Trail Fundamentals
and
Trail Management Objectives

Training Reference Package

Updated 10/16/2008

Contents

Trail Fundamentals

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

Trail Fundamentals are five concepts that are the cornerstones of Forest Service trail management:

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

Identify the five Trail Fundamentals for each National Forest System (NFS) trail or trail segment based on applicable land management plan direction, travel management decisions, trail-specific decisions, and other related direction (FSM 2353.13).

Trail Fundamentals provide an integrated means to consistently record and communicate the intended design and management guidelines for trail design, construction, maintenance and use. Before completing documentation for Trail Management Objectives (TMO), TRACS, or applying Trail Fundamentals in trail management, it is essential that their intent is clearly understood.

Trail Type (FSH 2309.18, sec. 14.1)

A category that reflects the predominant trail surface and general mode of travel accommodated by a trail

There are three Trails Types:

Standard/Terra Trail: *A trail that has a surface consisting predominantly of the ground and that is designed and managed to accommodate use on that surface.*

Snow Trail: *A trail that has a surface consisting predominantly of snow or ice and that is designed and managed to accommodate use on that surface.*

Water Trail*: A trail that has a surface consisting predominantly of water (but may include land-based portages) and that is designed and managed to accommodate use on that surface.*

This management concept allows managers to identify trail-specific Design Parameters, management needs, and the cost of managing the trail for particular uses and/or seasons by trail or trail segment.

1. Inventory trails and identify the appropriate Design Parameters, management needs, and management costs for NFS trails using the Trail Types.

2. Identify only one Trail Type per trail.

3. Identify the Trail Type for each NFS trail based on applicable land management plan direction, travel management decisions, trail-specific decisions, and other related direction.

4. Inventory both trails and Trail Types in the Infra Trails Module when two National Forest System trails overlap, for example, when a Snow Trail overlaps a Standard Terra Trail.

Trail Class (FSH 2309.18, sec.14.2)

The prescribed scale of development for a trail, representing its intended design and management standards.

Trail Classes are general categories reflecting trail development scale, arranged along a continuum.

There are five Trail Classes, ranging from the least developed (Trail Class 1) to the most developed (Trail Class 5):

Trail Class 1: Minimally Developed

Trail Class 2: Moderately Developed

Trail Class 3: Developed

Trail Class 4: Highly Developed

Trail Class 5: Fully Developed

Use Trail Classes to inventory NFS trails and to identify the applicable Design Parameters and costs for meeting the National Quality Standards for Trails.

1. Identify only one Trail Class per trail or trail segment.

2. Trail Class descriptors reflect typical attributes of trails in each class. Local deviations from any Trail Class descriptor may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

3. There is a direct relationship between Trail Class and Managed Uses (FHS 2309.18, sec. 14.3): generally, one cannot be determined without consideration of the other.

4. Identify the appropriate Trail Class for each NFS trail or trail segment based on the management intent in the applicable land management plan, travel management decisions, trail-specific decisions, and other related direction. Apply the Trail Class that most closely reflects the management intent for the trail or trail segment, which may or may not reflect the current condition of the trail.

For specifics on each Trail Class, refer to the Trail Class Matrix (FSH 2309.18, sec. 14.2, ex. 01).

Managed Use (FSH 2309.18, sec. 14.3)

A mode of travel that is <u>actively</u> managed and appropriate on a trail, based on its design and management.

1. Managed Use indicates management intent to accommodate a specific use.

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

3. The Managed Uses for a trail are usually a small subset of all the allowed uses on the trail, that is, uses that are allowed unless specifically prohibited. For example, on a trail that is closed to all motorized use but open to all non-motorized use, the Managed Uses could be Hiker/Pedestrian and Pack and Saddle. The allowed uses, however, would also include bicycles and all other non-motorized uses.

4. Identify the Managed Uses for each NFS trail or trail segment based on applicable land management plan direction, travel management decisions, trail-specific decisions, and other related direction.

5. There is a direct relationship between Managed Use and Trail Class: generally, one cannot be determined without consideration of the other. Not all Trail Classes are appropriate for all Managed Uses. For guidance on the potential appropriateness of each Trail Class to each Managed Use, see FSH 2309.18, section 14.3, exhibit 01.

Designed Use (FSH 2309.18, sec 14.4)

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.

1. There is only one Designed Use per trail or trail segment. Although a trail or trail segment may have more than one Managed Use and numerous uses may be allowed, only one Managed Use is identified as the design driver or Designed Use.

2. Determine the Designed Use for a trail or trail segment from the Managed Uses identified for that trail. When making this determination, consider all Managed Uses that occur during all seasons of use of the trail or trail segment. Assess any essential or limiting geometry for the Managed Uses of the trail or trail segment to determine whether any trail-specific adjustments are necessary to the applicable Design Parameters.

    a. In some situations, when there is more than one Managed Use identified for a trail, the Designed Use may be readily apparent. For example, on a trail with Managed Uses of all-terrain vehicle and Motorcycle, all-terrain vehicle use would be the Designed Use because this use requires wider tread widths and has lower tolerances for surface obstacles and maximum trail grades.

    b. In other situations involving more than one Managed Use, the Designed Use may not be readily apparent, as is often the case when there are fewer differences between the applicable sets of Design Parameters than in the example above. For example, on a trail that is actively managed for hiker and pedestrian, pack and saddle, and bicycle use, pack and saddle use would likely be the Designed Use because of the three Managed Uses, pack and saddle use generally has the most limiting design requirements. While the Bicycle Design Parameters are very similar to the Pack and Saddle Design Parameters, the Design Parameters for this trail may need to be adjusted to accommodate bicycles.

