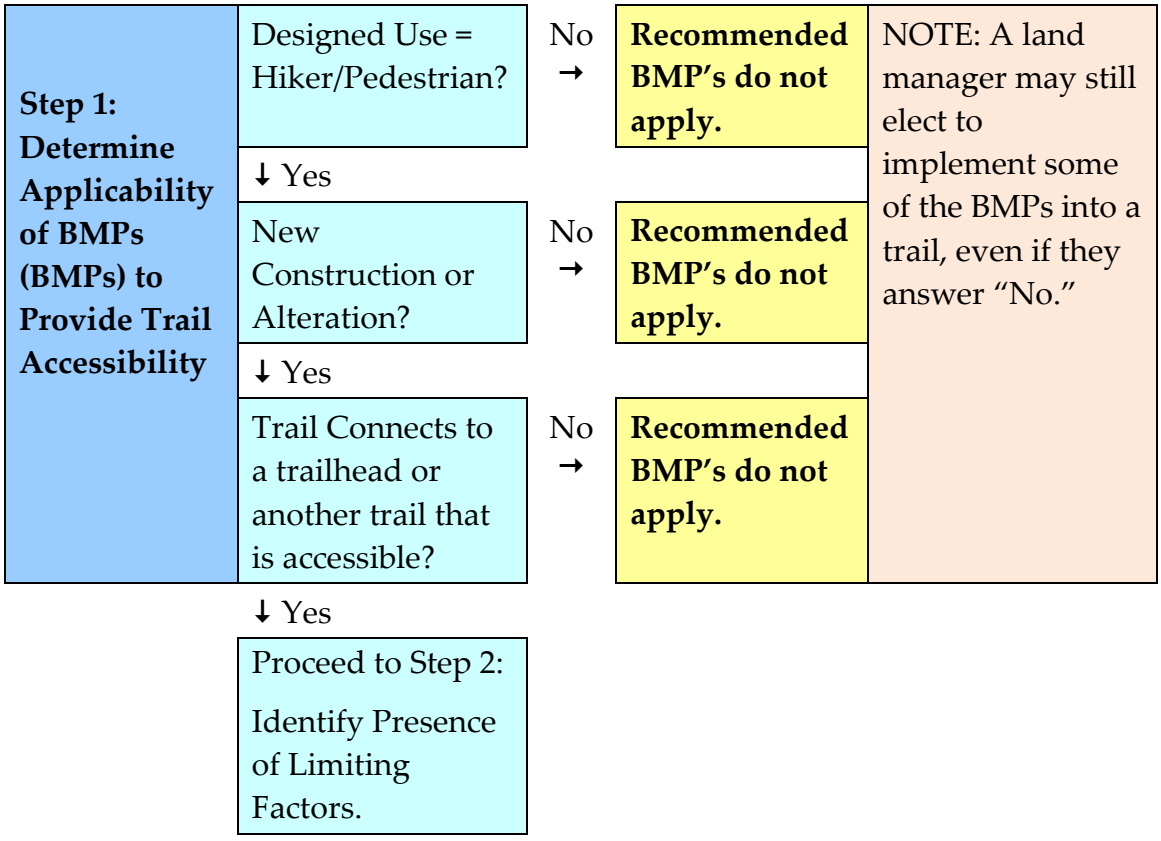
If you answer "yes" to these four questions, and elect to move forward, follow these recommended steps;

5. With the BMPs outlined within this guide in mind, lay out a proposed trail alignment on the ground and conduct an evaluation as you walk the established flag line. Base the review and analysis required in these

steps on actual field conditions, rather than relying only on topographic maps.

6. Make sure to apply the conditional exceptions, if any apply, and determine what portions of the proposed trail cannot fully comply with the recommended technical provisions described in the BMPs.
7. Determine if those portions of the trail can still comply with other recommended technical provisions to the maximum extent feasible.
8. Evaluate the entire trail and determine whether it is impracticable for the entire trail to comply with the recommended technical provisions. This determination takes into account what portions of the trail can and cannot fully comply with those technical provisions, and the extent of compliance where full compliance cannot be achieved.
9. Document the basis for the determinations, from steps 5—7, and maintain the documentation with the records for the new trail construction or trail alteration project.

Begin Key Steps and Sequence



<table>
<tr><td rowspan="11">Step 2: Identify Presence of Limiting Factors[153]

General
Exception 1

General
Exception 2

Note: The sequence for identifying limiting factors may vary and does not need to follow the order shown here.</td><td rowspan="3">Trail Grade
Does more than 30% of the trail's total length exceed 1:12 grade?</td><td colspan="4">No ➞</td><td>BMPs may still apply. Proceed to limiting factor for surface.</td></tr>
<tr><td>Yes ➞
Document length and percentage of trail that exceeds 1:12 and data source.</td><td rowspan="2">Does condition for departure(s) exist?</td><td colspan="2">No ➞</td><td></td></tr>
<tr><td colspan="2">Yes ➞</td><td>Yes ➞
Document condition for departure and linear distance.</td><td>BMPs may still apply, between terminus and the condition for departure. Proceed to limiting factor for surface.</td></tr>
<tr><td rowspan="3">Trail Surface

Is the trail tread surface Firm and Stable?</td><td colspan="4">Yes ➞</td><td>BMPs may still apply. Proceed to limiting factor for Minimum Trail Width.</td></tr>
<tr><td>No ➞
Document surface and data source.</td><td colspan="2" rowspan="2">Does condition for departure(s) exist?</td><td>No➞</td><td>BMPs may still apply. Proceed to limiting factor for Minimum Trail Width.</td></tr>
<tr><td></td><td>Yes ➞
Document condition for departure and the linear distance.</td><td>BMPs may still apply, between terminus and the condition for departure. Proceed to limiting factor for Trail Width.</td></tr>
<tr><td rowspan="3">Minimum Trail Tread Width
Is the minimum trail tread width less than 36″?</td><td colspan="4">No➞</td><td>BMPs may still apply. Proceed to limiting factor for Trail Obstacle.</td></tr>
<tr><td>Yes ➞
Document minimum trail width and data source.</td><td rowspan="2">Does condition for departure(s) exist?</td><td colspan="2">No➞</td><td></td></tr>
<tr><td colspan="2">Yes ➞</td><td>Document condition for departure and the linear distance.</td><td>BMPs may still apply, between terminus and the condition for departure. Proceed to limiting factor for Trail Obstacle.</td></tr>
<tr><td>Trail Obstacle</td><td colspan="4">No ➞</td><td>BMPs may still apply. Proceed to Step 3: Apply Technical Provisions.</td></tr>
<tr><td></td><td>Yes ➞</td><td>Does condition</td><td colspan="2">No ➞</td><td></td></tr>
</table>

	Trail obstacle 2″ (other than board, concrete or asphalt) or ½″ (board, concrete or asphalt) higher across width of trail?	Document obstacle type, dimensions and data source.	for departure(s) exist?	Yes ➞	Document condition for departure and the linear distance.	**BMPs** may still apply, between terminus and the condition for departure. Proceed to Step 3: Apply Technical Provisions.

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

	Clear tread width complies with BMps?		exist?	No →	Deviation not permitted.	→	Comply with clear tread width technical provision in BMPs	
Passing Space Passing spaces comply with BMPs	Yes →						Comply with passing space technical provision BMPs	
	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 BMPs	
Tread Obstacles Tread obstacles comply with BMPs	Yes →						Comply with tread obstacle technical provision BMPs	
	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 BMPs	
Protruding Objects Protruding objects comply with BMPs	Yes →						Comply with protruding objects technical provision BMPs	
	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 BMPs	
Openings Openings comply with BMPs	Yes →						Comply with trail grade technical provision BMPs	
	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 BMPs	

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

General Exception 1

General Exception 2</td><td colspan="3"></td></tr>
<tr><td colspan="2">No deviations occur. ➜</td><td>Apply the recommended BMPs' technical provisions to entire trail.</td></tr>
<tr><td>Yes ➜</td><td rowspan="2">What is the total linear distance, and associated percentage of the trail, that deviations from the guidelines occur?</td><td>Total linear distance =

Associated percentage of the trail =</td><td>Apply the recommended BMPs' technical provisions to segment(s) of trail where deviation(s) do not occur, document and provide source of data, maintain file.</td></tr>
<tr><td>Yes ➜</td><td>Determination that it would be impracticable for the entire trail to comply with the recommended BMPs.</td><td>Recommended BMPs do not apply, document and provide source of data, maintain file.</td></tr>
<tr><td colspan="3"></td></tr>
</table>

Appendix C: OPDMD Policy Examples

The samples provided on the following pages should not be adopted or excerpted by any organization without it first evaluating and documenting the five U.S. Department of Justice assessment factors discussed in this manual. A written policy alone—without supporting assessments tailored to each land trust's or park agency's trails—would not meet the Department of Justice's legal requirements. Additionally, the Department of Justice has not yet opined on the adequacy of any OPDMD policy, so there is no guarantee that the policies provided below would meet the Justice Department's standards for compliance. The examples below are provided for information only and should not be taken as legal advice.

Lancaster County Department of Parks and Recreation—ADA Trail Accessibility Policy

Recently the U.S. Department of Justice (DOJ) revised the ADA regulations and said revisions, including the definition of a wheelchair and Other Power-Driven Mobility Devices (OPDMD), have the potential to impact the accessibility of trails within the Lancaster County Park System. Pursuant to 5 CFR § 35.137, an assessment of the trails was conducted to determine whether particular devices can be used to access the trails. Access to trails and the use of devices as set forth below is limited to individuals with mobility disabilities and this policy does not authorize the use of these devices by others.

Lancaster County Park trails are available to individuals with a mobility disability as follows:

Wheelchairs

Wheelchairs, as defined by 28 CFR § 35.104, are permitted on all Lancaster County Park trails approved for pedestrian access.

