

USFS Inventory and Budget

Handouts and forms available at:

<http://sites.google.com/site/jimrectrails>





Trail Definition

USFS

A Trail is a linear feature constructed for the purpose of allowing the free movement of people, stock, or OHVs.

USFS / NPS / BLM / FWS Interagency Trail Definition

A linear route managed for human-powered, stock, or OHV forms of transportation or for historic or heritage values.

National Forests in Florida Trail Mileages (686.9 miles)

	FNST	Hiking	Horse	Mtn Bike	OHV	MC	Mixed -use Roads
Ocala	77.1	24.6	134	22	138	13	107
Apalach	72.7	17.2		19.9	34	55	52
Osceola	21.4	5.0	53				377
Totals	171.2	46.8	187	41.9	172	68	536

USFS INFRA TRAILS

Web Database that includes:

- Inventory
- Condition
- Cost data



Required Infra Trails Linear Events (18)

Accessibility Status

Administrative Organization

Congressional District

County

Designed Use

Historic Significance

Jurisdiction

Managed Use

Managing Organization

Trail Class

Trail Status

Trail Surface

Trail System

Typical Sideslope

Typical Trail Grade

Typical Veg - Brush

Typical Veg - Timber

Typical Soil Type

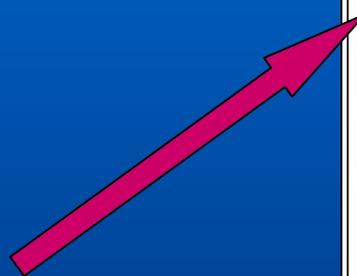
Trail Fundamentals

- Trail Type
- Trail Class
- Designed Use
- Managed Use
- Design Parameters



Trail Management Objectives (TMO)

Trail Basics



TRACS Trail Management Objectives

Region: _____ Forest: _____ District: _____

Trail Name: _____ Trail Number: _____

Trail Beginning Terrain: _____ Beg. Milepost: _____

Trail Ending Terrain: _____ End. Milepost: _____

Trail Inventory Length: _____ Miles Trail Mileage Survey: Wheel GPS Map Unknown

TMO Trail Section

Section Beg. Terrain: _____ Beg. Milepost: _____

Section End. Terrain: _____ End. Milepost: _____

Designed Use Objectives

Trail Type (Check one)

Standard/Terra Trail

Snow Trail

Water Trail

Trail Class (Check one)

1 (Primitive/Underdeveloped)

2 (Simple/Minor Development)

3 (Developed/Improved)

4 (Highly Developed)

5 (Fully Developed)

ROSMWROS Class (Check one)

RDS

Urban

Rural

Roadside-Modified

Roadside-Natural

Semi-Primitive Motorized

Semi-Primitive NonMotorized

Primitive

WROS

WROS 1

WROS 2

WROS 3

WROS 4

WROS 5

WROS 6

Designed Use (Check one)

Hiker/Pedestrian

Pack & Saddle

Bicycle

Wheelchair

Motorcycle

All Terrain Vehicle (ATV)

Cross-Country Ski

Snowshoe

Dog Sled

Snowmobile

Watercraft - NonMotorized

Watercraft - Motorized

Design Parameters (Fill in all that apply)

Basic Tread Width, inches: _____

Clearing Width, feet: _____

Clearing Height, feet: _____

Switchback Radius, feet: _____

Max. Sustained Grade, %: _____

Max. Pitch Grade, %: _____

Target Frequency (Fill in all that apply)

Per Year

Trail Opening: _____

Tread Repair: _____

Drainage Cleanout: _____

Logging Out: _____

Brushing: _____

Snow Trail Grooming: _____

Condition Survey: _____

TRACS TMO Form v4.0 - Side 1 (2/15/2004) Page _____ of _____

TRACS Trail Management Objectives

Travel Management Strategies FSH 7731 (WD 7700-34-8)

Managed Use (Fill in all that apply)

	From Date (mm/dd)	To Date (mm/dd)
<input type="checkbox"/> Hiker/Pedestrian		
<input type="checkbox"/> Pack & Saddle		
<input type="checkbox"/> Bicycle		
<input type="checkbox"/> Wheelchair		
<input type="checkbox"/> Motorcycle		
<input type="checkbox"/> All Terrain Vehicle (ATV)		
<input type="checkbox"/> Cross-Country Ski		
<input type="checkbox"/> Snowshoe		
<input type="checkbox"/> Dog Sled		
<input type="checkbox"/> Snowmobile		
<input type="checkbox"/> Watercraft - NonMotorized		
<input type="checkbox"/> Watercraft - Motorized		

Prohibited Use (Check if applicable)