Designed Use / Managed Use Types

Hiker / Pedestrian
Pack and Saddle
Bicycle
Motorcycle
All Terrain Vehicle
Four-Wheel Drive Vehicle > 50” in Width
Cross-Country Ski
Snowshoe
Snowmobile
Motorized Watercraft
Non-Motorized Watercraft

Design Parameters (FSH 2309.18, sec. 14.5)

Technical guidelines for the survey, design, construction, maintenance, and assessment of a trail, based on its Designed Use and Trail Class.

1. Design Parameters reflect the design objectives for NFS trails and determine the dominant physical criteria that most define their geometric shape. These criteria include:

   a. Design Tread Width. Design Tread Width is expressed in terms of single lane, double lane, and the minimum tread width on trail structures.

   b. Design Surface. Design Surface is expressed in terms of surface type, protrusions, and obstacles.

   c. Design Grade. Design Grade is expressed in terms of Target Grade, Short Pitch Maximum Grade, and Maximum Pitch Density.

   d. Design Cross Slope. Design Cross Slope is expressed in terms of Target Cross Slope and Maximum Cross Slope.

   e. Design Clearing. Design Clearing is expressed in terms of width, height, and shoulder clearance.

   f. Design Turns. Design Turns are expressed in terms of the turning radius.

2. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, and other factors (for example, mitigation of site-specific safety concerns and adjustments to accommodate other Managed Uses), provided that the deviations are consistent with the general intent of the applicable Trail Class.

3. Identify the Design Parameters for a NFS trail or trail segment based on its Trail Class and Designed Use. For a Design Parameter such as Design Tread Width, Design Clearing Width, and Design Turns that is expressed as a range of values, identify a specific value for each trail or trail segment.

For the complete set of Design Parameters, refer to FSH 2309.18, section 23.11, exhibit 01, through section 23.33, exhibit 01.

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* This management concept / attribute is included in the Federal Trail Data Standards developed by the US Forest Service, National Park Service, Bureau of Land Management and US Fish and Wildlife Service.

Trail Management Objectives

TMO: Setting the Standard

Trail Management Objective (TMOs) are documentation of the intended purpose and management of an NFS trail based on management direction, including access objectives.

Manage each trail to meet the TMOs identified for that trail, based on applicable land management plan direction, travel management decisions, trail-specific decisions, and other related direction, and based on management priorities and available resources. For each NFS trail or NFS trail segment, identify and document its TMOs, including the five Trail Fundamentals, Recreation Opportunity Spectrum classifications, design criteria, travel management strategies, and maintenance criteria. (FSM 2353.12)

Why TMOs?

TMOs are fundamental building blocks for trail management. They synthesize and document, in one convenient place, the management intention for the trail and provide basic reference information for subsequent trail planning, management, condition surveys, and reporting.

The documentation of TMOs for each NFS trail makes good management sense and are a pre-requisite for completing an effective trail condition assessment survey and subsequent prescription for work needed to meet standard

A trail can not be effectively managed or a determination made of what's needed to meet standard until basic questions like these have been answered: What is the purpose of the trail? What type of use is the trail being managed for? What is the intended level of development of the trail? In the past, some trails have been managed based largely on the type or amount of use they were currently getting, without sufficient consideration of the intended use or future trends and needs. This sometimes resulted in managing a trail for a type or level of use that was not compatible with the trail management direction, design, or location. Establishing and communicating the intended TMOs for each system trail is a proactive step that prevents this from occurring.

Developing Effective TMOs

District Rangers are responsible for approving TMOs, unless that responsibility has been reserved by the Forest Supervisor. (FSM 2325.04h)

Each TMO should be approved by a line officer after review and recommendation from the unit trail manager. For districts, it is recommended that the forest planning group and trail coordinator review these objectives prior to district ranger approval. This will ensure that the

objectives for a trail are consistent with the forest plan, district and forest travel management plans, and anticipated future land management actions. This will also ensure consistency between units so that one trail will not be motorized on one district then switch to pack and saddle stock at the district boundary.

TMOs are not static documents. They reflect the management intent and special considerations that are important for effective management of the trail. TMOs should be updated if the management intent for the trail, special considerations, or other factors change.

Instructions and reference material for developing TMOs are provided on the following pages of this section, in applicable sections of the TRACS User Guide, and on the USFS website for Recreation & Heritage Resources Integrated Business Systems (http://fsweb.wo.fs.fed.us/rhwr/ibsc/index.shtml). Review these materials for step-by-step instructions, examples, and basic guidance on documenting TMOs.

Instructions for electronically recording TMOs in Infra Trails are available on the I-Web Net website (http://basenet.fs.fed.us/) and via Infra On-line Help from within the Infra Trails module.