Other power-driven mobility devices (OPDMDs)

OPDMDs, as defined by 28 CFR § 35.104, are permitted on multi-use County Park rail trails including the Conewago Recreation Trail, the Lancaster Junction Recreation Trail, the Conestoga Greenway Trail and the Iron Horse Trail as follows:

- The OPDMD must be electric-powered. Internal combustion engines are not permitted.
- The OPDMD must have an electrical output of no more than 300 watts.
- The OPDMD must be no more than 36" in width.

Please note that electric bikes (ebikes) meeting the above criteria, and which allow the user to pedal or alternatively run on battery power, are permitted on all Lancaster County Park Trails approved for bicycle use. User discretion is advised as some approved bicycle trails may not be suitable for all types of ebikes.

Users of an OPDMD or wheelchair must operate the device at a safe speed considering the condition of the trail and the other users traveling on the trail.

The adoption of this Policy does not represent an endorsement that the Park trails or other Park properties are safe for the use of an OPDMD or wheelchair. Users must exercise reasonable caution and care while operating such devices within the Lancaster County Park System.

Source: *www.co.lancaster.pa.us/lanco/cwp/view.asp?a=513andQ=642379andlancoNav=|*

Americans with Disabilities Act (ADA) Accessibility Guidelines for Western Pennsylvania Conservancy Lands and Trails

First created: 2011; Last updated: 3/14/2012

I. Purpose

The purpose of these guidelines is to implement the Department of Justice's (DOJ) regulations that are focused on the use of wheelchairs and other power-driven mobility devices (OPDMD) for outdoor activities on Western Pennsylvania Conservancy (WPC) lands, as set forth in 28 CFR Part 35. These guidelines are not meant to address access to WPC indoor facilities and buildings.

The DOJ has amended the Department's title II regulation, 28 CFR Part 35, and the title III regulation, 28 CFR Part 36; the final rules and revisions went into effect on March 15, 2011. The revisions, including the definitions of wheelchairs and OPDMDs, have the potential to impact the accessibility of lands and trail systems under the ownership of WPC. Access to trails and the use of devices as set forth below is limited to individuals with mobility disabilities. These guidelines do not authorize the use of these devices by others.

For more information related to general visitation to WPC properties, please refer to the WPC Visitor Guidelines, which can be found on the Conservancy's website, http://waterlandlife.org/assets/2010_WPC_Property_Visitor_Guidelines.pdf. Questions concerning access to indoor facilities and buildings should be referred to Western Pennsylvania Conservancy, 800 Waterfront Dr., Pittsburgh, PA 15222; 1-866-564-6972 (toll-free); or info@paconserve.org.

II. Definitions

Electric-powered mobility device: Any mobility device powered by batteries, including multiple passenger carts (three or four wheels), Electronic Personal Assistance Mobility Devices (EPAMDs - such as the Segway PT), battery-powered bikes (two or three wheels), and single passenger scooters (three or four wheels).

Gas-powered mobility device: Any mobility device powered by a gas-fueled engine using natural gas, gasoline, diesel, synthetic or biofuel, or combination thereof, including all-terrain vehicles, carts (three or four wheels), off-road bikes (two or

three wheels), motor scooters (two or three wheels), motor cycles (two wheels), tractors, snowmobiles, amphibious craft, trucks and cars (four wheels).

Inline wheel device: A two-wheeled mobility device where the wheel direction of travel are aligned in the same plane.

Maintained Land: All real property owned by WPC that is managed in a relatively natural state, and contains designated and maintained trails. These trails are clearly indicated on WPC-produced maps of the property, and are blazed or otherwise marked on the ground.

Manual-powered mobility aid: Devises such as wheelchairs, scooters, walkers, crutches, canes, or braces designed for use by individuals with mobility impairments in any areas open to pedestrian use.

Other power-driven mobility device (OPDMD): Any mobility device powered by batteries, fuel, or other engines – whether or not designed primarily for use by individuals with mobility disabilities – that is used by individuals with mobility disabilities for the purpose of locomotion, including golf carts, Electronic Personal Assistance Mobility Devices (EPAMDs), such as the Segway PT, or any mobility device designed to operate in areas without defined pedestrian routes, but that is not a wheelchair within the meaning of this section.

Tandem wheel device: A two, three, or four-wheeled mobility device where the wheel alignment is parallel along one or more axles.

Unmaintained Land: All real property owned by WPC that is undeveloped and managed in a relatively natural state. This term excludes those properties with designated and maintained trails.

Wheelchair: A manually-operated or power-driven device designed primarily for use by an individual with a mobility disability for the main purpose of indoor, or of both indoor and outdoor locomotion.

III. WPC Unmaintained Land and Trail Assessment

Assessment Process

Western Pennsylvania Conservancy staff has conducted a comprehensive assessment of its properties, focusing especially on those properties with maintained trails or trail systems located within them. The assessment process

was based on DOJ guidelines (see: *DOJ Assessment Factors* below), and its aims were to determine whether particular devices can be used to access the land and, if applicable, the trails on WPC lands. Trails on WPC lands can be categorized into three different types; and specific limitations and justifications can be found below, under *Trail Categories*.

DOJ Assessment Factors
Factor (i): The type, size, weight, dimensions, and speed of the device;
Factor (ii): The facility's volume of pedestrian traffic (which may vary at different times of the day, week, month, or year);
Factor (iii): The facility's design and operational characteristics (e.g., whether its business is conducted indoors, its square footage, the density and placement of stationary devices, and the availability of storage for the device, if requested by the user);
Factor (iv): Whether legitimate safety requirements can be established to permit the safe operation of the other power-driven mobility device in the specific facility;
Factor (v): Whether the use of the other power-driven mobility device creates a substantial risk of serious harm to the immediate environment or natural or cultural resources, or poses a conflict with Federal land management laws and regulations.

Use of Gas-Powered Mobility Devices Statement
Gas-powered mobility devices are not permitted on WPC Unmaintained Lands, Maintained Lands, or trails, with the exception of pre-approved management use or emergency access purposes.
DOJ Assessment Factors:
Justification: § 35.137 Mobility Devices Assessment Factors iv and v.
Western Pennsylvania Conservancy lands and trails contain important conservation values that are managed to provide our region with clean waters and healthy forests, wildlife and natural areas for the benefit of present and future generations. The exclusion of gas-powered mobility devices, as compared to electric-powered mobility devices, is due to the substantial risk of harm to these values. This harm may result from fire caused by the heat of the gas-fired engine, spill of fuel or oil used in gas, and/or engine exhaust. In addition, the engine noise of gas-powered vehicles produces a significant zone of disturbance to the activities of native wildlife, and can negatively impact the experience of visitors who count on viewing wildlife and listening to bird calls. Furthermore, the noise from gas-powered mobility devices poses a health risk to adjacent visitors when it exceeds 70 dB. The World Health Organization has set 70 dB as a maximum safe noise level in the work place. Most gas-powered vehicles, such

as ATVs and gas-driven motor bikes, exceed this noise level. Additionally, the byproducts of combustion created by gas-powered engines pose a significant air quality risk to wildlife and vegetation, and also to other trail users. For more information on permitted and no-permitted activities during a visit to one of our properties, please see the WPC Property Visitor Guidelines.

Unmaintained Lands
No OPDMDs of any kind, including EPAMDs, are permitted on Unmaintained Lands. Western Pennsylvania Conservancy allows individuals with mobility disabilities to use wheelchairs, as defined by the DOJ, and manual-powered mobility aids such as walkers, crutches, canes, braces, or other similar devices on all Unmaintained Lands that are open to pedestrian use. Please note, however, that Unmaintained Lands are undeveloped, without designated and maintained trails, and are often difficult to access by manual-powered mobility aids. See also, *Waiver Statement*, below.

Trail Categories
Paved/Crushed Gravel Trails: Multi-use trail with shoulder.
Permissible: Wheelchairs and electric-powered mobility devices not to exceed a 36-inch maximum width. Examples of paved/crushed gravel trails can be found at WPC's Fallingwater property located within Bear Run Nature Reserve (5,098 acres, Stewart Township and Springfield Township, Fayette County; Lower Turkeyfoot Township, Somerset County), where EPAMDs such as Segways are permitted; and the West Branch French Creek Conservation Area (518 acres, Venango Township, Erie County).
DOJ Assessment Factors:
Justification: § 35.137 Mobility Devices Assessment Factors i and ii.
Size and width characteristics of the device could pose safety risks to the device-user and other trail users based on the high volume of pedestrian traffic commonly found on such trails. These trails are high capacity two-way traffic areas, where a device width restriction allows for safe passing of OPDMDs and other trail users.

Multi-use Service Trail: Unpaved road. Typical examples of this type of trail are unimproved fire and emergency roads, typically no greater than 6 feet in width.
Permissible: Wheelchairs and electric-powered mobility devices not to exceed a 36-inch maximum width. Individuals interested in using an OPDMD on a WPC *multi-use service trail* should contact the WPC Stewardship program for more information (contact information found below). Examples of this type of trail can be found at WPC's Bear Run Nature Reserve (5,098 acres, Stewart Township and

Springfield Township, Fayette County; Lower Turkeyfoot Township, Somerset County).
DOJ Assessment Factors:
Justification: § 35.137 Mobility Devices Assessment Factors i, iv and v.
The size, weight, and width characteristics of the device create a substantial risk of serious harm to the environment or natural resources. In the event of two-way traffic, when an OPDMD must temporarily move off trail, the device has the potential to crush trail-side vegetation, contribute to erosion, create ruts on and off the trail, and inappropriately expand the trail corridor. These trails are typically wide enough for one-way vehicle traffic; the 36-inch width restriction allows for the safe passing of mobility devices and pedestrians on unpaved multi-use service trails.