	From Date (mm/dd)	To Date (mm/dd)
<input type="checkbox"/> All Motorized Use		
<input type="checkbox"/> Hiker/Pedestrian		
<input type="checkbox"/> Pack & Saddle		
<input type="checkbox"/> Bicycle		
<input type="checkbox"/> Wheelchair		
<input type="checkbox"/> Motorcycle		
<input type="checkbox"/> All Terrain Vehicle (ATV)		
<input type="checkbox"/> Cross-Country Ski		
<input type="checkbox"/> Snowshoe		
<input type="checkbox"/> Dog Sled		
<input type="checkbox"/> Snowmobile		
<input type="checkbox"/> Watercraft - NonMotorized		
<input type="checkbox"/> Watercraft - Motorized		

Other Use (Optional: Check one that apply)

	Accept	Discontinue	Eliminate
<input type="checkbox"/> Hiker/Pedestrian			
<input type="checkbox"/> Pack & Saddle			
<input type="checkbox"/> Bicycle			
<input type="checkbox"/> Wheelchair			
<input type="checkbox"/> Motorcycle			
<input type="checkbox"/> All Terrain Vehicle (ATV)			
<input type="checkbox"/> Cross-Country Ski			
<input type="checkbox"/> Snowshoe			
<input type="checkbox"/> Dog Sled			
<input type="checkbox"/> Snowmobile			
<input type="checkbox"/> Watercraft - NonMotorized			
<input type="checkbox"/> Watercraft - Motorized			

Special Considerations (Provide specific and reference information below)

Accessible per Current Agency Guidelines

Mechanized Tools or Equipment Prohibited

T&E or Sensitive Species Present (Plant / Wildlife)

Heritage Resource Present

Equipment across Non-FS Land (Existing / Needs)

Existing Permit or Agreement (Trail-Specific Area)

Remarks / Reference Information (Use continuation sheet if needed)

Line Officer: Name _____ Title _____ Signature _____ Date _____

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Trail Type

UAS TRACS Trail Management Objectives

Region: Forest: District:

Trail Name: Trail Number:

Tr. Req. Term: Dev. H. exp:

Tr. Endng Term: End. H. exp:

Tr. Inventory length: Miles Tr. H. exp Source: Wtr GPS Map Database

TMO Trail Section

Station Req. Term: Dev. H. exp:

Station End. Term:

Designed Use Objectives

Trail Type

Standard Terra Trail
 Snow Trail
 Water Trail

Trail Class

1 (Primitive/Undeveloped)
 2 (Simple/Minor Development)
 3 (Developed/Improved)
 4 (Highly Developed)
 5 (Fully Developed)

ROS/WROS Class

ROS

Urban
 Rural
 Roaded/Modified
 Roaded/Natural
 Semi-Primitive/Materialized
 Semi-Primitive/NonMaterialized
 Primitive

WROS

WROS1
 WROS2
 WROS3
 WROS4
 WROS5
 WROS6

Designed Use

Hiker / Pedestrian
 Pack & Saddle
 Bicycle
 Wheelchair
 Motorcycle
 All Terrain Vehicle (ATV)
 Cross-Country Ski
 Snowshoe
 Dog Sled
 Snowmobile
 Over-Snow ATV
 Watercraft - NonMaterialized
 Watercraft - Materialized

Design Parameters

Basic Tread Width, inches
 Clearing Width, feet
 Clearing Height, feet
 Switchback Radius, feet
 Max. Sustained Grade, %
 Max. Pitch Grade, %

Target Frequency

Trail Opening
 Tread Repair
 Drainage Cleanout
 Logging Out
 Brushing
 Snow Trail Grooming
 Condition Survey

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- Standard Terra Trail
- Snow Trail
- Water Trail



Trail Class

TRACS Trail Management Objectives

Region: Forest: District:

Trail Name: Trail Number:

Trail Beginning Termini: Beg. Milepost:

Trail Ending Termini: End. Milepost:

Trail Inventory Length: Miles Trail Mileage Source: Wheel GPS Map Unknown

TMO Trail Section

Section Beg. Termini: Beg. Milepost:

Section End. Termini: End. Milepost:

Designed Use Objectives

Trail Type (Check one):
 Standard Terra-Trail
 Snow Trail
 Water Trail

Trail Class (Check one):
 1 (Primitive/Undeveloped)
 2 (Simple/Minor Development)
 3 (Developed/Improved)
 4 (Highly Developed)
 5 (Fully Developed)

ROSWROS Class (Check one):
 RDS: Urban Rural Modified Roaded Natural Semi-Primitive Motorized Semi-Primitive NonMotorized Primitive
 WROS: WROS 1 WROS 2 WROS 3 WROS 4 WROS 5 WROS 6