TMO Form

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

Sec.# ____ 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)

ROS/WROS Class (Check one)

Non-Wilderness
- ROS
- ☐ Urban
- ☐ Rural
- ☐ Roaded Modified
- ☐ Roaded Natural
- ☐ Semi-Primitive Motorized
- ☐ Semi-Primitive NonMotorized
- ☐ Primitive

Wilderness
- WROS
- ☐ WROS 1
- ☐ WROS 2
- ☐ WROS 3
- ☐ WROS 4
- ☐ WROS 5
- ☐ WROS 6

Designed Use

(Check one)
- ☐ Hiker / Pedestrian
- ☐ Pack & Saddle
- ☐ Bicycle
- ☐ Motorcycle
- ☐ All Terrain Vehicle (ATV)
- ☐ Four-Wheel Drive Vehicle > 50"
- ☐ _____
- ☐ _____
- ☐ Cross-Country Ski
- ☐ Snowshoe
- ☐ Snowmobile
- ☐ _____
- ☐ Watercraft - NonMotorized
- ☐ Watercraft - Motorized

Design Parameters

(Fill in all that apply)
- ____ Tread Width (inches)
- ____ Target Grade (%)
- ____ Short Pitch Maximum (%) (Up to 200' lengths)
- ____ Target Cross-Slope (%)
- ____ Clearing Width (feet)
- ____ Clearing Height (feet)
- ____ Switchback Radius (feet)
- ____ _____

Target Frequency

Per Year

(Fill in all that apply)
- ____ Trail Opening
- ____ Tread Repair
- ____ Drainage Cleanout
- ____ Logging Out
- ____ Brushing
- ____ Snow Trail Grooming
- ____ Condition Survey
- ____ _____

TRACS TMO Form v5 - Side 1 (10/1/2008) Page ____ of ____

TRACS Trail Management Objectives

Trail Name: _____ **Trail Number:** _____

Travel Management Strategies FSM 2353.19

Managed Use

(Fill in all that apply)*

	From Date (mm/dd)	To Date (mm/dd)
☐ Hiker / Pedestrian		
☐ Pack & Saddle		
☐ Bicycle		
☐ Motorcycle		
☐ All Terrain Vehicle (ATV)		
☐ 4WD Vehicle > 50"		
☐ _____		
☐ _____		
☐ Cross-Country Ski		
☐ Snowshoe		
☐ Snowmobile		
☐ _____		
☐ Watercraft-NonMotorized		
☐ Watercraft - Motorized		

Prohibited Use

(Check if applicable)

	From Date (mm/dd)	To Date (mm/dd)
☐ All Motorized Use		

(Or, fill in all that apply)

☐ Hiker / Pedestrian		
☐ Pack & Saddle		
☐ Bicycle		
☐ Motorcycle		
☐ All Terrain Vehicle (ATV)		
☐ 4WD Vehicle > 50"		
☐ _____		
☐ _____		
☐ Cross-Country Ski		
☐ Snowshoe		
☐ Snowmobile		
☐ _____		
☐ Watercraft - NonMotorized		
☐ Watercraft - Motorized		

Other Use

(Optional: Check any that apply)*

	Accept	Discourage	Eliminate
☐ Hiker / Pedestrian			
☐ Pack & Saddle			
☐ Bicycle			
☐ Motorcycle			
☐ All Terrain Vehicle (ATV)			
☐ 4WD Vehicle > 50"			
☐ _____			
☐ _____			
☐ Cross-Country Ski			
☐ Snowshoe			
☐ Snowmobile			
☐ _____			
☐ Watercraft - NonMotorized			
☐ Watercraft - Motorized			

Special Considerations

(Check any that apply. Underline appropriate clarifier in parenthesis. Provide specifics and reference information below.)

- ☐ Shared System (shared with other system road or trail)
- ☐ 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 _____

TRACS TMO Form v5 - Side 2 (10/1/2008) Page _____ of _____

TRACS Trail Management Objectives

Trail Name: _____ **Trail Number:** _____

Remarks / Reference Information (Continuation Sheet)

(Type notes over this message. To insert spaces between lines of text in Excel, press Alt and Enter.)

TRACS TMO Form v5 - Continuation (10/1/2008) Page _____ of _____

TMO Form

Instructions

Establishing and documenting Trail Management Objectives (TMOs) prior to doing a trail condition survey is essential for getting high quality results— results that will benefit trail management efforts for years to come.

The instructions below explain how to complete each field on the TMO Form. Refer also to the attached TMO Form and TMO Example on the following pages. Additional guidance and TMO reference materials can be found in FSM 2353 and FSH 2309.18, the TRACS User Guide, Infra Trails documentation, and on the USFS Recreation, & Heritage Resources Integrated Business Systems website: http://fsweb.wo.fs.fed.us/rhwr/ibsc/index.shtml

Overall Trail Information

Region / Forest / District: Enter the Region number, Forest name (or number), and District name (or number).

Trail Name & Trail Number: Enter the official trail name and trail number. These should correspond exactly to the Trail Name and Trail Number recorded in Infra Trails. Double-check for correct spelling and use of spaces.

Trail Beginning & Ending Termini: Enter a brief narrative description identifying the location of the beginning and ending trail termini. These should correspond exactly with what is recorded in Infra Trails.

Beginning & Ending Mileposts: Enter the beginning milepost or measure point, and the ending milepost for the trail. These should correspond exactly with what is recorded in Infra Trails.

Trail Inventory Length: Enter the length of the trail in miles. This mileage should match what is recorded in Infra Trails. Mileage accuracy recorded on the TMO should correspond to the method of collection (Trail Mileage Source):

- ✓ Wheel: If the length was wheeled with a cyclometer, use three decimal places (i.e.3.641). [Note: 0.001 miles equals approx. 5 feet]
- ✓ GPS: If the length was collected by GPS, use two decimal places (i.e. 3.64).
- ✓ Map or Unknown: If the actual length is unknown, or was determined by cartographic feature file (CFF) or by vehicle, use no more than one decimal place of accuracy (i.e. 3.6).

