

Trail Assessment for Accessibility & Sustainability



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Presented by:

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Trail Planner/Builder

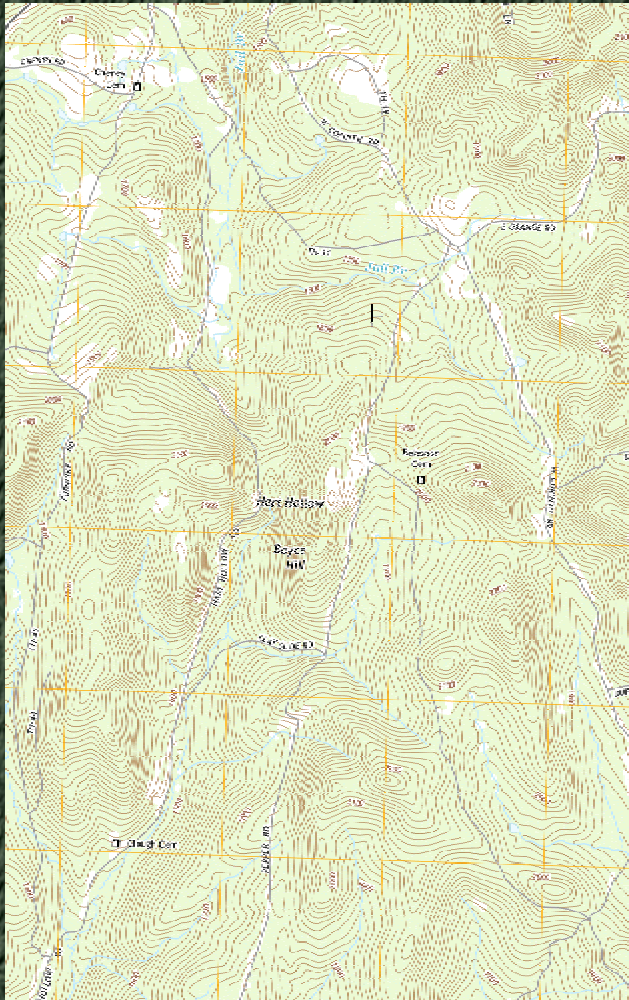
Peter S. Jensen & Associates, LLC

Washington, VT

Regulatory Negotiation Committee
on Outdoor Developed Areas
1997 - 1999



Trail Assessments



Big picture

- P Review of existing trails
- P Resource impacts
- P Higher use vs lower use & why
- P Determine access priorities
- P Too many trails/more maintenance
- P Desire to add new trail
- P Other parameters

Trail Assessments



Trail Specific

- P Access point
- P Parking, transit stop, etc.
- P Purpose of trail
- P Designed use
- P Tread conditions
- P Renovation needs
- P Sustainable elements
- P Degree of accessibility

Trail Assessments & Accessibility

Accessibility Definitions

Oxford Dictionary -

the quality of being able to be reached or entered,
the quality of being easy to obtain or use.

The Web -

Accessibility is the practice of making information,
activities, and/or environments sensible, meaningful, and
usable for as many people as possible.

4 Principals of Accessibility (from the Web)

Perceivable, Operable, Understandable, Robust (POUR)

Trail Assessments and Accessibility

Discussion Topics:

- P All Persons Trails
- P Sustainability science
- P Trail sustainability
- P Trail assessment
- P Trail construction



All Persons Trails

Federal Lands use Architectural Barriers Act Accessibility Standards - Section 1017 Trails