Designed Use (Check one):
 Hiker / Pedestrian
 Pack & Saddle
 Bicycle
 Wheelchair
 Motorcycle
 All Terrain Vehicle (ATV)
 Cross-Country Ski
 Snowshoe
 Dog Sled
 Snowmobile
 Watercraft - NonMotorized
 Watercraft - Motorized

Design Parameters (Fill in all that apply):
 Basic Tread Width, inches
 Clearing Width, feet
 Clearing Height, feet
 Switchback Radius, feet
 Max. Sustained Grade, %
 Max. Pitch Grade, %

Target Frequency (Fill in all that apply):
 Trail Opening
 Tread Repair
 Drainage Cleanout
 Logging Out
 Brushing
 Snow Trail Grooming
 Condition Survey

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- 1 - Primitive/Undeveloped
- 2 - Simple/Minor Development
- 3 - Developed/Improved
- 4 - Highly Developed
- 5 - Fully Developed

Trail Class Matrix

National Trail Management Classes

Updated 1/2/2005

Trail prescriptions describe the desired management of each trail, based on Forest Plan direction. These prescriptions take into account user preferences, setting, protection of sensitive resources, and other management activities. To meet prescription, each trail is assigned an appropriate Trail Class. These general categories are used to identify applicable Trail Design Parameters and to identify basic indicators used for determining the cost to meet national quality standards.¹

The General Criteria below define each Trail Class and are applicable to all system trails. Subsequent sections provide Additional Criteria specific to Motorized Trails, Pack and Saddle Trails, Snow Trails, and Water Trails.

Trail Class descriptions define "typical" attributes, and exceptions may occur for any attribute. Apply the Trail Class that most closely matches the managed objective of the trail.

Trail Attributes	Trail Class 1 Minimal/Undeveloped Trail	Trail Class 2 Simple/Minor Development Trail	Trail Class 3 Developed/Improved Trail	Trail Class 4 Highly Developed Trail	Trail Class 5 Fully Developed Trail
General Criteria Physical Characteristics to be Applied to All National Forest System Trails					
Tread & Traffic Flow	<ul style="list-style-type: none"> Tread intermittent and often indistinct May require route finding Native materials only 	<ul style="list-style-type: none"> Tread discernible and continuous, but narrow and rough Few or no allowances constructed for passing Native materials 	<ul style="list-style-type: none"> Tread obvious and continuous Width accommodates unimpeded one-lane travel (occasional allowances constructed for passing) Typically native materials 	<ul style="list-style-type: none"> Tread wide and relatively smooth with few irregularities Width may consistently accommodate two-lane travel Native or imported materials May be hardened 	<ul style="list-style-type: none"> Width generally accommodates two-lane and two-directional travel, or provides frequent passing turnouts Commonly hardened with asphalt or other imported material
Obstacles	<ul style="list-style-type: none"> Obstacles common Narrow passages; brush, steep grades, rocks and logs present 	<ul style="list-style-type: none"> Obstacles occasionally present Blockages cleared to define route and protect resources Vegetation may encroach into trailway 	<ul style="list-style-type: none"> Obstacles infrequent Vegetation cleared outside of trailway 	<ul style="list-style-type: none"> Few or no obstacles exist Grades typically <12% Vegetation cleared outside of trailway 	<ul style="list-style-type: none"> No obstacles Grades typically <8%
Constructed Features & Trail Elements	<ul style="list-style-type: none"> Minimal to non-existent Drainage is functional No constructed bridges or foot crossings 	<ul style="list-style-type: none"> Structures are of limited size, scale, and number Drainage functional Structures adequate to protect trail infrastructure and resources Primitive foot crossings and fords 	<ul style="list-style-type: none"> Trail structures (walls, steps, drainage, raised trail) may be common and substantial Trail bridges as needed for resource protection and appropriate access Generally native materials used in Wilderness 	<ul style="list-style-type: none"> Structures frequent and substantial Substantial trail bridges are appropriate at water crossings Trailside amenities may be present 	<ul style="list-style-type: none"> Structures frequent or continuous; may include curbs, handrails, trailside amenities, and boardwalks Drainage structures frequent; may include culverts and road-like designs