Trail Mileage Source: Check the box that corresponds to the source of the mileage above. This is the mileage metadata for reference.

TMO Trail Section

Some trails may have more than one set of objectives. Normally this occurs when a TMO variable changes along distinct segments of the trail, such as between junctions or destinations. Examples can include changes in Trail Class, ROS, Design Parameters, or Prohibited Uses.

If applicable, use the TMO Trail Section block to identify multiple TMOs by trail section. If not applicable, leave this section blank.

Section #: Enter a number or letter to sequentially identify the trail section and corresponding TMO (i.e. Segment #: 1, 2, 3, etc.).

Section Beginning & Ending Termini: Enter a brief narrative description identifying the location of the beginning and ending termini for this trail segment.

Section Beginning & Ending Milepost: Enter the beginning milepost or measure point, and the ending milepost for this trail segment.

Designed Use Objectives

Trail Type: *A category that reflects the predominant trail surface and general mode of travel accommodated by a trail*

The Trail Type differentiates between the three basic kinds of trails: Standard Terra Trail, Snow Trail, or Water Trail. Each Trail Type is stored in the Infra database as a separate record, even when, for example, a Snow Trail mostly or totally overlaps a Standard/Terra Trail.

- ✓ Assign one Trail Type for the trail.

Trail Class: *The prescribed scale of development for a trail, representing its intended design and management standards.*

The National Trail Management Classes are outlined in the National Trails Management Class Matrix (.FSH 2309.18, sec. 14.2, ex. 01).

- ✓ Assign the most appropriate Trail Class for the trail or trail segment. If more than one Trail Class is assigned to the trail, identify each Trail Class by individual trail segment (see TMO Trail Section above).

ROS/WROS Class: The Recreational Opportunity Spectrum (ROS) class has likely been assigned to the area by the forest plan and helps ensure the transportation system is managed accordingly. ROS and Wilderness ROS (WROS) classes are mutually exclusive.

- ✓ Locate and refer to the forest ROS and/or Wilderness classification maps.
- ✓ Assign the appropriate ROS/WROS to this segment of the trail. If multiple ROS/WROS classes exist along the trail, consider either segmenting the trail or using the dominant class (see TMO Trail Section above).

Note: Pending finalization of nationally standardized definitions for WROS categories, refer to regional protocols for WROS definitions, with WROS 1 representing the most pristine and WROS 5 representing the most modified end of the WROS spectrum. The WROS 6 category can be used for Other.

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.*

The Designed Use must be identified for each trail or trail segment. The Designed Use identifies the single use or limiting factor that drives technical Design Parameters for the trail (i.e. Design Tread Width, Design Grade, Design Clearing, etc.). The Designed Use is necessary to establish the trail's geometric design standards from which the trail is designed, constructed, operated, and maintained. While several Managed Uses may occur on the trail, there is only one Designed Use for any given trail or trail segment.

For an expanded explanation of Designed Use, refer to FSH 2309.18, section 14.4.

✓ Select only one Designed Use per trail or trail segment

Design Parameters: *Technical guidelines for the survey, design, construction, maintenance, and assessment of a trail, based on its Designed Use and Trail Class.*

Design Parameters reflect the design objectives for NFS trails and determine the dominant physical criteria that most define their geometric shape.

For each combination of Designed Use and Trail Class, there is a corresponding set of nationally established Design Parameters. These nationally established Design Parameters (FSH 2309.19, section 23.11 through section 23.33) should be used as a basis for determining specific Design Parameters for a trail or trail segment. Additional design criteria are also important, such as back slope angle for example, but are not included in the national Design Parameters as they tend to be very site-specific and require sound engineering judgment to define.

Some of the national Design Parameters are presented as specific values or narrative descriptions, while others are presented as an appropriate range of values. For those values presented as numeric ranges, a trail-specific value that falls within the range should be identified and recorded on the TMO form. For example, on a Hiker/Pedestrian Trail Class 4, the nationally established Design Tread Width for non-wilderness segments is listed as 24 to 60. The trail-specific Design Tread Width, however, should be recorded as a specific value appropriate for the trail (i.e. 48 inches).

Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, and other factors (for example, mitigation of site-specific safety concerns and adjustments to accommodate other Managed Uses), provided that the deviations are consistent with the general intent of the applicable Trail Class.

- ✓ Assign a specific value for each Design Parameter variable listed. This is not intended to be an all-encompassing list of specifications, but a list of only the dominant criteria that most define the geometric shape of the trail.
- ✓ Footnote any trail-specific deviations from the national Design Parameters in the corresponding Design Parameter field, and explain or justify the deviation in the Remarks section of the TMO.
- ✓ Add any additional Design Parameter factors and corresponding values that are deemed important to this specific segment of trail and are necessary for achieving the trail objectives.

Target Frequency: Target Frequency indicates how often a routine task should be completed in order to maintain the trail to standard. Each trail requires a recurring interval for routine maintenance tasks in order to keep the trail functional, stable and useable. For example, brush grows at a certain rate and to keep a trail operational, the brush must be cut at fairly regular intervals. These intervals, which vary by trail and by task, are generally site or area-specific and require local experience to define.