Pedestrian Single Track Trail: Unpaved, narrow-gauge trail suitable for foot-traffic only. This type of trail is for natural areas where environmental or topographic constraints require no user impact to natural resources. No OPDMDs of any kind, including EPAMDs, are permitted on these trails. Examples of this type of trail can be found at WPC's Bear Run Nature Reserve (5,098 acres, Stewart Township and Springfield Township, Fayette County; Lower Turkeyfoot Township, Somerset County), West Branch French Creek Conservation Area (518 acres, Venango Township, Erie County), and Wolf Creek Narrows Natural Area (115 acres, Slippery Rock Township, Butler County).
DOJ Assessment Factors:
Justification: § 35.137 Mobility Devices Assessment Factors i, ii, iv, and v.
Characteristics of the device create a substantial risk of serious harm to trail users on this type of trail, as well as to the environment or natural resources. These are narrow trails where two-way traffic would require pedestrians to step off the trail and harm natural resources when allowing passage of OPDMDs. An OPDMD has the potential to damage the structural integrity of such a trail, especially in wet weather, by causing ruts, compacting the soil, and contributing to further erosion. In the event of two-way traffic, when an OPDMD must temporarily move off trail, the device has the potential to crush trail-side vegetation and inappropriately expand the trail corridor. Additionally, much of the trail tread may be uneven, and the trail grade steeply sloped or narrower than 36 inches in some places, and may pose safety issues to trail users if accessed by OPDMDs. It is recommended that permitted trail users stay within the authorized trail footprint to avoid serious harm to natural resources.

Speed Limits on WPC Lands and Trails
For safety purposes, and in consideration of public enjoyment within WPC properties, all WPC lands and trails have a maximum speed limit of 12 mph.

Trail users operating any of the above-mentioned devices must observe this speed limit at all times and must yield to oncoming hikers. Please note that trail surfaces may be uneven, steeply sloped, or narrower than 36 inches in some places.

Safety Statement
Users of an OPDMD or wheelchair must operate the device in a safe manner considering the condition of the trail and the other users traveling on the trail. Additionally, all OPDMDs must stay on designated trails at all times; exceptions can be made when crossing turf areas to leave or rejoin a trail (assessment factors (i)-(v) inclusive).

Waiver Statement
The adoption of these guidelines does not represent an endorsement that WPC trails or properties are safe for the use of an OPDMD or wheelchair. Users must exercise reasonable caution and care while operating such devices within WPC lands and trail systems. As with any outdoor activity, there are inherent risks associated with hiking and trail-walking. All individuals who enter upon WPC's trails and Unmaintained Lands do so at their own risk.

Validation of Mobility Disability
Individuals who have a mobility disability may show a valid State-issued disability card/placard, or other State-issued proof of disability, or they may state that they are using the mobility device due to a mobility disability. Conservancy staff may not ask about the nature and extent of the individual's disability. Furthermore, the rule states that the claim of a mobility disability must be considered valid as long as it is not contradicted by observable fact.

Public Notification

If you have any questions regarding the ADA ruling and how it applies to WPC properties, or the accessibility of WPC lands and trails, please contact Bryan Ritti of WPC's Stewardship program at: 412-586-2327.

Western Pennsylvania Conservancy will post the above guidelines on our website [link to website here], and the guidelines can be requested in print or digital form by contacting: Bryan Ritti, Land Steward at 412-586-2327 / britti@paconserve.org or Andy Zadnik, Land Stewardship Coordinator at 412-586-2318 / azadnik@paconserve.org Where it is appropriate, WPC staff will post these guidelines on our properties and trail systems.

IV. Additional Resources

- Department of Justice ADA Ruling: DOJ ADA Website
- American Trails index on ADA-related topics: accessible trails, outdoor recreation, and the Americans with Disabilities Act
- Additional information and comments on "power-driven mobility devices":
  - Comments from American Trails to Department of Justice
  - Concerns with DOJ proposal for "power-driven mobility devices"
  - Comments favoring allowing Segway use as mobility assistive devices
  - Hikers concerned about potential for ATVs gaining free access to backcountry areas

Sources

Accessible Trails; American Trails; http://www.americantrails.org/resources/accessible/powermobilityquestions.html

Americans with Disabilities Act Title II Regulations: Nondiscrimination on the Basis of Disability in State and Local Government Services. Department of Justice. 2010, September 15.

Department of Justice. Revised ADA Regulations: Implementing Title II and Title III. 2011, May 9. http://www.ada.gov/regs2010/ADAregs2010.htm

Lancaster County Parks Department; http://www.americantrails.org/resources/accessible/Lancaster-County-PA-policy-OPDMD.html

Minnesota DNR; http://www.dnr.state.mn.us/accessible_outdoors/policycfr35.html

Orange County Parks; http://www.americantrails.org/resources/accessible/Orange-County-Parks-policy-OPDMD.html

West Penn Trail Handicapped Accessibility Policy; Conemaugh Valley Conservancy; www.conemaughvalleyconservancy.org

Silver Lake Nature Center, Bristol, PA— Trail Accessibility Policy

The trails of the Silver Lake Nature Center are open to pedestrians from sunrise to sunset daily. The Silver Lake Nature Center (Center) has designed a section of trail approximately half mile in length and in roughly a figure-eight shape specifically for people with mobility disabilities. It takes the visitors through a representation of all the habitats available at the Silver Lake Nature Center. This trail is paved with gravel fines or is grass-covered packed dirt and crosses wetlands on boardwalks to create a hard smooth surface. The trail is reasonably level with no steep inclines or extended changes in elevation. The trail is often 60 inches wide, but does narrow down to 36 inches where obstacles forced the trail width to be compressed. Benches are place regularly along the trail. The trail is accessible from both the parking lot by the lake and the parking lot at the Visitor Center.

The Center acknowledges that all trails are open to all visitors who wish to use a trail in a wheelchair, as defined in the Americans with Disabilities Act.

Only those sections of trails designated as Accessible will be maintained to accommodate people with a mobility disability. Visitors, with or without mobility disabilities, use any trail at their own risk. People are permitted on the trails after hours only when participating in a formal program offered by the Center.

All visitors regardless of mode of travel are asked to stay on the designated trials. A study conducted in 2010 demonstrated that the Center is home to 40 plant species and at least 2 animal species that are listed as Pennsylvania Species of Special Concern. The Center contains two habitats considered Pennsylvania Habitats of Special Concern. Any off-trail use may impact one or more of these species.

Policy for use of Other Power-Driven Mobility Device at the Silver Lake Nature Center

It has been determined that on any Nature Center Trail persons with mobility disability may use any electric propulsion device that does not exceed any of the following criteria:

1. An OPDMD may be up to 32 inches in width, up to 6 feet in length, and electrical powered.
2. An OPDMD must be operated at a safe speed. When other users are present on a trail, a safe speed is deemed to be the average speed at which the other users are travelling on the trail. The maximum speed for an OPDMD when other users are present is 5 MPH. When other users are not present the maximum speed for an OPDMD is 10 MPH.
3. OPDMDs may not be used on trails at times of heavy traffic. SLNC

recommends that an OPDMD user contact the Center at 215-785-1177 to confirm that an OPDMD is permitted on a particular trail.
4. OPDMD's are to yield to pedestrians. When approaching pedestrians or other trail users, the operator of the OPDMD needs to stop their vehicle at a safe distance from the other trail users and make contact confirming that the other visitors are aware of the OPDMD's presence and that they acknowledge that the OPDMD can pass safely.
5. Note that Pennsylvania requires all children under the age of 12 operating devices of any kind to wear helmets. The Center strongly encourages all trail visitors using motorized or non-motorized devices to wear helmets for safety.
6. By adopting these Guidelines SLNC is not representing that the Center's properties are safe for use by an OPDMD and it is not assuming any liability. Certain risks are inherent in the use of the Center and all users must exercise reasonable care and are responsible for their own safety.

Note that a detailed discussion on the SLNC's review of the Assessment Factors is available upon request.

Source: *www.silverlakenaturecenter.org/index.php?option=com_contentandview=articleandid=3*8andItemid=98#Accessible*

Appendix D: Outdoor Developed Areas Accessibility Guidelines, Chapter 1017

Published in the *Federal Register* September 26, 2013.

36 CFR Part 1191
RIN 3014-AA22

Architectural Barriers Act Accessibility Guidelines; Outdoor Developed Areas

AGENCY: Architectural and Transportation Barriers Compliance Board.

CHAPTER 10: RECREATION FACILITIES

1017 Trails
[Added to Appendix C to Part 1191—Architectural Barriers Act: Scoping]

1017 Trails
1017.1 General

This section contains the technical requirements for trails. The technical requirements address the surface of the trails, passing spaces, and resting intervals (1017.2); the clear tread width of trails (1017.3); passing spaces (1017.4); tread obstacles (1017.5); openings (1017.6); slopes, including running slope (1017.7.1) and cross slope (1017.7.2); resting intervals (1017.8); protruding objects (1017.9); and trailhead signs (1017.10).

Two exceptions are provided. When an entity determines that a condition in 1019 does not permit full compliance with a specific provision in 1017 on a portion of a trail, Exception 1 permits the portion of trail to comply with the provision to the extent practicable. When an entity determines that it is impracticable for the entire trail to comply with the technical requirements in 1017, Exception 2 exempts the entire trail from complying with the requirements. This determination is made after the entity applies Exception 1 to portions of the trail. The entity should consider the portions of the trail that can and cannot fully comply with the specific provisions in 1017 and the extent of compliance where full compliance cannot be achieved when determining whether it would be impracticable for the entire trail to comply with the technical requirements in 1017. As discussed under F201.4.1, federal agencies are required to document the basis for their determination when using Exceptions 1 or 2, and are required notify us when using Exception 2.