Trail Classes: 1

Trail Attributes	Trail Class 1 Minimal/Undeveloped Trail	Trail Class 2 Simple/Minor Development Trail	Trail Class 3 Developed/Improved Trail	Trail Class 4 Highly Developed Trail	Trail Class 5 Fully Developed Trail
General Criteria Physical Characteristics to be Applied to All National Forest System Trails					
Signs	<ul style="list-style-type: none"> Minimum required Generally limited to regulation and resource protection No destination signs present 	<ul style="list-style-type: none"> Minimum required for basic direction Generally limited to regulation and resource protection Typically very few or no destination signs present 	<ul style="list-style-type: none"> Regulation, resource protection, user reassurance Directional signs at junctions, or when confusion is likely Destination signs typically present Informational and interpretive signs may be present outside of Wilderness 	<ul style="list-style-type: none"> Wide variety of signs likely present Informational signs likely (outside of Wilderness) Interpretive signs possible (outside of Wilderness) Trail Universal Access information likely displayed at trailhead 	<ul style="list-style-type: none"> Wide variety of signage is present Information and interpretive signs likely Trail Universal Access information is typically displayed at trailhead
Natural, unmodified ROS: Often Primitive setting, but may occur in other ROS settings WROS: Primitive		<ul style="list-style-type: none"> Natural, essentially unmodified ROS: Typically Primitive to Semi-Primitive setting WROS: Primitive to Semi-Primitive 	<ul style="list-style-type: none"> Natural, primarily unmodified ROS: Typically Semi-Primitive to Rooded Natural setting WROS: Semi-Primitive to Transition 	<ul style="list-style-type: none"> May be modified ROS: Typically Rooded Natural to Rural setting WROS: Transition (rarely present in Wilderness) 	<ul style="list-style-type: none"> Can be highly modified ROS: Typically Rural to Urban setting Commonly associated with Visitor Centers or high-use recreation sites Not present in Wilderness

For design criteria and specifications, refer to Forest Service Handbook and other applicable agency references.

Trail Environment & Experience descriptors are provided to assist with understanding Trail Classes. They represent typical or varying Trail Class and ROS or WROS setting combinations, but are not intended to indicate combinations that are "allowed" or "not appropriate." Trail Class should be determined by local managers at the trail-specific level, based on Forest Plan direction and other information. While less developed trails may occur in any ROS setting, they typically occur in less developed ROS settings. Similarly, more highly developed trails tend to occur in more highly developed ROS settings, but may occur in less developed ROS settings (with the exception of Trail Class 5, which is not consistent with Primitive settings).

Designed Use



TRACS Trail Management Objectives

Region: Forest: District:

Trail Name: Trail Number:

Trail Beginning Terminal: Beg. Milepost:

Trail Ending Terminal: End. Milepost:

Trail Inventory Length: Miles Trail Mileage Resource: Wheel GPS Map Unknown

TMO Trail Section

Section Beg. Terminal: Beg. Milepost:

Section End. Terminal: End. Milepost:

Sec. #

Designed Use Objectives

Trail Type (Check one)

- Standard Form Trail
- Snow Trail
- Water Trail

Trail Class (Check one)

- 1 (Primitive/Underdeveloped)
- 2 (Simple/Minor Development)
- 3 (Develop/Improved)
- 4 (Highly Developed)
- 5 (Fully Developed)

ROSWROS Class (Check one)

Urban	Rural	Roaded Modified	Roaded Natural	Semi-Primitive Motorized	Semi-Primitive Non-Motorized	Primitive
<input type="checkbox"/>	<input type="checkbox"/>					

Designed Use (Check one)

- Hike / Pedestrian
- Pack & Saddle
- Bicycle
- Wheelchair
- Motorcycle
- All Terrain Vehicle (ATV)
- Cross-Country Ski
- Snowshoe
- Dog Sled
- Snowmobile
- Watercraft - Non-Motorized
- Watercraft - Motorized

Design Parameters (Fill in all that apply)

- Basic Tree Width, inches:
- Clearing Width, feet:
- Clearing Height, feet:
- Switchback Radius, feet:
- Max. Sustained Grade, %:
- Max. Pitch Grade, %:

Trail Frequency (Fill in all that apply)

- Trail Opening:
- Tree Repair:
- Drainage Cleanout:
- Logging Out:
- Brushing:
- Snow Trail Grooming:
- Condition Survey:

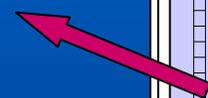
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The intended use that controls the desired geometric design and determines the subsequent maintenance parameters for the trail.

Managed Use

There may be more than one Managed Use per trail or trail segment.

Managed Use indicates a management decision or intent to accommodate and/or encourage a specified type of trail use.