- ✓ For the applicable tasks, define the maintenance interval that best reflects the frequency necessary to keep this trail or trail segment to standard. Any period within that interval should be considered "to standard".
- ✓ The interval is expressed in years.

Examples:

Task:	Frequency:	Recorded As:
Trail Opening	once every year	1.0
Brushing	once every 3 years	0.33
Logging Out	two times per year	2.0

Travel Management Strategies

Travel Management Strategies are very important for effective and efficient trail management. Establishing Travel Management Strategies for major trail uses helps the manager balance the needs of conflicting uses, guides the manager on operational tradeoffs, and assist maintenance crews to efficiently target maintenance efforts to only necessary tasks. This section of the TMO form documents basic information that should also be recorded in the Access and Travel Management (ATM) portion of Infra Trails.

Managed Use: *A mode of travel that is actively managed and appropriate on a trail, based on its design and management*

Managed Use indicates a management intent to accommodate a specific use. Accommodating the Managed Use frequently results in user-specific trail maintenance and/or signing needs and costs.

- ✓ Record each use that is actively managed on the trail or trail segment. There may be more than one Managed Use per trail or trail segment.
- ✓ For each Managed Use, document the dates during which that use is actively managed for that use. If there is more than one season of use for a particular Managed Use, record that using the blank space provided under the list of Managed Uses.

Managed Season of Use (To/From): The Managed Season of Use specifically defines the period of the time that the trail is available and managed in a safe and sufficient state for the defined user. It is intended to bracket the times that the Forest is responsible for providing that opportunity.

Examples:

- One obvious example would be when a Standard Terra Trail is covered by snow and outside of the Managed Season of Use. During this time, the Forest does not intend to provide an accessible tread as this would require snow removal and is not part of the managed trail opportunity. Conversely, during the Managed Season of Use, the Forest intends to maintain the accessible tread in a safe and functional condition.
- A less obvious example would be if the trail has a Hiker/Pedestrian Travel Management Strategy of Encourage with a Managed Season of Use from March 1 to November 15. In this case, the Forest would be responsible for providing stream crossings during high water in June (i.e. trail bridges). Changing the Managed Season of Use for the same example to June 30 to November 15, thus bypassing the June run-off, would alleviate this conflict and clearly define management expectations.

Prohibited Use: *Mode of travel prohibited by official legal order*.

- ✓ Record any use that is prohibited by an official prohibition or closure order.
- ✓ Document the dates during which the use is prohibited.
- ✓ Footnote and cite the specific CFR under Remarks / Reference Information.

Other Use: This section is provided to document additional trail-specific information and Travel Management Strategies as needed.

- ✓ If applicable, record other Travel Management Strategies for the trail that were not captured under Managed Use or Prohibited Use. Check whether the use is Accepted (allowed, while not actively managed for), Discouraged, or Eliminated.

Special Considerations

Use this section to identify any additional considerations that trail managers, design, construction or maintenance personnel should be aware of.

- ✓ Check any applicable special consideration for the trail or trail segment, underlining the appropriate clarifier shown in parenthesis.
- ✓ Footnote the consideration, and provide details and/or reference for corresponding direction or decision documents under Remarks / Reference Information.

Remarks / Reference Information

Use this area to provide additional information or clarification, or to cite reference decisions and materials related to information documented earlier in the TMO. When clarifying information documented in previous sections of the TMO, it is recommended that a footnote be added next to the TMO entry, followed by a footnoted explanation in the Remarks / Reference section.

Example:

Footnoted Items in TMO Sections:

Design Parameters
Basic Tread Width, inches | 24" [1]

Maintenance Frequency
Trail Opening | 1 [2]

Special Considerations
T&E or Sensitive Species Present | X [3]

Footnote Explanations in Remarks:

Remarks / Reference Information

[1] Tread width exceptions allowed at existing wood trail structures.

[2] Complete annual Trail Opening by 6/15.

[3] Goose grass sedge, sensitive plant, located in 1st mile of trail, refer to 3/15/1999 BE for Smith Ridge Trail for mitigation specifications.

Line Officer Approval

District Rangers are responsible for approving TMOs, unless that responsibility has been reserved by the Forest Supervisor (FSM 2353.04j).

Having the line officer approve Trail Management Objectives is essential. The TMO pulls together and documents management direction and expectations for the trail. A documented, approved TMO provides the trail manager, trail technicians, and trail maintenance crews with the key tool they need to confidently work on the trail without having to second-guess operational and maintenance choices.

The TMO establishes the base standards against which trail condition surveys and prescriptions are measured and completed. It also ensures a management framework of continuity and consistency over time and through personnel changes. Succinctly put, the TMO pulls it all together.