US Forest Service Trail Accessibility Guidelines - FSTAG

Trail Technical Requirements

Conditions for Exception

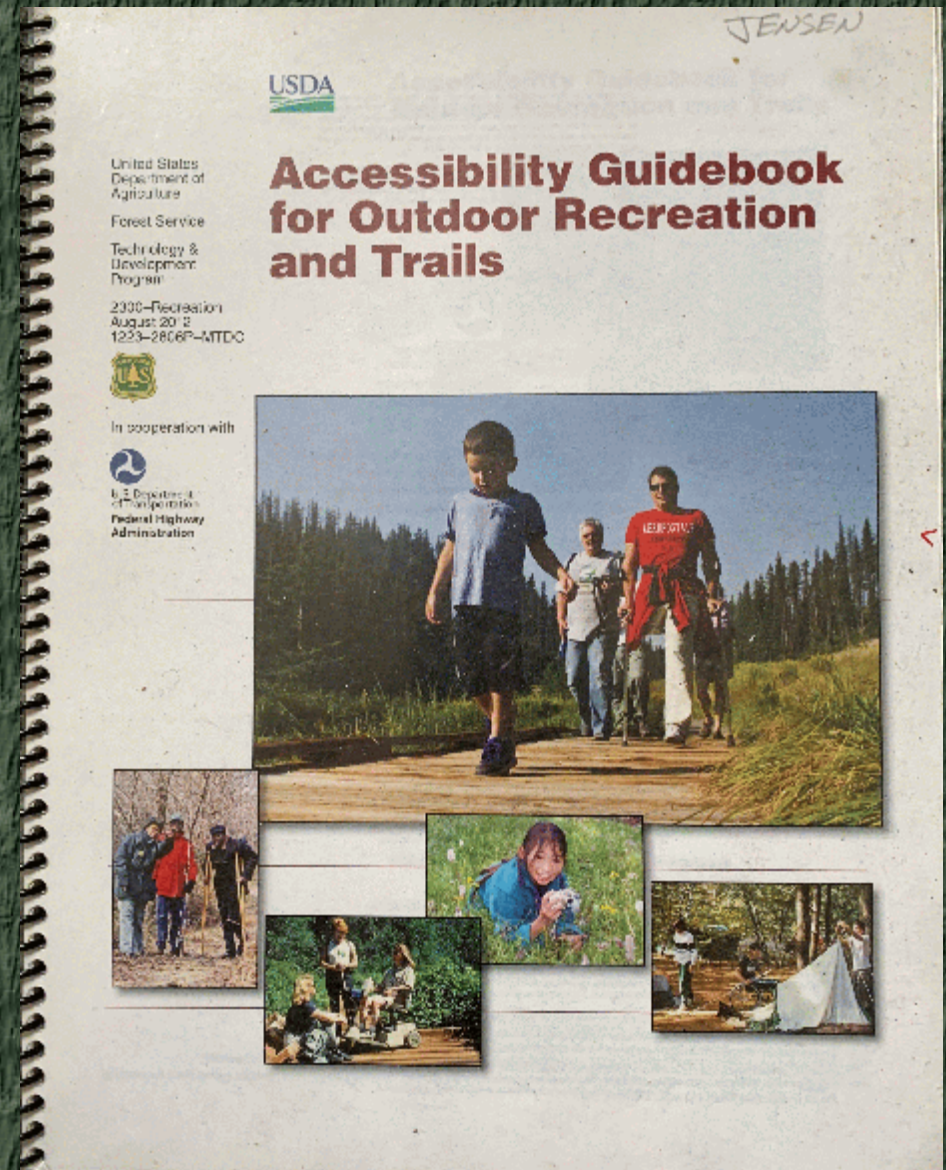


All Persons Trails

US Forest Service Trail Accessibility Guidelines - FSTAG

Required for Federal
properties and Federally
funded trail projects.

Best practices on all other
ownerships.