UAS TRACS Trail Management Objectives
Travel Management Strategies FSH 7731(WG 7700-94-9)

Managed Use		From Date	To Date
(Fill in all that apply)		(mm/dd)	(mm/dd)
<input type="checkbox"/>	Hiker / Pedestrian		
<input type="checkbox"/>	Pack & Saddle		
<input type="checkbox"/>	Bicycle		
<input type="checkbox"/>	Wheelchair		
<input type="checkbox"/>	Motorcycle		
<input type="checkbox"/>	All Terrain Vehicle (ATV)		
<input type="checkbox"/>	Cross-Country Ski		
<input type="checkbox"/>	Snowshoe		
<input type="checkbox"/>	Dog Sled		
<input type="checkbox"/>	Snowmobile		
<input type="checkbox"/>	Watercraft - NonMotorized		
<input type="checkbox"/>	Watercraft - Motorized		

Prohibited Use		From Date	To Date
(Check if applicable)		(mm/dd)	(mm/dd)
<input type="checkbox"/>	All Motorized Use		
(Or, fill in all that apply)			
<input type="checkbox"/>	Hiker / Pedestrian		
<input type="checkbox"/>	Pack & Saddle		
<input type="checkbox"/>	Bicycle		
<input type="checkbox"/>	Wheelchair		
<input type="checkbox"/>	Motorcycle		
<input type="checkbox"/>	All Terrain Vehicle (ATV)		
<input type="checkbox"/>	Cross-Country Ski		
<input type="checkbox"/>	Snowshoe		
<input type="checkbox"/>	Dog Sled		
<input type="checkbox"/>	Snowmobile		
<input type="checkbox"/>	Watercraft - NonMotorized		
<input type="checkbox"/>	Watercraft - Motorized		

Other Use		Accept	Discourage	Eliminate
(Optional: Check any that apply)				
<input type="checkbox"/>	Hiker / Pedestrian			
<input type="checkbox"/>	Pack & Saddle			
<input type="checkbox"/>	Bicycle			
<input type="checkbox"/>	Wheelchair			
<input type="checkbox"/>	Motorcycle			
<input type="checkbox"/>	All Terrain Vehicle (ATV)			
<input type="checkbox"/>	Cross-Country Ski			
<input type="checkbox"/>	Snowshoe			
<input type="checkbox"/>	Dog Sled			
<input type="checkbox"/>	Snowmobile			
<input type="checkbox"/>	Watercraft - NonMotorized			
<input type="checkbox"/>	Watercraft - Motorized			

Special Considerations
(Check any that apply; use parentheses to provide specific and reference information below.)

- Accessible per Current Agency Guidelines
- Mechanized Tools or Equipment Prohibited
- T&E or Sensitive Species Present (Plant / Wildlife)
- Heritage Resource Present
- Easement across Non-FS Land (Existing / Needed)
- Existing Permit or Agreement (Trail-Specific Area)

Remarks / Reference Information
(Use continuation sheet if needed)

Line Officer: Name _____ Signature _____
Title _____ Date _____

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Designed / Managed Uses

Hiker / Pedestrian

Pack & Saddle

Bicycle

Wheelchair

Motorcycle

All Terrain Vehicle

Cross-Country Ski

Snowshoe

Dog Sled

Snowmobile

Watercraft - NonMotorized

Watercraft - Motorized

Design Parameters

TRACS Trail Management Objectives

Region: Forest: District:

Trail Name: Trail Number:

Trail Beginning Beg. Milepost:
Termini:

Trail Ending Termini: End. Milepost:

Trail Inventory Length: Miles Trail Mileage Source: Wheel GPS Msp Unknown

TMO Trail Section

Section Beg. Beg. Milepost:
Termini:

Sec.# Section End. End. Milepost:
Termini:

Designed Use Objectives

Trail Type (Check one)
 Standard Terra Trail
 Snow Trail
 Water Trail

Trail Class (Check one)
 1 (Primitive/Underdeveloped)
 2 (Simple/Minor Development)
 3 (Developed/Improved)
 4 (Highly Developed)
 5 (Fully Developed)

ROS/WROS Class (Check one)

ROS		WROS	
<input type="checkbox"/> Urban	<input type="checkbox"/> WROS 1		
<input type="checkbox"/> Rural	<input type="checkbox"/> WROS 2		
<input type="checkbox"/> Roaded Modified	<input type="checkbox"/> WROS 3		
<input type="checkbox"/> Roaded Natural	<input type="checkbox"/> WROS 4		
<input type="checkbox"/> Semi-Primitive Motorized	<input type="checkbox"/> WROS 5		
<input type="checkbox"/> Semi-Primitive NonMotorized	<input type="checkbox"/> WROS 6		
<input type="checkbox"/> Primitive			

Designed Use (Check one)