1017.2 Surface

This section requires the surface of trails, passing spaces, and resting intervals to be firm and stable. A firm trail surface resists deformation by indentations. A stable trail surface is not permanently affected by expected weather conditions and can sustain normal wear and tear from the expected uses between planned maintenance.

1017.3 Clear Tread Width

This section requires the clear tread width of trails to be 36 inches minimum. The 36 inches minimum clear tread width is to be maintained for the entire distance of the trail and may not be reduced by gates, barriers, or other obstacles unless an entity determines under Exception 1 to 1017.1 that a condition in 1019 does not permit full compliance with the provision.
Where gates and barriers require wheelchair users to make 90 degree or 180 degree turns, sufficient space should be provided for wheelchair users to make the turns. We and National Institute on Disability and Rehabilitation Research sponsored research to collect anthropometric data from a sample of about 500 individuals who use manual wheelchairs, power wheelchairs, and scooters. The research is known as the Anthropometry of Wheeled Mobility Project and was conducted by the Center for Inclusive Design and Environmental Access in the School of Architecture and Planning, University at Buffalo, The State University of New York. The reports on the Anthropometry of Wheeled Mobility Project are available at: *http://www.udeworld.com/anthropometrics.html.* The reports provide data on turning spaces for manual wheelchairs, power wheelchairs, and scooters.

1017.4 Passing Spaces

This section requires passing spaces to be provided at intervals of 1000 feet maximum where the clear tread width of trails is less than 60 inches. Entities should consider providing either 60 inches minimum clear tread width on trails or passing spaces at shorter intervals where the trail is heavily used or where the trail is a boardwalk or otherwise not at the same level as the adjoining ground surface. Where the full length of a trail does not fully comply with the technical requirements in 1017, a passing space is required to be located at the end of the trail segment that fully complies with the technical requirements 1017 to enable individuals who use wheeled mobility devices to turn and exit the trail.

Passing spaces are required to be:

- A space 60 inches minimum by 60 inches minimum; or
- The intersection of two trails providing a T-shaped space complying with 304.3.2 of the Architectural Barriers Act Accessibility Guidelines where the

base and the arms of the T-shaped space extend 48 inches minimum beyond the intersection.

Where the intersection of two trails serves as a passing space, the vertical alignment of the trails at the intersection that form the T-shaped space is required to be nominally planar (i.e., as flat as possible) so that all the wheels of a mobility device touch the ground when turning into and out of the passing space.
Passing spaces and resting intervals are permitted to overlap. Where passing spaces and resting intervals overlap, the technical requirements for resting intervals in 1017.8.3 require the slope of the surface to not be steeper than 1:48 in any direction. Where the surface is other than asphalt, concrete, or boards, slopes not steeper than 1:20 are permitted when necessary for drainage. Otherwise, passing space surfaces have the same slopes as the adjoining trail tread.

1017.5 Tread Obstacles

This section contains technical requirements for tread obstacles on trails, passing spaces, and resting intervals. The vertical alignment of joints in concrete, asphalt, or board surfaces on trails can be tread obstacles. Natural features such as tree roots and rocks within the trail tread also can be obstacles. This section requires obstacles to not exceed 1/2 inch in height measured vertically to the highest point. Where the surface is other than concrete, asphalt, or boards, obstacles are permitted to not exceed 2 inches in height measured vertically to the highest point.

The frequency of tread obstacles and tread obstacles that cross the full width of the trail tread can make travel difficult for individuals who use wheeled mobility devices. Where possible, tread obstacles that cross the full width of the trail tread should be separated by 48 inches minimum so individuals who use wheeled mobility devices can cross the obstacle before confronting another obstacle.

1017.6 Openings

This section requires openings in the surface of trails, passing spaces, and resting intervals such as spaces between the boards in a boardwalk to not allow passage of a sphere more than 1/2 inch in diameter. Elongated openings should be placed so that the long dimension is perpendicular, or as close to perpendicular as possible, to the dominant direction of travel.

1017.7 Slopes

This section contains technical requirements for the maximum running slope and segment length (1017.7.1) and cross slope (1017.7.2) of trails.

1017.7.1 Maximum Running Slope and Segment Length

This section requires that not more than 30 percent of the total length of a trail have a running slope steeper than 1:12 (8.33%), and that the running slope of any segment of a trail not be steeper than 1:8 (12%). Where the running slope of a segment a trail is steeper than 1:20 (5%), the maximum length of the segment is specified in Table 1017.7.1, and a resting interval is required at the top and bottom of each segment. Gradual running slopes are more useable by individuals with disabilities. Where the terrain results in steeper running slopes, resting intervals are required more frequently. Where running slopes are less severe, resting intervals are permitted to be further apart.

1017.7.2 Cross Slope

This section requires the cross slope of trails to not be steeper than 1:48. Where the surface is other than asphalt, concrete, or boards, cross slopes not steeper than 1:20 are permitted when necessary for drainage.

1017.8 Resting Intervals

This section contains the technical requirements for the length (1017.8.1), width (1017.8.2), and slope (1017.8.3) of resting intervals; and for a turning space (1017.8.4) where resting intervals are provided adjacent to a trail.

1017.8.1 Length

This section requires resting intervals to be 60 inches long minimum.

1017.8.2 Width

This section requires resting intervals that are provided within the trail tread to be at least as wide as the widest segment of the trail tread leading to the resting interval. Resting intervals that are provided adjacent to the trail tread are required to be 36 inches wide minimum.

1017.8.3 Slope

This section requires the slope of resting intervals to not be steeper than 1:48 in any direction. Where the surface is other than asphalt, concrete, or boards, slopes not steeper than 1:20 are permitted when necessary for drainage.

1017.8.4 Turning Space

This section requires a turning space complying with 304.2.3 of the Architectural Barriers Act Accessibility Guidelines where resting intervals are provided adjacent to the trail tread. The vertical alignment of the trail tread, turning space, and resting interval is required to be nominally planar (i.e., as flat as possible) so that all the wheels of a mobility device touch the ground when turning in and out of the resting interval.

1017.9 Protruding Objects

This section requires constructed elements on trails, resting intervals, and passing spaces to comply with the technical requirements for protruding objects in 307 of the Architectural Barriers Act Accessibility Guidelines. Protruding objects can be hazardous for individuals who are blind or have low vision. Signs and other post mounted objects are examples of constructed elements that can be protruding objects. Natural elements such as tree branches are not required to comply with the technical requirements for protruding objects in 307 of the Architectural Barriers Act Accessibility Guidelines. However, entities should maintain the vertical clearance along the trail tread, resting intervals, and passing spaces free from tree branches for 80 inches high minimum above the ground.

1017.10 Trailhead Signs

This section requires trail information signs at trailheads to include information on the length of the trail or trail segment; surface type; typical and minimum tread width; typical and maximum running slope; and typical and maximum cross slope. This information enables individuals with disabilities to decide whether to hike the trail based on the characteristics of the trail. Entities also should provide information about the accessibility of trails on websites.

Appendix E: Technical Accessibility Guidelines For ORARs

Outdoor Recreation Access Routes (ORARs) are continuous, unobstructed paths for pedestrian use only. They connect elements in a picnic area, campground, or trailhead. While similar terminology may be used to describe both trails and ORARs, they are very different types of routes.

ORAR LINEAR GRADE GUIDELINES

From	To	Maximum Distance
0%	5%	Any distance
5.1%	8.3%	50 feet
8.3%	10%	30 feet

Photo courtesy Penn Trails LLC

The concept of ORARs was developed for the Outdoor Guidelines (Chapter 1016), which as noted above, applies only to federal entities (which are governed by the ABA). Non-federal entities, on the other hand, are governed by the 2010 ADA Design Standards for Accessible Design, which provide specifications for "accessible routes." Unlike trails, this guide does not recommend that the ORAR design parameters be utilized as BMPs by non-federal entities. This guide recommends that unless advised otherwise by legal counsel or subsequent rulemaking, non-federal trail providers should build this type of route to the more stringent "accessible route" standards than the ORAR standards in the Outdoor Guidelines. (The chapter references below refer to the Outdoor Guidelines.)

1. Grade (Chapter 1016.7)

The linear grade (running slope) of any segment of an ORAR must not be steeper than 1:10. Where the linear grade of an ORAR segment is steeper than 5%, the maximum length of that segment must be within the parameters shown in the illustration below. In addition, resting intervals must be provided at each end of the ORAR segment that exceeds 5% in grade.

2. Cross Slope (Chapter 1016.7.2)

As with trails, the maximum cross slope for an ORAR surfaced with concrete, asphalt, or board is 2%. Where the surface is other than asphalt, concrete, or boards, cross slopes not steeper then 5% are permitted when necessary for drainage.

3. Surfaces (Chapter 1016.2)

The surface of ORAR, and their related passing and resting spaces, must be firm and stable. As discussed earlier in this guide, a stable surface remains unchanged by applied force so that when the force is removed the surface returns to its original condition. A firm surface resists deformation by indentations.

4. Clear Tread Width (Chapter 1016.3)

The clear tread width for an ORAR is required to be a minimum of 36".

5. Resting Intervals (Chapter 1016.8)

An ORAR resting interval must be a minimum of 60" long. Where resting intervals are provided *within* the ORAR, they must be at least as wide as the widest segment of the ORAR leading to it. Where resting intervals are provided *adjacent to* an ORAR, the resting interval's clear tread width must be a minimum of 36." The linear grades and cross slopes for resting intervals are:

- Concrete, asphalt, or boards—no steeper than 2% in any direction.
- Other surfaces—no steeper than 5% in any direction.

If the resting interval is adjacent to an ORAR, a turning pace must be provided as well. The turning space must then comply with the 2010 ADA Design Standards Chapter 304.3.2. Vertical alignments between ORAR, turning spaces, and resting intervals must be reasonably planar (i.e., on the same general plane).