TMO Example 1

TRACS Trail Management Objectives

Region: 1 Forest: Gallatin District: 011101 Big Timber

Trail Name: Sweet Grass Trail Trail Number: 122

Trail Beginning Termini: West Boulder Trailead (# 12305) Beg. Milepost: 0.000

Trail Ending Termini: Continental Divide NST End. Milepost: 10.700

Trail Inventory Length: 10.700 Miles Trail Mileage Source: [X] Wheel [ ] GPS [ ] Map [ ] Unknown

TMO Trail Section

Sec.# Section Beg. Termini: Beg. Milepost:

Section End. Termini: End. Milepost:

Designed Use Objectives

Trail Type (Check one)

- [X] Standard Terra Trail
- [ ] Snow Trail
- [ ] Water Trail

Trail Class (Check one)

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

ROS/WROS Class (Check one)

ROS (Non-Wilderness)	WROS (Wilderness)
[ ] Urban	[ ] WROS 1
[ ] Rural	[ ] WROS 2
[ ] Roaded Modified	[ ] WROS 3
[X] Roaded Natural	[ ] WROS 4
[ ] Semi-Primitive Motorized	[ ] WROS 5
[ ] Semi-Primitive NonMotorized	[ ] WROS 6
[ ] Primitive	

Designed Use

(Check one)

- [ ] Hiker / Pedestrian
- [X] 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)

48	Tread Width (inches)
10	Grade: Target Range (%) (>80% of TMO segment)
15	Grade: Short Pitch Max (%) (up to 200' lengths)
5	Cross-Slope (%)
8	Clearing Width (feet)
8	Clearing Height (feet)
6	Switchback Radius (feet)
	_____

Target Frequency Per Year

(Fill in all that apply)

1	Trail Opening
0.5	Tread Repair
0.5	Drainage Cleanout
0.5	Logging Out
0.5	Brushing
	Snow Trail Grooming
0.2	Condition Survey
	_____

TRACS TMO Form v4.2 - Side 1 (12/5/2006) Page 1 of 2

TRACS Trail Management Objectives

Trail Name: Sweet Grass Trail **Trail Number:** 122

Travel Management Strategies FSM 2353.19

Managed Use

(Fill in all that apply)*

		From Date (mm/dd)	To Date (mm/dd)
X	Hiker / Pedestrian	5/1	10/31
X	Pack & Saddle	5/1	10/31
	Bicycle		
	Wheelchair		
	Motorcycle		
	All Terrain Vehicle (ATV)		
	_____		
	Cross-Country Ski		
	Snowshoe		
	Dog Sled		
	Snowmobile		
	_____		
	Watercraft-NonMotorized		
	Watercraft - Motorized		

Prohibited Use

(Check if applicable)

		From Date (mm/dd)	To Date (mm/dd)
	All Motorized Use		

(Or, fill in all that apply)

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

Other Use

(Optional: Check any that apply)*

		Accept	Discourage	Eliminate
	Hiker / Pedestrian			
	Pack & Saddle			
	Bicycle			
	Wheelchair			
	Motorcycle*			
	All Terrain Vehicle (ATV)*			
	_____			
	Cross-Country Ski			
	Snowshoe			
	Dog Sled			
	Snowmobile			
	_____			
	Watercraft - NonMotorized			
	Watercraft - Motorized			

Special Considerations

(Check any that apply. Underline appropriate clarifier in parenthesis. Provide specifics and reference information below.)

- Shared System (shared with other system road or trail)
- 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: Grant Marnier Signature: Grant Marnier

Title: District Ranger Date: 1/15/2007

TRACS TMO Form v4.2 - Side 2 (12/5/2006) Page 2 of 2

TMO Example 2

TRACS Trail Management Objectives

Region: 1 **Forest:** Gallatin **District:** 011101 Big Timber

Trail Name: Sweet Grass X-Ski Trail **Trail Number:** Sno-122

Trail Beginning Termini: West Boulder Trailead (# 12305) **Beg. Milepost:** 0.000

Trail Ending Termini: Dead End **End. Milepost:** 2.870

Trail Inventory Length: 2.870 Miles **Trail Mileage Source:** [X] Wheel [ ] GPS [ ] Map [ ] Unknown

TMO Trail Section

1 Sec.#

Section Beg. Termini: West Boulder Trailhead **Beg. Milepost:** 0.000

Section End. Termini: Wilderness Boundary **End. Milepost:** 2.260

Designed Use Objectives

Trail Type (Check one)

- [ ] Standard Terra Trail
- [X] Snow Trail
- [ ] Water Trail

Trail Class (Check one)

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

ROS/WROS Class (Check one)

ROS (Non-Wilderness)	WROS (Wilderness)
[ ] Urban	[ ] WROS 1
[ ] Rural	[ ] WROS 2
[ ] Roaded Modified	[ ] WROS 3
[X] Roaded Natural	[ ] WROS 4
[ ] Semi-Primitive Motorized	[ ] WROS 5
[ ] Semi-Primitive NonMotorized	[ ] WROS 6
[ ] Primitive	

Designed Use

(Check one)

- [ ] Hiker / Pedestrian
- [ ] Pack & Saddle
- [ ] Bicycle
- [ ] Wheelchair
- [ ] Motorcycle
- [ ] All Terrain Vehicle (ATV)
- [X] Cross-Country Ski
- [ ] Snowshoe
- [ ] Dog Sled
- [ ] Snowmobile
- [ ] Watercraft - NonMotorized
- [ ] Watercraft - Motorized

Design Parameters

(Fill in all that apply)

72"	Tread Width (inches)
10%	Grade: Target Range (%) (>80% of TMO segment)
15%	Grade: Short Pitch Max (%) (up to 200' lengths)
5%	Cross-Slope (%)
8'	Clearing Width (feet)
8'	Clearing Height (feet)
NA	Switchback Radius (feet)

Target Frequency Per Year

(Fill in all that apply)