<input type="checkbox"/> Hiker / Pedestrian
<input type="checkbox"/> Pack & Saddle
<input type="checkbox"/> Bicycle
<input type="checkbox"/> Wheelchair
<input type="checkbox"/> Motorcycle
<input type="checkbox"/> All Terrain Vehicle (ATV)
<input type="checkbox"/> Cross-Country Ski
<input type="checkbox"/> Snowshoe
<input type="checkbox"/> Dog Sled
<input type="checkbox"/> Snowmobile
<input type="checkbox"/> Watercraft - NonMotorized
<input type="checkbox"/> Watercraft - Motorized

Design Parameters (Fill in all that apply)

<input type="checkbox"/>	Basic Tread Width, inches
<input type="checkbox"/>	Clearing Width, feet
<input type="checkbox"/>	Clearing Height, feet
<input type="checkbox"/>	Switchback Radius, feet
<input type="checkbox"/>	Max. Sustained Grade, %
<input type="checkbox"/>	Max. Pitch Grade, %
<input type="checkbox"/>	
<input type="checkbox"/>	

Target Frequency (Fill in all that apply)

<input type="checkbox"/>	Trail Opening
<input type="checkbox"/>	Trail
<input type="checkbox"/>	Drainage Cleanout
<input type="checkbox"/>	Logging Out
<input type="checkbox"/>	Brushing
<input type="checkbox"/>	Snow Trail Grooming
<input type="checkbox"/>	Condition Survey
<input type="checkbox"/>	

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- Tread Width
- Grade – Range
- Grade – Short Pitch
- Cross-Slope
- Clearing Width
- Clearing Height
- Switchback Radius

Design Parameters

DRAFT 6/18/02

USFS Trail Design Parameters

Trail Design Parameters provide guidance for the assessment, survey and design, construction, reconstruction and maintenance of trails, based on the Trail Class and Designed Use of the trail. Exceptions and variances to these parameters can occur, however, when site-specific circumstances demand such exceptions.

Designed Use	Trail Class 1	Trail Class 2	Trail Class 3*	Trail Class 4*	Trail Class 5*
Design Tread Width					
Wilderness	0' – 12"	0' – 9"	12" – 24" Exception: May be 36"–48" at switchbacks, turnpikes, forks and steep side slopes.	24"	Not applicable
Non-Wilderness	0' – 12"	0' – 9"	18" – 48"	32" – 60"	36" – 120"
Design Surface					
Type	Native, ungraded, indigenous, rough.	Native with limited grading.	Native with some on-site borrow or imported material.	Improved materials or hand-dredging is common.	Uniform, firm, and stable.
Obstacles	Roots, rocks, logs, steps to 24".	Roots, rocks and log protrusions to 6"; steps to 36".	Generally clear. Protrusions to 3"; steps to 3".	Smooth, few obstacles. Protrusions 2.5"; steps to 2".	Smooth, no obstacles. Protrusions <2".
Design Grade**					
Target Range (<90% of Trail)	< 25%	< 18%	< 12%	< 10%	< 5%
Short Pitch Max (Up to 200' length)	40%	35%	25%	15%	10%
Max Pitch Density***	< 10% of trail	< 5% of trail	< 5% of trail	< 3% of trail	< 3% of trail
Design Cross-Slope					
Target Range	Not applicable	5 – 20%	5 – 10%	3 – 7%	2 – 3% (or crowned)
Maximum	Up to natural side-slope.	Up to natural side-slope.	15%	10%	3%
Design Clearing					
Width	Sufficient to define trail corridor.	24" – 30", with some when pavement into clearing area.	12" – 18" outside of tread edge.	12" – 18" outside of tread edge.	12" – 24" outside of tread edge.
Height	0'	0' – 7'	8'	8'	> 8'
Design Turns					
Radius	No minimum.	2' – 3'	3' – 5'	4' – 6'	6' – 12'

* Trail Classes 3, 4 and 5 may potentially provide accessible passage. If assessing or designing trails for accessibility, refer to current Agency trail accessibility guidance.

** Grade variances should be based upon soils, hydrological conditions, use levels, and other factors contributing to surface stability and erosion potential.

*** Maximum pitch density refers to the percentage of the trail that is within 5% (+/-) of the Short Pitch Maximum Grade.

Trail Design Parameters - 11

Trail CASM

Condition Assessment Survey Matrix

CASM
Trail Condition Assessment Survey Matrix
A Guide to Recommended Survey Methods and Accuracies
© 2015 FWS

CASM is the Forest Service's guide for conducting efficient and appropriate trail inventory and condition surveys, based on the level of trail development or Trail Class, investment in trail structures, and visitor expectations. CASM values are recommended minimums for data accuracy and specificity. Local managers may select more rigorous frequencies, methods, or accuracies as determined necessary.