6. Passing Spaces (Chapter 1016.4)

ORARs with a clear tread width less than 60" should provide passing spaces at intervals of 200 feet maximum. Given their purpose, ORAR can potentially be subject to heavy usage by pedestrians. While not required, the Outdoor Guidelines recommend that entities consider providing either a 60" minimum clear tread width for ORAR, or if that cannot be achieved, it is recommended that passing spaces be provided at shorter intervals. Passing spaces must be 60" x 60"minium on an ORAR or the intersection of two ORAR providing a T-shaped space where the base and the arms of the T-shaped space extend 48" minimum beyond the intersection. The vertical alignment at the T-shape intersection should be nominally planar.

7. Tread Obstacles (Chapter 1016.5)

Tread obstacle height (measured vertically to the highest point) on an ORAR and its related resting and passing spaces cannot exceed ½ inch for concrete, asphalt, or boards.[154] It cannot exceed 1 inch for other surfaces. The vertical alignment of joints in concrete, asphalt, or board surfaces can be tread obstacles. Natural features such as tree roots, or constructed items such as traffic calming devices,

can be obstacles. Where possible, obstacles on an ORAR should be separated by a distance of 48" minimum.

8. Openings in Surfaces (Chapter 106.6 and ADA Design Standards §302.3)

Openings[155] in surfaces that run perpendicular/diagonal to the primary direction of travel cannot be greater than ½" wide.

9. Protruding Objects (Chapter 1016.9 and 2010 ADA Design Standards §307)

Protruding objects on ORARs and associated resting intervals and passing spaces can be hazardous for persons who are blind or have low vision. Therefore, constructed elements must comply with the Outdoor Guidelines under the ABA., which establishes limits on protruding objects. The standards were created to give a person sufficient time to detect the element with a cane before there is body contact:

- Chapter 307.2 *Protrusion Limits*. Objects with leading edges more than 27 inches (685 mm) and not more than 80 inches (2030 mm) above the finish floor or ground shall protrude 4 inches (100 mm) maximum horizontally into the circulation path. EXCEPTION: Handrails shall be permitted to protrude 4 1/2 inches (115 mm) maximum.
- Chapter 307.3 *Post-Mounted Objects*. Free-standing objects mounted on posts or pylons shall overhang circulation paths 12 inches (305 mm) maximum when located 27 inches (685 mm) minimum and 80 inches (2030 mm) maximum above the finish floor or ground. Where a sign or other obstruction is mounted between posts or pylons and the clear distance between the posts or pylons is greater than 12 inches (305 mm), the lowest edge of such sign or obstruction shall be 27 inches (685 mm) maximum or 80 inches (2030 mm) minimum above the finish floor or ground. EXCEPTION: The sloping portions of handrails serving stairs and ramps shall not be required to comply with 307.3.
- Chapter 307.4 *Vertical Clearance*. Vertical clearance shall be 80 inches (2030 mm) high minimum. Guardrails or other barriers shall be provided where the vertical clearance is less than 80 inches (2030 mm) high. The leading edge of such guardrail or barrier shall be located 27 inches (685 mm) maximum above the finish floor or ground.

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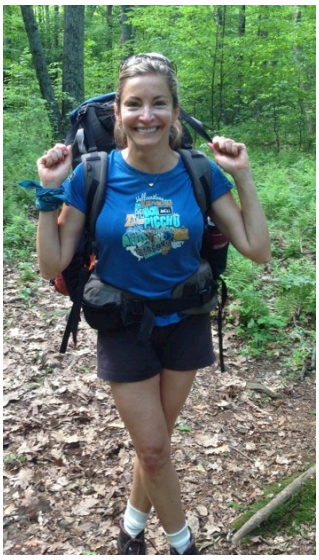
About the Authors



Debra Wolf Goldstein, Esq., is the principal of Conservation Matters, LLC, a Philadelphia-based law firm that provides legal and consulting services to land trusts, environmental organizations, landowners, and government agencies.

Debra has over two decades of experience as a lawyer with a primary focus on land use and conservation law. Debra also brings her clients a broad knowledge of the public sector and proven nonprofit management skills. She has lectured extensively on topics including: conservation and trail easements; recreational liability and risk management; conservation finance; easement violations; and easement appraisals and tax treatment.

Debra chairs the Land Use Committee of Philadelphia's Park and Recreation Commission and formerly was vice president of the Fairmount Park Commission. She has written numerous legal, scholarly, and popular publications and taught Planning Law as an adjunct professor at Temple University—Ambler. She holds a J.D., *cum laude*, from Georgetown University Law Center and graduated with a B.A. from Brown University.

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Larry Knutson is the founder and President of Penn Trails, LLC, an active member company of the *Professional Trail Builders Association*, North America's largest private sector group of professional trail specialists, contractors, designers and consultants. Located near Carlisle, Pennsylvania, Penn Trails' services include:

- Trail Assessments
- Trail Project Planning and Design
- Trail Project Management and Construction Management

In addition, the company offers a wide range of professional trails training and education programs for federal, state, municipal and non-profit clients.

Knutson is serving a 3-year term on PA DCNR's *State Trails Advisory Board*, as chair of the Accessible and Sustainable Trails Committee. He has taught a variety of trail classes and workshops for Pennsylvania DCNR, Pennsylvania Land Trust Association, PA Recreation and Parks Society, Wildlands Conservancy, Western Pennsylvania Conservancy, USDA Forest Service and Professional Trail Builders Association. A recipient of the American Hiking Society's *2003 Volunteer of the Year* award for his trail work in Pennsylvania, he is also a former Appalachian Trail overseer and Pennsylvania Park Ranger.

Contact Larry at info@penntrails.com or 717-486-4455.

Endnotes

[1] Pennsylvania Department of Conservation and Natural Resources. "Pennsylvania Outdoors: The Keystone for Healthy Living." *Pennsylvania State Outdoor Recreation Plan* (2009): p. 17.
[2] *Id.* at p. 19.
[3] See *Pennsylvania Health Care Association*. http://www.phca.org.
[4] Disability data are from Erickson, Lee & von Schrade. "Disability Status Report: Pennsylvania." *Cornell University Employment and Disability Institute* (2012).
[5] A great deal has changed in recent years regarding access for people with disabilities. Instead of looking at a person vis-à-vis his or her disability or handicap, the whole person is now regarded in reference to:

1. *Function* — the physiological or psychological functions of the body or the anatomical body parts;
2. *Activity* — the performance of a task or action by an individual;
3. *Participation* — an individual's involvement in life situations within his or her society; and
4. *Contextual Factors* — environmental and personal factors that impact the individual's functional state.

For an excellent discussion of the wide range of abilities that exist within the population and how the design process can meet the needs of people of all abilities, see *Designing Sidewalks and Trails for Access: Part II of II: Best Practices Design Guide*. http://www.fhwa.dot.gov.
[6] Cable, Candace. "Special Report." Geartrends.com. (Winter 2005).
[7] Snyder, Gary. "Mountain Spirit." *Mountains and Rivers Without End.* Counterpoint Press, (2009).
[8] As stated frequently in this guide, trails are designed for specific purposes, based upon distinct user desires and needs, as well as setting and environment. These factors then account for the structural characteristics of a specific trail. A hiking trail is managed for human beings to utilize. Likewise, an equestrian trail is managed to provide service to horses and their riders. *While a horse may certainly be capable of trotting down a pedestrian hiking trail, that does not mean that the trail was designed structurally to accommodate that use.* Likewise, while a single-track mountain biking trail may be navigable by many hikers, that does not mean that its specific Managed Use will provide accessibility for pedestrians. If an entity decides it wishes to create a biking trail that will

also provide universal access for hikers, then it will need to be planned and designed as a shared use trail that structurally accommodates both user groups and thus provides universal access.

[9] Published by the Pennsylvania Department of Conservation and Natural Resources, the manual is available for download at http://www.dcnr.state.pa.us and http://conservationtools.org/guides/show/126.

[10] The U.S. Access Board's *Outdoor Developed Areas Accessibility Guidelines* and the *Pennsylvania Trail Design Manual* utilize this definition of a trail.

[11] The U.S. Access Board is not entirely consistent in its materials. Elsewhere it explains that a trail is designed for pedestrians and other users to "experience" the outdoors and may be used by a variety of users, but it is not designed for transportation purposes and does not connect elements, spaces, or facilities within a site. "Key Differences between Shared Use Paths, Trails, Sidewalks, and Accessible Routes," U.S. Access Board, Advance Notice of Proposed Rulemaking, Shared Use Path Accessibility Guidelines, 36 CFR Chapter XI, March 28, 2011.

[12] Federal Highway Administration and National Recreational Trails Advisory Committee. "Conflicts on Multiple Use Trails." (2012): p. 8m. www.fhwa.dot.gov.

[13] The full name of the U.S. Access Board is the U.S. Architectural & Transportation Barriers Compliance Board. It developed the proposed Outdoor Developed Areas Accessibility Guidelines (i.e., the Outdoor Guidelines) through regulatory negotiation, which was a process of face-to-face negotiations among representatives of interested groups, with the goal of arriving at a consensus that then went through a public comment period. The committee tasked with developing the proposed rule was called the Regulatory Negotiation Committee on Outdoor Developed Areas Accessibility Guidelines.