All Persons Trails

Trail Technical Requirements

P Surface

P Clear Tread Width

P Slopes

P Resting Interval

P Passing Spaces

P Tread Obstacles

P Openings

P Protruding Objects

P Trail Signs

P Gates/Barriers
(USFS only)

All Persons Trails

Surface - must be firm and stable



Native soil

Stabilized native or imported material



Imported material



All Persons Trails

Clear Tread Width

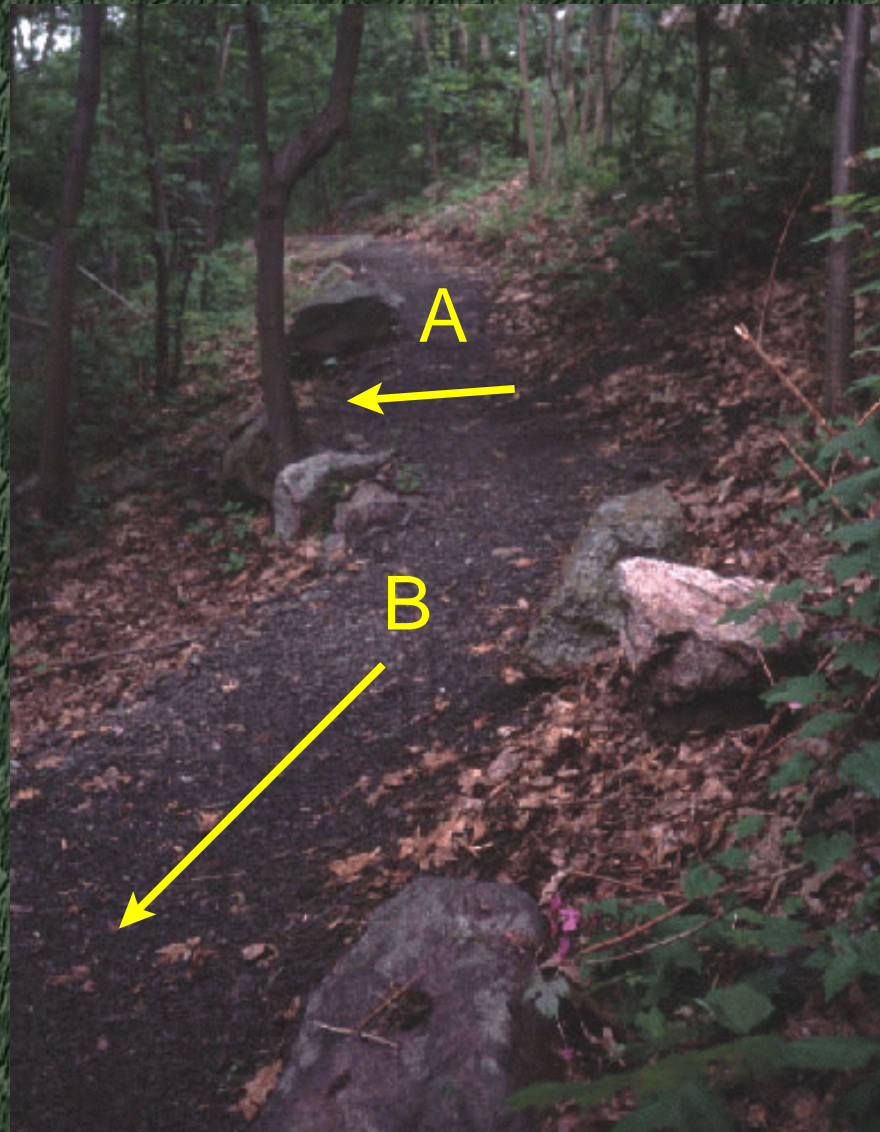
36" Minimum



All Persons Trails

Slopes

Key elements of
accessibility &
sustainability



All Persons Trails Cross Slope

5 % Maximum



All Persons Trails

Slopes

Running Slopes shall be:

- P 5% (1:20) or less for any distance
- P 8.3% (1:12) maximum up to 200 feet
- P 10% (1:10) maximum up to 30 feet
- P 12% (1:8) maximum up to 10 feet

All Persons Trails

Running Slope

70% or more of a trail's total length must have a running slope of less than 8.3% (1:12)



All Persons Trails

Tread Obstacles

2" Maximum height



All Persons Trails

Tread Obstacles

Advisory: Obstacles
should be separated by
48 inches



All Persons Trails

Protruding Objects

These are not protruding objects.