Assessment Factors	Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Survey Method ¹	Walk-through & Note (Not on Map or GPS) ²	Cyclo-meter or GPS ²	Cyclo-meter or GPS ²	Cyclo-meter	Tape or Cyclo-meter & Hand Level with 1/4" Resolution
Recommended Survey Accuracy & Specificity:					
Measurement Interval ³	Minor Photogrammetric Changes	Minor Photogrammetric Changes or 1/4 Mile	Typical Grade Changes of 10% or 500 Feet	Typical Grade Changes of 10% or 500 Feet	Inter-usable Alignment Changes, 2% Grade Changes, or 25 Feet
Typical Grade ⁴	+/- 10%	+/- 10%	+/- 5%	+/- 5%	+/- 1%
Typical Width ⁵	Not Measured	Optional +/- 6"	Optional +/- 6"	Optional +/- 6"	+/- 3"
Obstacles ⁶	Not Measured	Not Measured	Optional	Formidable Obstacles (e.g., narrow width with steep drop off)	All those defined as Obstacles
Typical Cross Slope ⁷	Not Measured	Not Measured	+/- 1%	+/- 1%	+/- 0.1%
Features & Tasks ⁸	Maximum Grouping of Features & Tasks	Grouping of Features & Tasks	Grouping of Features & Tasks Optional	Each Feature & Task Isolated & Assessed Individually	Each Feature & Task Isolated & Assessed Individually

¹ **Survey Method:** Most efficient method that accomplishes identified CASM accuracies.

² **GPS:** TRACS data collected via GPS must meet agency GIS spatial standards. This usually includes differential correction and editing for multi-pathing, spiking, and degraded satellite coverage.

³ **Measurement Interval:** Maximum interval between collecting a full set of survey points for Typical Grade, Typical Width, Obstacles, Typical Cross Slope, and applicable Features and Tasks. If an element (i.e. Typical Grade) changes more frequently than the maximum interval, record those changes based on the CASM accuracy identified for that element.

⁴ **Typical Grade:** Initiate new survey segment when Typical Grade changes by this amount.

⁵ **Typical Width:** Initiate new survey segment when Typical Width changes by this amount.

⁶ **Obstacles:** For those defined (see FSM/FSH, Infra Business Rules, Universal Access guidelines, etc.)

⁷ **Typical Cross Slope:** Accuracy of Rise-over-Run measurement across Typical Tread Width.

⁸ **Grouping Features & Tasks:** Features and Tasks can be grouped within survey segment.



TMO → TRACS → CASM → Infra Cornerstones of...



- Efficient Trail Planning & Management
- Consistent, Quality Data
- Accurate, Accountable Inventory & Costing

ITDS

Interagency Trail Data Standards

Trail Name • Trail Number • Trail Length • Trail Status

ITDS

Interagency Trail Data Standards

Which Trails? The ITDS are applicable to all USFS, BLM and FWS managed trails, including National Scenic Trails and National Historic Trails. The ITDS can also be applied to trails managed by state or local governments and other entities.

What? The ITDS are a core set of 24 standardized trail data attributes with corresponding definitions and values applicable to tabular and spatial data. They include 5 additional attributes applicable only to NHTs and NHTAs and 13 attributes specific to NHTs. The ITDS reflect a core set of interagency questions and data available on trails, and are not intended to cover all possible trail data or agency-specific data needs.

Why? The ITDS enable trail managers and the public to consistently understand terminology, to recognize, identify and describe trails and trail systems. This means users do not need to be able to access, exchange and store by more than one individual, agency or group. Data sharing data increases the capability for enhanced and consistent mapping, inventory, monitoring, condition assessment, coding, budgeting, information services, and reporting.

Who? The ITDS were developed by the USFS/NPS/BLM/FWS ITDS Team at the request of the Federal Interagency Trails Council. The ITDS are being used by these agencies, as well as by other trail managers and the public.

How? The ITDS are being incorporated into agency databases and GIS spatial layers to support a wide variety of trail inventory, planning, management, and public information needs.

Status? The ITDS underwent internal and external reviews in 2003 and 2004. The ITDS are currently being prepared for publication by the Federal Geographic Data Committee (FGDC) as National Trail Data Standards. Interagency data exchange information for any additional relevant ITDS attributes specific to NHTs, known by the personal responsibility of the ITDS developer, is a part of public information and will be reviewed.

Info? Access the ITDS and find out more at <http://www.fs.fed.gov/itds/>

Trail System • County • State • Congressional District • etc.

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Data Attributes

ITDS attributes are listed below by functional category. For complete attribute definitions, corresponding values and data structures, refer to the database questionnaire.