[14] The guidelines added new sections to the ABA relating to the following recreation facilities constructed or altered by or on behalf of the federal government:

ABA Chapter 2: Scoping Requirements

F244 Camping Facilities
F245 Picnic Facilities
F246 Viewing Areas
F247 Trails
F248 Beach Access Routes

ABA Chapter 10: Recreation Facilities

1011 Outdoor Constructed Features
1012 Parking Spaces within Accessible Camping Units and Picnic Units and Pull-Up Spaces at Recreational Vehicle Dump Stations
1013 Tent Pads and Tent Platforms
1014 Camp Shelters
1015 Viewing Areas

ABA Chapter 1016: Outdoor Recreation Access Routes

ABA Chapter 1017: Trails

ABA Chapter 1018: Beach Access Routes

ABA Chapter 1019: Conditions for Exceptions

[15] A complete copy of the Outdoor Guidelines (ABA Accessibility Guidelines, Outdoor Developed Areas, published in the Federal Register on September 26, 2013) is available from the U.S. Access Board at http://www.access-board.gov.

[16] A pdf copy of the ABA's May 2014 publication, that provides full informational guidance for Federal entity trails, camping and picnic facilities, viewing areas and beach access is available at http://www.access-board.gov.
[17] The Outdoor Guidelines were issued pursuant to a statute governing only the accessibility of *federal* facilities (i.e., pursuant to the Architectural Barriers Act (the "**ABA**") and *not* the Americans with Disabilities Act ("**ADA**"), which governs private organizations and state and local government agencies).
[18] Design and construction requirements for equestrians, mountain bikes, off-highway vehicles, and snowmobiles are based on the specific requirements of the intended mode of transportation. For the safety of trail users and to minimize conflicts between motorized and non-motorized recreation, pedestrians may not always be permitted on these trails. These non-pedestrian trails do not preclude use by persons with disabilities, assuming they are using the alternative means of transportation for which the trail is designed and constructed. By contrast, pedestrian trails need to consider the accessibility guidelines, because the intended use is by foot (or via OPDMD).
[19] ADA Information Line, U.S. Dept. of Justice, Disability Rights Section representative. Personal interview. 3 September 2013.
[20] "American Association of State Highway Transportation Officials." 4th Edition. (2012).
[21] Architectural and Transportation Barriers Compliance Board. "Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way." (2011) http://www.access-board.gov.
[22] The word "trail" is used in its broad generic sense for much of this chapter.
[23] "Chapter 2: Who Is Protected By The ADA?"
[24] USDA Forest Service Technology and Development Program. *Accessibility Guidebook for Outdoor Recreation and Trails: Publication 2300–Recreation.* (August 2012): 1223–2806P–MTDC, p. 7.
[25] Appalachian Mountain Club. *AMC's Complete Guide to Trail Building and Maintenance.* (2008): p. 3.
[26] Federal Highway Administration. *Designing Sidewalks and Trails for Access: Part II of II – Best Practices Design Guide*, 200. http://www.fhwa.dot.gov/environment/bicycle_pedestrian/.
[27] United Nations World Commission on Environment and Development, 1987. Three decades ago, the Brundtland Commission published its groundbreaking report, Our Common Future, which many agree introduced the concept of sustainable development into public discourse. A frequently quoted definition from that report says that, "[s]ustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."
[28] Massachusetts Department of Conservation and Recreation. *Trails Guidelines and Best Practices Manual.* (2012): p. 2.
[29] The 2013 Boy Scout Jamboree in Beckley, WV, hosted roughly 30,000 Scouts and leaders, all of whom utilized the trail system over a period of ten days. *The Register-Herald*, [Beckley, West Virginia] 25 July 2013.
[30] USDA Forest Service. *Trail Fundamentals and Trail Management Objectives: Training Reference Package.* 1 May 2011 edition: pp. 1-5. http://www.fs.fed.us.
[31] For a complete discussion of Trail Classes and the related Federal Trail Data Standards in which they are utilized, see http://www.nps.gov/gis/trails/
[32] *US Forest Service*. http://www.fs.fed.us/recreation/programs/accessibility.
[33] *Id.*

[34] National Center on Accessibility. "Trail Surfaces: What Do I Need to Know Now?" *Access Today*, *special vol*., (Fall 2001). http://www.indiana.edu/~nca/monographs/1trail-surfaces.shtml.
[35] Trail tread is the surface of the trail that is traveled upon. It's where the shoe meets the trail.
[36] National Center on Accessibility. "Trail Surfaces: What Do I Need to Know Now?" *Access Today*, *special vol*., (Fall 2001). http://www.indiana.edu/~nca/monographs/1trail-surfaces.shtml.
[37] The U.S. Access Board has conducted several research projects using a Rotational Pentrometer to evaluate the firmness and stability of trail and play area surfaces. Additional information about these projects is available at http://www.access-board.gov. U.S. Access Board. "Outdoor Developed Areas: A summary of accessibility standards for Federal outdoor developed areas." May 2014: p.17.
[38] "Advance Notice of Proposed Rulemaking; Shared Use Path Accessibility Guidelines." US Access Board. http://www.access-board.gov/guidelines-and-standards/streets-sidewalks/shared-use-paths/background/advance-notice.
[39] "Access Currents: January-February 2014." U.S. Access Board. http://www.access-board.gov/news/access-currents-january-february-2014.
[40] Zeller, Janet. "Surfaces for accesible trails." (2007). http://www.americantrails.org/resources/accessible/USFSsurface.html.
[41] Bachensky, Lois. "Building Crusher Fines Trails: Finely crushed compacted rock is a popular trail surface improvement throughout America." *American Trails Magazine*. (March 2007). http://www.americantrails.org/resources/trailbuilding/BuildCrushFinesOne.html.
[42] *Id.*
[43] "Trail Surface Aggregate." *Penn State University* http://www.dirtandgravel.psu.edu/trails/documents/TSA_tech_bulletin_2014.pdf.
[44] *Id.*
[45] "Zeller, Janet. "Surfaces for accesible trails." (2007). http://www.americantrails.org/resources/accessible/USFSsurface.html.
[46] An excellent resource for trail structure construction, especially in wet areas, is provided in *Wetland Trail Design and Construction,* 2007 ed., USDA Forest Service, Technology and Development Program, Missoula, MT. http://www.fhwa.dot.gov.
[47] 42 U.S.C. §§ 12101 et seq. (1990), as amended.
[48] 42 U.S.C. §§ 4151 et seq. (1968), as amended.
[49] Disability is a medically definable condition that limits a major life activity such as walking, seeing, hearing, speaking, breathing, thinking, etc.
[50] Title II extends to all the activities of state and local governments whether or not they receive federal funds. (In this regard it differs from Section 504 of the Rehabilitation Act of 1973, which covers only programs receiving federal financial assistance.) Most buildings constructed or altered with federal funds also must comply with the ABA.
[51] 42 U.S.C. § 12132.
[52] Program access includes access to goods, services, activities or any other offering of a federal, state and local government. It requires entities to either modify their policies, practices and procedures, or provide auxiliary aids and services to ensure access for people with disabilities. "Programs" do not necessarily have to be structured or staffed; they could range from structured and staffed tennis lessons to an unstructured walk along a nature trail with wayside exhibits. For more information see http://www.ada.gov/taman2.html - II-3.1000.
[53] 42 U.S.C. § 12182(a).

[54] See http://www.ada.gov/ 2010ADAstandards_index.htm. The 2010 ADA Standards for Accessible Design (which this manual terms the 2010 ADA Design Standards) were adopted in the final ADA rules for Title II (28 CFR part 35) and Title III (28 CFR part 36). The 2010 ADA Design Standards incorporate the 2004 ADA Accessibility Guidelines as well as the regulations contained in 28 CFR 35.151. For more information see http://www.ada.gov
[55] See the Glossary for additional definitions.
[56] The 2010 ADA Design Standards also contain specific technical requirements for restaurants, medical care facilities, mercantile facilities, libraries, and lodging.
[57] 2010 ADA Design Standards, Chapter 10: Recreation Facilities. http://www.access-board.gov.
[58] 2010 ADA Design Standards, Chapter 4: Accessible Routes. http://www.access-board.gov.
[59] This manual does not discuss recreation facilities, accessible routes, or other facilities governed by the 2010 ADA Design Standards. To the extent of any conflict between the 2010 ADA Design Standards and the Outdoor Guidelines (which are discussed in this manual as BMPs) the binding 2010 ADA Design Standards would govern.
[60] Draft guidelines were issued on October 19, 2009; the final Outdoor Guidelines were issued in September 2013. Note that the Outdoor Guidelines do not prescribe different levels of accessibility. A trail is either accessible or it is not. Trails that comply with the Outdoor Guidelines do so because they incorporate specific Designed Use criteria that provide accessibility.
[61] The U.S. Forest Service, however, will continue to follow FSTAG rather than the Outdoor Guidelines.
[62] The caveat to this is that Title II organizations need to provide programmatic access under the ADA; thus there is a legal argument to be made that if public trails are inaccessible, constituents are essentially being denied program access. The California State Parks system, for instance, was sued by a plaintiff under this theory in Tucker v. Calif. Dept. of Parks & Recreation, (U.S. Dist. Ct. N.D. Calif., 2005, Case No. C98-04935). The consent decree that settled the case required the state to identify barriers to trail accessibility and address the feasibility of removing some or all of those barriers. Pursuant to the settlement, the state adopted the Outdoor Guidelines as its official policy.
[63] Note that the line between public trails and private ones is not always crystal clear. In the case of Carolyn v. Orange Park Community Assoc. (4th Dist., 177 Cal. App. 4th 1090, 2009), for instance, the California Court of Appeals examined whether trails located on private land in the common area of Orange Park Community Association ("OPCA") constituted a "public accommodation" subjecting OPCA to the ADA. The OPCA trails were used for hiking and horseback riding and connected to adjacent public trails, but OPCA didn't specifically invite the general public onto its trails. On the other hand, the court found that OPCA did not charge non-members a fee to use the trails, did not discourage trespassers, and did not enforce property boundaries. In 2007, concerned about safety and damage to the trail, OPCA put up barriers at trail access points to discourage vehicles while still permitting horse and pedestrian use. A plaintiff with a mobility impairment sued because the barriers stopped him from using a horse-drawn carriage on the trail.
The court noted that although purely residential sections of a condominium development were not within the jurisdiction of the ADA, sections that were open to the public may constitute "public accommodations." After examining a number of factors, the court determined that the trails were not "open" to the public–-although they were *used* by the public--and that the OPCA trails therefore were not within the scope of the ADA. The court reasoned that although the

public was not prohibited from walking on the trails, the OPCA did not encourage the public to use the trails in that it did not advertise nor receive any payment for the public's use. The court concluded that OPCA's failure to police the border between its trails and the adjoining public land was not sufficient to categorize the trails as a public accommodation.