1 [1]	Trail Opening
NA	Tread Repair
0.5 [1]	Drainage Cleanout
0.5 [1]	Logging Out
0.5 [1]	Brushing
9	Snow Trail Grooming
0.2	Condition Survey

TRACS TMO Form v4.2 - Side 1 (12/5/2006) Page 1 of 4

TRACS Trail Management Objectives

Trail Name: Sweet Grass X-Ski Trail **Trail Number:** Sno-122

Travel Management Strategies FSM 2353.13

Managed Use

(Fill in all that apply)*

		From Date (mm/dd)	To Date (mm/dd)
	Hiker / Pedestrian		
	Pack & Saddle		
	Bicycle		
	Wheelchair		
	Motorcycle		
	All Terrain Vehicle (ATV)		
	_____		
X	Cross-Country Ski	12/1	3/31
X	Snowshoe	12/1	3/31
	Dog Sled		
	Snowmobile		
	_____		
	Watercraft-NonMotorized		
	Watercraft - Motorized		

Prohibited Use

(Check if applicable)

		From Date (mm/dd)	To Date (mm/dd)
	All Motorized Use		

(Or, fill in all that apply)

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

Other Use

(Optional: Check any that apply)*

		Accept	Discourage	Eliminate
	Hiker / Pedestrian			
	Pack & Saddle			
	Bicycle			
	Wheelchair			
	Motorcycle*			
	All Terrain Vehicle (ATV)*			
	_____			
	Cross-Country Ski			
	Snowshoe			
	Dog Sled			
	Snowmobile			
	_____			
	Watercraft - NonMotorized			
	Watercraft - Motorized			

Special Considerations

(Check any that apply. Underline appropriate clarifier in parenthesis. Provide specifics and reference information below.)

		Shared System (shared with other road or trail)
		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)
[2]	X	Existing Permit or Agreement (Trail-Specific / Area)
		_____

Remarks / Reference Information

[1] Target task frequency for BMP 0.000 - EMP 2.260 applied to Sweet Grass Trail 122 (standard/terra trail)

[2] Special use permit with Big Timber Cross Country Ski Club to maintain the trail for x-skiing.

Line Officer: Name: Grant Marnier Signature: Grant Marnier

Title: District Ranger Date: 1/15/2007

TRACS Trail Management Objectives

Region: 1 Forest: Gallatin District: 011101 Big Timber

Trail Name: Sweet Grass X-Ski Trail Trail Number: Sno-122

Trail Beginning Termini: West Boulder Trailead(# 12305) Beg. Milepost: 0.000

Trail Ending Termini: Dead End End. Milepost: 2.870

Trail Inventory Length: 2.870 Miles Trail Mileage Source: [X] Wheel [ ] GPS [ ] Map [ ] Unknown

TMO Trail Section

2 Sec.#

Section Beg. Termini: Wilderness Boundary Beg. Milepost: 2.260

Section End. Termini: Dead end End. Milepost: 2.870

Designed Use Objectives

Trail Type (Check one)

- [ ] Standard Terra Trail
- [X] Snow Trail
- [ ] Water Trail

Trail Class (Check one)

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

ROS/WROS Class (Check one)

Non-Wilderness ROS

- [ ] Urban
- [ ] Rural
- [ ] Roaded Modified
- [ ] Roaded Natural
- [ ] Semi-Primitive Motorized
- [ ] Semi-Primitive NonMotorized
- [ ] Primitive

Wilderness WROS

- [ ] WROS 1
- [ ] WROS 2
- [X] WROS 3
- [ ] WROS 4
- [ ] WROS 5
- [ ] WROS 6

Designed Use

(Check one)

- [ ] Hiker / Pedestrian
- [ ] Pack & Saddle
- [ ] Bicycle
- [ ] Wheelchair
- [ ] Motorcycle
- [ ] All Terrain Vehicle (ATV)
- [ ] _____
- [X] Cross-Country Ski
- [ ] Snowshoe
- [ ] Dog Sled
- [ ] Snowmobile
- [ ] _____
- [ ] Watercraft - NonMotorized
- [ ] Watercraft - Motorized

Design Parameters

(Fill in all that apply)

36"	Tread Width (inches)
15%	Grade: Target Range (%) (> 90% of TMO segment)
20%	Grade: Short Pitch Max (%) (up to 200' lengths)
5%	Cross-Slope (%)
4'	Clearing Width (feet)
6'	Clearing Height (feet)
NA	Switchback Radius (feet)
	_____

Target Frequency Per Year

(Fill in all that apply)

1	Trail Opening
0.33	Tread Repair
0.33	Drainage Cleanout
0.33	Logging Out
0.33	Brushing
1	Snow Trail Grooming
0.2	Condition Survey
	_____

TRACS TMO Form v4.2 - Side 1 (12/5/2006) Page 3 of 4

TRACS Trail Management Objectives

Trail Name: Sweet Grass X-Ski Trail **Trail Number:** Sno-122

Travel Management Strategies FSM 2353.13

Managed Use

(Fill in all that apply)		From Date (mm/dd)	To Date (mm/dd)
	Hiker / Pedestrian		
	Pack & Saddle		
	Bicycle		
	Wheelchair		
	Motorcycle		
	All Terrain Vehicle (ATV)		
	_____		
X	Cross-Country Ski	12/1	3/31
X	Snowshoe	12/1	3/31
	Dog Sled		
	Snowmobile		
	_____		
	Watercraft-NonMotorized		
	Watercraft - Motorized		