Basic Trail Information:	
Trail Name	Trail System
Trail Number	Interagency Identification Code (Applicable)
Trail Length	Stated Surface (If Applicable)
Trail Status	
Trail Administrative Unit & Location:	
Admin Org	Jurisdiction
Managing Org	Municipality
Congressional District	State
County	
Trail Management and Use:	
Accessibility Status	Primary Trail Maintainer
Designated Use	Prohibited Use
Land Use Plan	Trail System
Managed Use	Trail Class
Medical Personnel	Trail System
Trail Management Considerations:	
Historic Significance	Rights-of-Way
National Trail Designation	Special Management
Trail Conditions & Cost:	
Cost Annual Cycle Maintenance	Cost Improvement Contribution
Cost Annual Cycle Operation	Cost Last Updated
Cost Deferred Maintenance	Trail Condition

NHT and/or NHTA Basic Information: (Applicable only to National Historic and Scenic Trails)

NHT/NHTA Trail Administration	Water Facility Type
NHT/NHTA Media Center Name	

Range Resource Information: (Applicable only to NHT trails associated with public lands resources)

NHT Auto-Trail Surface	NHT Site Name
NHT Certification Status	NHT Site Number
NHT Condition Category	NRHP Criteria
NHT High Potential Region	NRHP Priority Category
NHT High Potential Site	Type of Route
NHT Public Use Segment	Type of Role
NHT Public Use Site	



2009 FS Trails Budget

- National - \$75 million
- Southern Region - \$6.8 million
- NF in Florida - \$524,000
- FNST - \$1.5 million



USFS Trail Program Priorities

- Implement Travel Management Rule
- Foster new and expand existing trail partnerships
- Trail data clean up: Trail Inventory, TMOs, TRACS



Work Plan

Project Header

Name: CMTL-IT Improve Transportation System - Trails Non-FNST
 Description: Improve transportation system, trails, non-FNST
 National Goal: 0 - None
 Objective: 0.0.0 - None
 Leader: Billy Aaron
 Unit Priority: Yes
 Approved: Yes
 Stewardship Contract?: No

Fiscal Year: 2008
 Unit: NFS IN FLORIDA
 Status:

Project Totals

Total Personnel Costs:	\$289,162
Total Fleet Cost:	\$29,028
Total Other Cost:	\$65,250
Total Project Cost:	\$383,440

Personnel

Personnel	Rate/day	CMTL	Total Days	Total
AMERT TRACY	\$272.00	\$5,440	20	\$5,440
BECKER JAMES	\$375.00	\$11,250	30	\$11,250
CARTER GERALD	\$283.00	\$1,415	5	\$1,415
ELLIS CATHLEEN	\$335.00	\$27,470	82	\$27,470
GREEN KARL	\$275.00	\$5,500	20	\$5,500
HARRISON DORIS	\$189.00	\$1,512	8	\$1,512
Total		\$289,162	943	\$289,162

Fleet

Fleet	FOR Rate/Month	Months	Use Rate	Use Units	CMTL	Total
2845 - COMPACT PIU EXT. CAB	\$200	12	\$2,200/MILE	5,000	\$3,500	\$3,500
4002 - DUMP TRUCK 4XC	\$455	4	\$1,820/MILE	1,000	\$2,540	\$2,540
4005 - TRACTOR WHEELED	\$219	12	\$2,628/MILE	200	\$4,296	\$4,296
6605 - COMPACT EXT CAB PU	\$300	3	\$900/MILE	3,000	\$1,050	\$1,050
7443 - PINTELE HOOK TRAILER	\$164	4	\$656/MILE	0	\$656	\$656
7696 - 4X4 EXT CAB FULLSIZE	\$250	12	\$3,000/MILE	20,000	\$9,200	\$9,200
7716 - 4 WHEELER OFF ROAD	\$162	12	\$1,944/MILE	500	\$1,944	\$1,944
7774 - HONDA 4X4 ATV	\$163	12	\$1,956/MILE	500	\$1,944	\$1,944
Total					\$29,028	\$29,028

Other Resources

Other Resources	Units Needed	CMTL	Total
04 Misc supplies	1 EACH	\$2,000	\$2,000
04 Signs	1 EACH	\$3,683	\$3,683
12 Route Designation-Traylor ANF (#178482)	1 EACH	\$20,000	\$20,000
Total		\$65,250	\$65,250

Activities

CMTL
 Job Code: CMTL05

Activity Name	Allocated Cost
CMTL-IT	\$383,440
BLI Total	\$383,440
Activity Total	\$383,440
Balance	\$0

Accomplishments

CMTL	Planned	Actual
CMTL-IT	0.0	0.0
0-imp-std	0.0	0.0

Used to track budget and year-long allocations



Handouts and forms

sites.google.com/site/jimrectrails

coming soon to:

www.fs.fed.us/r3/measure