[64] ADA Information Line, U.S. Dept. of Justice, Disability Rights Section representative. Personal interview. 3 September 2013.

[65] Pennsylvania Department of Conservation and Natural Resources. *Pennsylvania Trail Design Manual.* (2013): pp. 15-17.

[66] The Pennsylvania Department of Labor & Industry provides information regarding the UCC at http://www.portal.state.pa.us.

[67] *City of Albuquerque*. http://www.cabq.gov/parksandrecreation.

[68] Voight, Alison, et al. "Best Practices of Accessibility in Parks and Recreation: A Delphi Survey of National Experts in Accessibility." *National Center on Accessibility*. (2008). http://www.indiana.edu/~nca/.

[69] *Id.*

[70] As noted above, a shared use path or a pedestrian route developed primarily to connect elements, spaces and facilities within a site is not a "trail"; these would fall within the Managed Use and design parameters for one of the other routes described in this publication. See ABA Chapter 1: F106.5 Defined Terms, 2013.

[71] These standards are recognized in the *Pennsylvania Trail Design Manual* as the authority for accessible hiker/pedestrians trails.

[72] U.S. Access Board. Outdoor Guidelines, F247.2 Existing Trails. "Where the original design, function, or purpose of an existing trail is changed and the altered portion of the trail directly connects to a trail head or another trail that substantially meets the requirements in 1017, the altered portion of the trail shall comply with 1017." http://www.access-board.gov.

[73] U.S. Access Board. www.access-board.gov/guidelines-and-standards/recreation-facilities/outdoor-developed-areas/background/committee-report/other-issues.

[74] Draft USDA FSTAG, May 22, 2006.

[75] In practical terms, although the Outdoor Guidelines do not specifically reference the five trail classes noted in this manual's discussion of Trail Fundamentals, this exception means that Class 1 and 2 trails (and sometimes Class 3 trails) generally would be exempted from the accessibility guidelines and Class 4 and 5 trails may need to comply.

[76] U.S. Access Board. http://www.access-board.gov/guidelines-and-standards/recreation-facilities/outdoor-developed-areas/background/committee-report/other-issues.

[77] The first two conditions for departure were originally together in one exception in earlier drafts of the Outdoor Guidelines. This paragraph was excerpted from that version.

[78] *Id.*

[79] Note that the earlier draft of the Outdoor Guidelines had the word "substantially" in place of "fundamentally" in the wording of this conditional for departure; this word was changed to make this provision consistent with many other federal regulations that use the word "fundamentally." The final, adopted Outdoor Guidelines also deleted/re-worded a proposed conditional exception: "Where compliance would cause substantial harm to cultural, historic, religious, or significant natural features or characteristics."

[80] *Id.*

[81] The U.S. Access Board committee noted the following about a similar proposed conditional exception in the draft regulations (which would have established a condition for departure where

"compliance would require construction methods or materials that are prohibited by Federal, State, or local regulations or statutes"):

> For example, Federally designated and some State designated Wilderness Areas prohibit use of mechanized equipment, limiting construction methods to hand tools. Imported materials may be prohibited in order to maintain the integrity of the natural ecosystem. Construction methods and materials employed in designated wetlands or coastal areas are strictly limited. For traditional, historic, or other reasons, many trails are built using only the native soil for surfacing, which may not be firm and stable. Federal statutes such as the Wilderness Act and the Endangered Species Act, and the State and local statutes often impose restrictions to protect or address environmental concerns. Many aquatic features are protected under Federal or State laws. Some constructed water crossings, which would be required to provide accessibility, may not be permitted under certain laws or regulations. http://www.access-board.gov/guidelines-and-standards/recreation-facilities/outdoor-developed-areas/background/committee-report/other-issues.

[82] Pennsylvania Department of Conservation and Natural Resources. *Pennsylvania Trail Design Manual.* (2013): p. 89.

[83] U.S. Access Board. Outdoor Guidelines § 1017.1.

[84] *Id.* at Advisory 1019.1 (emphasis added).

[85] USDA Forest Service. *Accessibility Guidebook for Outdoor Recreation and Trails. (*2013): p. 88.

[86] U.S. Access Board. Outdoor Guidelines § 1017.1 Exception 2 (emphasis added). http://www.access-board.gov.

[87] U.S. Access Board. Outdoor Guidelines ("General Issues"):

> Where a conditional exception applies to the technical provisions for a facility, the exception is to be applied on a provision-by-provision basis. For example, if a portion of trail can fully comply with the technical provision for clear tread width but cannot fully comply with the technical provision for running slope, the conditional exception permits the portion of the trail to comply with the technical provision for running slope to the maximum extent feasible. The phase 'to the maximum extent feasible' means that the portion of the trail can depart from the technical provision for running slope to the extent necessary to address the condition. http://www.access-board.gov.

[88] Federal agencies must notify the U.S. Access Board when an agency determines that an entire trail should be exempted from compliance with the Outdoor Guidelines.

[89] U.S. Access Board. Outdoor Guidelines § 1017.7.1. http://www.access-board.gov.

[90] *Id*.

[91] *Id*. at § 1017.7.2.

[92] *Id*. at § 1017.2.

[93] Readers wanting further information on trail surfacing should look at the 1999 report by The National Center for Accessibility, which conducted a two-year study on the effectiveness of surface treatments for creating trails accessible to people with mobility impairments. http://www.ncaonline.org/resources/articles/trailstudy-1999.shtml.

[94] Outdoor Guidelines § 1017.3.

[95] *Id*. at §1017.8.

[96] *Id*. at §1017.4.

[97] *Id*. at §1017.5.

[98] *Id.* at §1017.9.

[99] §307 of the ABA Accessibility Guidelines covers Protruding Objects

307.1 General.
307.2 Protrusion Limits.
307.3 Post-Mounted Objects.
307.4 Vertical Clearance.
307.5 Required Clear Width.

[100] *Id.* at § 1017.6.

[101] See *Proposed Supplements to Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way*, R105.5 Defined Terms, http://www.access-board.gov/guidelines-and-standards.

[102] For further discussion, see the "Key Differences between Shared Use Paths, Trails, Sidewalks, and Accessible Routes," U.S. Access Board, Advance Notice of Proposed Rulemaking, March 28, 2011, http://www.access-board.gov/guidelines-and-standards/streets-sidewalks/shared-use-paths/background/advance-notice.

[103] See *Pennsylvania Trail Design Manual*, p. 57.

[104] Additionally, one source noted:

> Another safety issue is visibility of the pathway corridor and other users during nighttime travel… Non-wheeled users may not be as visible as bicyclists. This issue can be addressed through education and outreach to raise runners' and walkers' awareness about the importance of wearing reflective clothing and/or carrying a headlamp/red blinking light; enforcing regulations requiring lights and reflectors; or illuminating the pathway.

What Are the Safety Issues for Shared use Paths? Pedestrian and Bicycle Information Center, http://www.bicyclinginfo.org/faqs/answer.cfm?id=3920.

[105] See *AASHTO Guide*, §5.2.1 "Width and Clearance." The *AASHTO Guide* recommends that two-directional shared use paths should be 10 feet wide at a minimum. Where shared use paths are anticipated to serve a high percentage of pedestrians and high user volumes, the *AASHTO Guide* recommends that the paths be 11 to 14 feet wide to enable a bicyclist to pass another path user travelling in the same direction, at the same time a path user is approaching from the opposite direction. In certain very rare circumstances, the *AASHTO Guide* permits the width of shared use paths to be reduced to 8 feet.

[106] See the U.S. Access Board's Supplemental Notice of Proposed Rulemaking that includes specific provisions for shared use paths in the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way, 76 FR 44664 (July 26, 2011), 2. http://www.access-board.gov/guidelines-and-standards/streets-sidewalks/shared-use-paths/supplemental-notice/proposed-supplements.

[107] *Id.*

[108] See R302.5.4 Physical Constraints and R302.5.5 Regulatory Constraints in the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way Proposed Technical Provisions Applicable to Shared Use Paths; http://www.access-board.gov/guidelines-and-standards/streets-sidewalks/shared-use-paths/supplemental-notice/proposed-supplements.

[109] *Id.*

[110] *Id.*

[111] The U.S. Access Board published its Supplemental Notice of Proposed Rulemaking (Federal Register, February 13, 2013) concerning Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way; Shared Use Paths. For the latest developments and background information, see http://www.access-board.gov/guidelines-and-standards/.