All Persons Trails

Protruding Objects

No more than 4 inches into space from 27 inches to 80 inches above tread.



All Persons Trails

Trail Information Signs

Access Information:

1. Length of trail
2. Surface Type
3. Typical & Min tread width
4. Typical & Max running slope
5. Typical & Max cross slope



All Persons Trails

ABA Trail Standards - General Exception 1

- P Compliance is not practicable due to terrain
- P Compliance cannot be accomplished with the prevailing construction practices.
- P Compliance would fundamentally alter the function or purpose of the facility or setting
- P Compliance would be precluded by Federal, State or Local laws -environmental, cultural, archeological, etc.

Compliance
would alter the
nature of the
setting.



All Persons Trails

ABA Trail Standards - General Exception 2

- P Combination of running slope & cross slope exceeds 40 % over 20 feet
- P Trail obstacle 30 inches high or more runs across the full tread width of trail
- P Trail surface is neither firm nor stable for a distance of 45 feet or more
- P 15 % or more of the trail does not fully comply with the Tech requirements.



Compliance would be difficult due to extreme running slope and cross slope.

Evaluating trails for sustainability and access



Trail Sustainability

Topics for discussion:

- P Sustainability Science
 - < Guidance/Data
 - < Fall line Calculation
 - < Half Rule
 - < Grade measurements
 - < Rise/Run



Sustainability Science

Understanding trail sustainability data

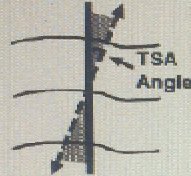

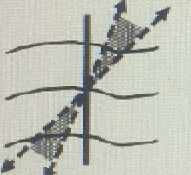

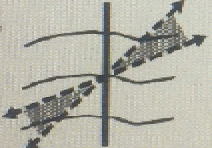


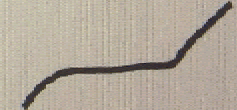
ASSESSING THE INFLUENCE OF SUSTAINABLE TRAIL DESIGN AND MAINTENANCE ON SOIL LOSS

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Sustainability Science

Trail Slope Alignment (TSA)	Degradation Potential	Trail Profile
<i>Fall-aligned Trails</i>		
0-22° 	Very High — tread drainage rarely possible; erosion, widening, & muddiness probable	
23-45° 	High — tread drainage is often difficult; erosion, widening, & muddiness are likely	
<i>Side-hill Trails</i>		
46-68° 	Low — tread drainage is possible; low potential for problems	
69-90° 	Very Low — tread drainage is easy; very low potential for problems	

Sustainability Science



Fall line/Contour



Half Rule

Sustainability Science

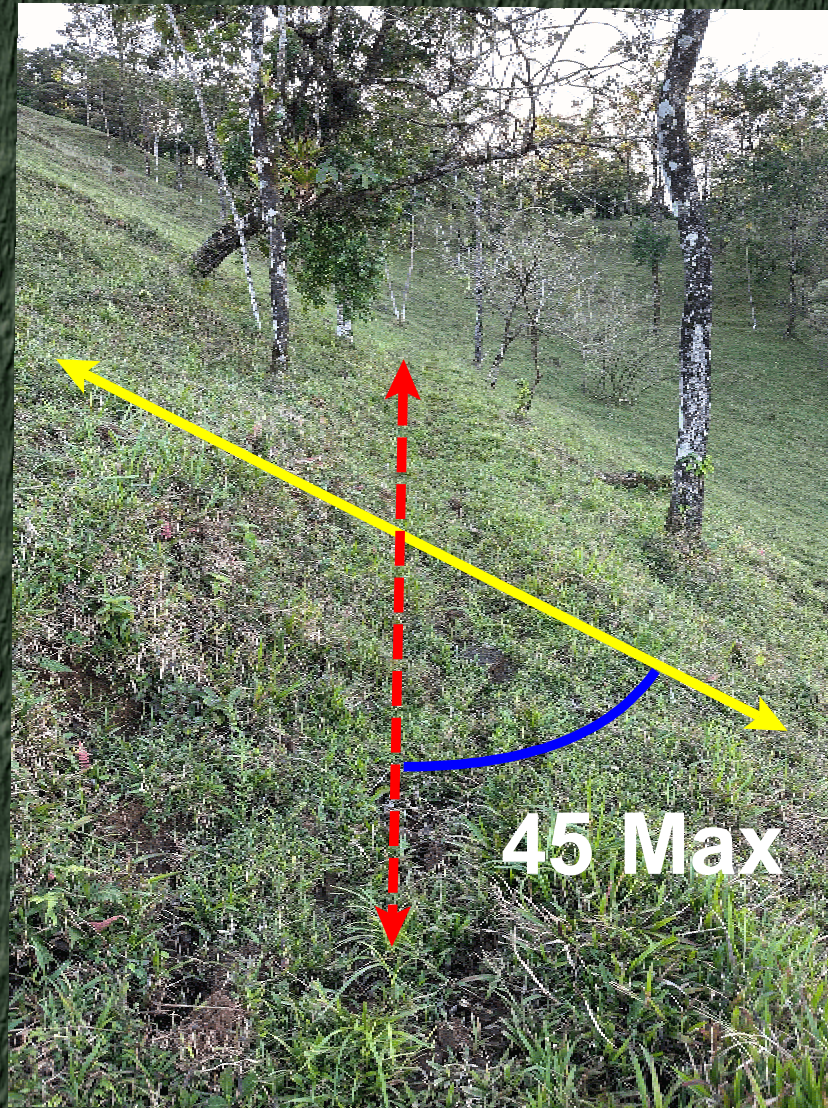
P Fall Line



Sustainability Science

P Fall Line

P Half Rule



Sustainability Science

Grade measurement



Sustainability Science

Grade measurement data



Importance of grade measurements



Importance of grade measurements



Importance of grade measurements



Importance of grade measurements



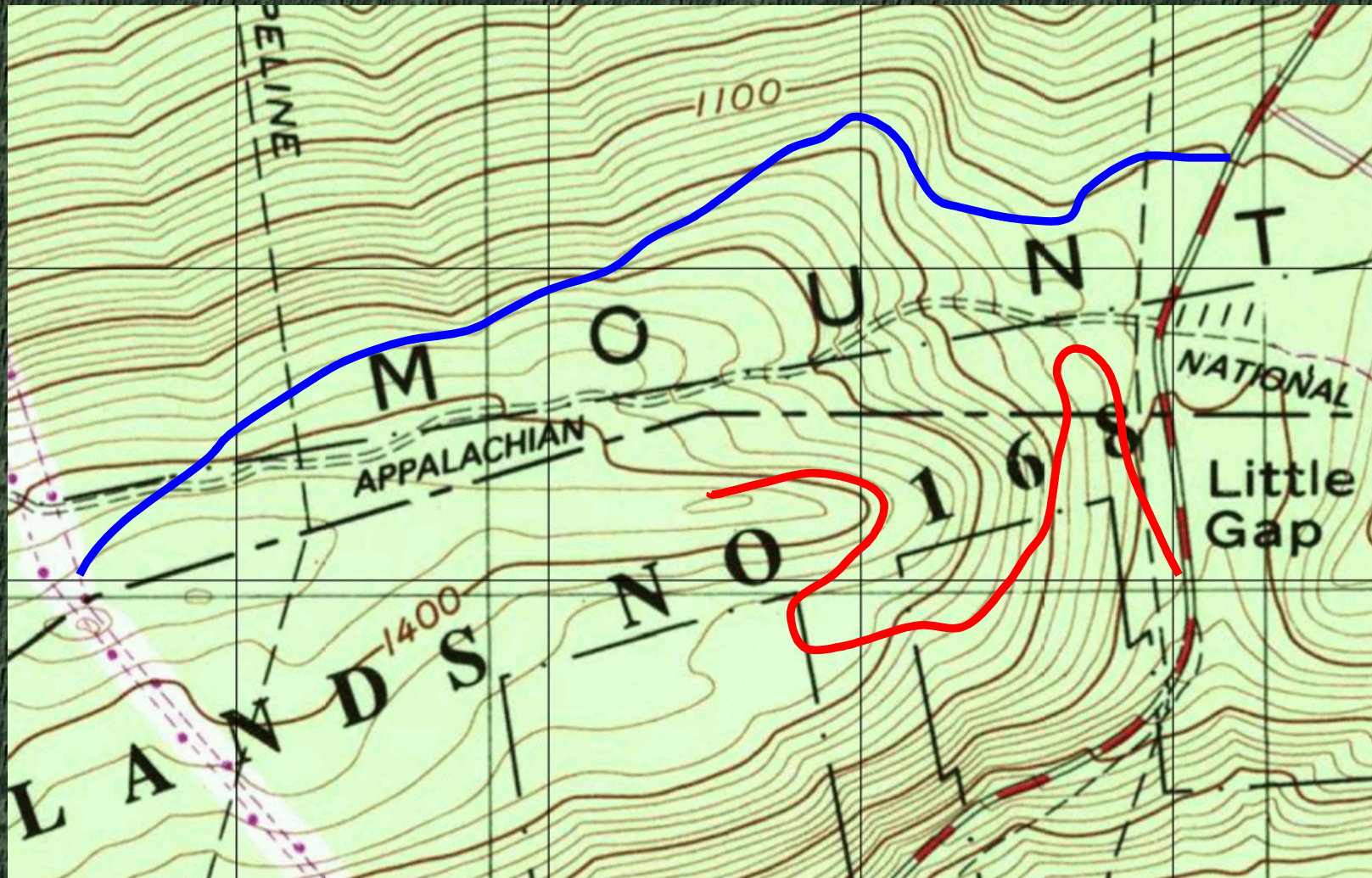
Trail Sustainability

Topics for discussion:

- P Sustainability Practices
 - < Use Half Rule
 - < Grade Reversals



Trail Sustainability



Trail Sustainability

Does the existing trail meet the Half Rule?

Will your new trail alignment adhere to the Half Rule?



Trail Sustainability

Grade Reversals

Good tread alignment

Use natural features to create reversals



Trail Sustainability



Trail Sustainability



Trail Assessment

Topics for discussion:

- P Unsustainable tread &
- P Accessibility impacts



Trail Assessment

P Implications of poor trail condition

- < Soil erosion & vegetation/habitat damage
- < Poor recreation experience
- < Increased maintenance
- < Safety issues

Trail Assessment

What are the issues on this section of trail?



Trail Assessment

- P Seasonal water flow
- P Entrenchment
- P Lack of grade reversals
- P Trail widening
- P User response



Trail Assessment



Trail Assessment



Trail Assessment



Block old
tread with
large objects

Realign
tread uphill

Trail Construction

Topics for discussion:

- P Bench cuts
- P Retaining
- P Risers/steps
- P Drainage
- P Assessments require understanding of trail construction



Trail Construction

Full bench cuts



Trail Construction

Full bench cut with grade reversals.

Reversals can serve as rest sections on an All Persons Trail.



Trail Construction



Trail Construction

Stone step risers with reversal above steps.

Maximum grade above and below steps is 15 percent based on local soil type.



Sustainable and Accessible Trails



They fit the environment, drain easily, require minimal maintenance, and provide maximum access.

Uhhh, Questions?



Contact Information

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