[112] The regulations state that "[i]n these situations, an easement or other legal means is used to establish a right for the public to use the portion of the land that the shared use path crosses for transportation purposes." http://www.access-board.gov/guidelines-and-standards/streets-sidewalks/shared-use-paths/supplemental-notice/proposed-supplements.
[113]Another type of pedestrian route is the Beach Access Route, which falls under the Outdoor Guidelines, Chapter 1018. Standards for beach access routes do not legally apply to non-federal lands.
[114] http://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-ada-standards/ada-standards/chapter-4-accessible-routes.
[115] Chapter 4 of the 2010 ADA Design Standards addresses the need for fully compliant accessible routes between certain recreation-related elements. It is important during the conceptual planning stages to identify which elements may be part of the future "trail" and determine if those elements will require a connector path that must comply with the 2010 ADA Design Standards or the Outdoor Guidelines.
[116] Fraser, Carole. Universal Access Coordinator, New York State Department of Environmental Conservation. Personal interview. 4 May 2014.
[117] See F247.1 General, http://www.access-board.gov/guidelines-and-standards/recreation-facilities/outdoor-developed-areas/final-guidelines-for-outdoor-developed-areas/discussion-of-requirements?highlight=WyJ0cmFpbGhlYWQiXQ==.
[118] See the 2010 ADA Design Standards, http://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-ada-standards/ada-standards.
[119] The PROW Guidelines also will govern certain aspects of amenities relating to shared use paths. For example, those regulations will require that gates/barriers be at least 32" wide to allow wheelchair access. See "#7 Gates and Barriers," U.S. Access Board, Advance Notice of Proposed Rulemaking, Shared Use Path Accessibility Guidelines, 36 CFR Chapter XI, March 28, 2011.
[120] Non-federal entities could use these standards as BMPs to the extent that standards for those amenities are not already provided by the ADA Standards.
[121] See Outdoor Guidelines, Chapter 2 ("Scoping Requirements") and Chapter 10.11 through 10.15.
[122] Outdoor Guidelines, pp. 21-31 and Chapter 2, Scoping Requirements, http://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-ada-standards/background/ada-aba-accessibility-guidelines-2004/aba-chapter-2-scoping-requirements.
[123] National Park Service. *Handbook for Trail Design, Construction and Maintenance, North Country National Scenic Trail.* Chapter 7, "Signs, " p. 57. http://www.nps.gov.
[124] Rimmer, James H. "Building Inclusive Physical Activity Communities for People with Vision Loss." *Journal of Visual Impairment and Blindness*, Special Supp., vol. 100 (2009).
[125] National Council on Disabilities. "The Current State of Health Care for People with Disabilities.", 30 September 2009: p. 82.
[126] *Pennsylvania Trail Design Manual*, p. 131.
[127] Federal Highway Administration. *Designing Sidewalks and Trails for Access - Part II of II: Best Practices Design Guide, Section 13.5, Trail Access Information*, http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalk2/sidewalks213.cfm.
[128] See 28 CFR § 35.137 (for Title II entities) and § 36.311 (for Title III entities).
[129] Federal agencies generally are covered by the ABA and Section 504 of the Rehabilitation Act.

[130] See generally U.S. Dept. of Justice regulations 28 CFR § 35.104, §3 5.137, § 36.104, and § 36.311.
[131] 28 CFR § 35.104.
[132] Federal Register, Vol. 75, No. 178, September 15, 2010, Rules and Regulations. More information on the U.S. Dept. of Justice assessment factors can be found at http://www.ada.gov/opdmd.htm.
[133] http://www.americantrails.org/resources/accessible/OPDMD-trail-policies-assessments.html.
[134] The regulatory guidance provided with the OPDMD regulations (i.e., *not the regulations themselves*), notes that in certain cases the presentation of a state-issued proof of disability "will have no relevance or bearing at all on whether the OPDMD may be used, because the public entity's [or public accommodation's] policy does not permit the device in question on-site **under any circumstances** (e.g., because its use would create a substantial risk of serious harm to the immediate environment or natural or cultural resources.)" (emphasis added) See Federal Register, vol. 75, No. 178, 9/15/10, Rules and Regulations p. 56201 and 56301. At least one commentator has stated that she believes that the above (bolded) language means that **if the entity *itself* uses a certain type of vehicle in certain circumstances** (such as for occasional trail maintenance), then it could not be said that use of that vehicle is prohibited "under any circumstances" and thus that use of such vehicle by persons with disabilities cannot be prohibited. (See OPDMD Webinar, 2/23/11, www.americantrails.org.) **On the other hand, nowhere in the regulations or the regulatory guidance does it state that the trail entity is subject to the identical limitations that it sets for users of its trails or other property**. As noted in the text accompanying this footnote, until the U.S. Dept. of Justice clarifies this point, entities should limit their use of such vehicles and document the justifications for any such usage.
[135] 28 CFR § 35.137(c)(1) and § 36.311(c)(2).
[136] 28 CFR § 35.137(c)(2) and §3 6.311(c)(2).
[137] See, e.g., Helen L. v. DiDario (3d Cir. 1995) 46 F.3d 325.
[138] U.S. Dept. of Transportation. *Understanding Sidewalk and Trail Users*, Chapter 2, p. 29. The text goes on to note that: "The needs and abilities of each user will vary depending on the performance characteristics of any particular type of technology. The benefits obtained from a particular type of technology will also be influenced by the skill, experience, and ability of the user, as well as the characteristics of the environment. For example, there are a wide variety of wheelchairs for individuals with mobility impairments. The outdoor environment performance characteristics of the traditional, hospital-style manual wheelchair are very different from the mobility that can be achieved using a powered wheelchair specifically designed for rugged, outdoor environments."
[139] An excellent resource available to guide organizations through the big-picture issues relating to building trails (whether accessible or not) is: *Trail and Path Planning: A Guide for Municipalities* (Linking Landscapes, Chester County Planning Commission, 2007). This manual discusses how to use the Municipalities Planning Code, the Comprehensive Plan, the official map, the zoning ordinance, and the subdivision and land development ordinances to further the goal of building trail or trail networks. http://conservationtools.org/libraries/1/library_items/295.
[140] Section 3.01(a) states in pertinent part: "Permitted Trail Uses: Use of the Trail as a right-of-way for… (ii) power-driven mobility devices for use by persons who have mobility impairments…. " For completeness sake, it is recommended that the phrase "Wheelchairs and" be added to the beginning of (ii) in this provision.
[141] The Model Trail Easement protects landowners who are sued for occurrences within the public trail area by having the easement holder defend and indemnify him/her for so-called "Public

Access Claims." These are defined as "any Loss for *personal injury or property damage* occurring within the Easement Area…." (emphasis added). But ADA-based civil rights actions or other actions for injunctive relief (e.g., a suit to permit OPDMDs) do not neatly fit into the category of claims for "personal injury or property damage." Therefore, where the parties agree that the trail provider should indemnify the landowner regarding claims of ADA violations, the indemnity provision in the Model Trail Easement may be expanded to include the following as a "Public Access Claim."

> Also included as a Public Access Claim are Losses and Litigation Expenses arising from a civil rights action brought under the Americans with Disabilities Act against the Owners based upon the denial of public access to the Trail Facilities for Permitted Trail Uses. Such claims may be defended by counsel selected by Holder and prosecuted, settled or otherwise ended on such terms as are satisfactory to Holder. Owners must fully cooperate with Holder and its counsel in the defense of any such claims.

Likewise the short-form Grant of Trail Easement could be expanded to address indemnification for claims brought for ADA violations.

[142] *Pennsylvania Trail Design Manual*, p. 177.

[143] *Id*. at p. 202.

[144] *Id*. at p. 202.

[145] *Id*. at pp.177-220.

[146] http://www.fallingwater.org.

[147]http://www.philanthropyroundtable.org/almanac/great_achievements/the_arts_and_culture/1964_saving_frank_lloyd_wright_masterpieces.

[148] An excellent resource on wetland trail design and construction can be found at http://www.fhwa.dot.gov/environment/recreational_trails/publications/fs_publications/01232833/toc.cfm.

[149] USDA Forest Service. *Trail Construction & Maintenance Notebook.* (2007): 0723-2806-MTDC.

[150] *USDA Forest Service Technology & Development Program. Accessibility Guidebook for Outdoor Recreation and Trails. Publication 2300–Recreation (August 2012): 1223–2806P–MTDC, p. 29.*

[151] This implementation guide has been adapted from the U.S. Forest Service's Accessibility Guidebook for Outdoor Recreation and Trails, FSTAG Implementation Process Flowchart, p. 115. August 2012, USDA Forest Service Technology and Development Center, Missoula, MT.

[152] Excerpt from U.S. Access Board's *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 managers. Rather, it was developed to specifically define the scope of these guidelines.

[153] Exceptions:

General Exception 1. Where an entity determines that a condition does not permit full compliance with a specific technical provision recommended in the BMP's, on a portion of a trail, that portion of the trail may still comply with the BMP's to the maximum extent feasible. The entity should document the basis for their determination, and maintain the documentation with the records for the trail construction or trail alteration project.

General Exception 2. Where an entity determines that it is impracticable for an entire trail to comply with the recommended BMP's, the entity would then determine the trail design will be unable to meet the recommended BMP's. The entity should document the basis for their determination, and maintain the documentation with the records for the trail construction or alteration project.

General Exception 1. Exception 1 can be applied to specific requirements in the BMP's on a portion of a trail where full compliance with the requirement cannot be achieved due to any of the Conditions for Exceptions (see below).

General Exception 2. First apply Exception 1 to determine the portions of a trail where full compliance with the specific requirements in the BMP's cannot be achieved. An entity should then evaluate the entire trail, taking into account the portions of the trail that can and cannot fully comply with the requirements in the BMP's and the extent of compliance where full compliance cannot be achieved to determine whether it would be impracticable for the entire trail to comply with the BMP's. The determination should be made on a case-by-case basis.

[154] The obstacle height specified in both sections 1017.5 and 1016.5 of the Outdoor Guidelines are based on the technical provisions for changes in level in Chapters 303.3 and 305.2 of the ADA-ABA Accessibility Standards.

[155] The Outdoor Guidelines contain a new exception to the 2010 ADA Design Standards specifically for openings in floor or ground surfaces. Permitted openings in an ORAR surface are based on section 302.3 of the 2010 ADA Design Standards plus certain changes made by the Outdoor Guidelines.