Prohibited Use

(Check if applicable)		From Date (mm/dd)	To Date (mm/dd)	
X	All Motorized Use	1/1	12/31	1
(Or, fill in all that apply)				
	Hiker / Pedestrian			
	Pack & Saddle			
	Bicycle			
	Wheelchair			
	Motorcycle			
	All Terrain Vehicle (ATV)			
	_____			
	Cross-Country Ski			
	Snowshoe			
	Dog Sled			
	Snowmobile			
	_____			
	Watercraft - NonMotorized			
	Watercraft - Motorized			

Other Use

(Optional: Check any that apply)		Accept	Discourage	Eliminate
	Hiker / Pedestrian			
	Pack & Saddle			
	Bicycle			
	Wheelchair			
	Motorcycle*			
	All Terrain Vehicle (ATV)*			
	_____			
	Cross-Country Ski			
	Snowshoe			
	Dog Sled			
	Snowmobile			
	_____			
	Watercraft - NonMotorized			
	Watercraft - Motorized			

Special Considerations

(Check any that apply. Underline appropriate clarifier in parenthesis. Provide specifics and reference information below.)

		Shared System (shared with other road or trail)
		Accessible per Current Agency Guidelines
2	X	Mechanized Tools or Equipment Prohibited
		T&E or Sensitive Species Present (Plant / Wildlife)
		Heritage Resource Present
		Easement across Non-FS Land (Existing / Needed)
3	X	Existing Permit or Agreement (Trail-Specific / Area)
		_____

Remarks / Reference Information

[1] Motorized use prohibited year-round (CFR...)

[2] Primitive tools only.

[3] Special use permit with Big Timber Cross Country Ski Club to maintain the trail for x-skiing.

Line Officer: Name: Grant Marnier Signature: Grant Marnier

Title: District Ranger Date: 1/15/2007

Official Trail Definitions

USFS Definitions: (36 CFR 212.1)

Trail: *A route 50 inches or less in width or a route over 50 inches wide that is identified and managed as a trail.*

Forest trail: *A trail wholly or partly within or adjacent to and serving the National Forest System that the Forest Service determines is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources.*

National Forest System trail: *A forest trail other than a trail which has been authorized by a legally documented right-of-way held by a State, county, or other local public road authority.*

USFS / NPS / BLM / FWS Interagency Definition:

Defined by the Interagency Trail Data Standards Team in July 2002, the interagency definition is based on and encompasses individual agency definitions of a trail, and includes "standard" trails, National Scenic Trails and National Historic Trails:

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

Clarifier: "Trails provide public access for opportunities of outdoor recreation as well as access to many significant prehistoric and historic sites.

Some portions of historic trails are accessible today, and provide recreational and other benefits, while others, more 'virtual' in nature, provide a cultural and/or historic experience, but are not physically capable of being traversed or accessed. Historic trails can consist of a path, a route, a corridor, a road, a river/stream, etc."

National Quality Standards are national criteria that establish the level of quality in terms of health and cleanliness, resource setting, safety and security, responsiveness, and condition of facilities for National Forest System trails managed at a full-service level.

Apply the National Quality Standards for Trails in planning, constructing, and managing National Forest System trails and related trail projects. (FSH 2353.15)

1. The National Quality Standards for Trails establish desired outcomes for National Forest System trails managed at a full-service level. These standards also form the baseline for estimating the cost of managing NFS trails. The National Quality Standards for Trails consist of five key measures: health and cleanliness, safety and security, condition of facilities, responsiveness, and resource setting.

2. The complete set of National Quality Standards for Trails is contained in FSH 2353.15, exhibit 01.

3. Critical National Quality Standards are identified with an asterisk. If any of these standards is not met, the resulting conditions pose a high probability of immediate and permanent injury to persons or property. If any of the critical standards cannot be met due to budget or other constraints, take action as soon as practicable to correct or mitigate the problem. Corrective or mitigating measures may include closing the trail, portions of the trail, or associated trail structures to public use.

4. Take mitigating steps if conditions, facilities, or services addressed by noncritical standards decline to the point where visitor's health or safety is threatened. Examples include repairing the trail, portions of the trail, or associated trail structure or removing trail structures that are in disrepair and no longer needed.

5. The National Quality Standards for Trails apply to NFS trails and associated trail structures. The National Quality Standards for Trails do not apply to trailheads. Trailheads, which are constructed with the primary purpose of providing visitor amenities, are typically considered developed sites. Trailheads constructed with the primary purpose of resource protection are typically considered concentrated use areas within General Forest Areas.

Key Measure: HEALTH AND CLEANLINESS

1. Visitors are not exposed to human waste along trails.
2. The trail and trailside are free of litter.
3. The trail and trailside are free of graffiti.

Key Measure: RESOURCE SETTING

1. *Effects from trail use do not conflict with environmental laws (such as the Endangered Species Act, National Historic Preservation Act, and Clean Water Act).[1]
2. Resource management adjacent to and along the trail corridor is consistent with ROS objectives and desired conditions of adjacent management areas.
3. Trail opportunities, trail development, and trail management are consistent with Recreation Management System (ROS, SMS, and BBM) objectives and the applicable land management plan.
4. The trail, use of the trail, and trail maintenance do not cause unacceptable damage to other resources.
5. Trail use does not exceed established trail capacity.

Key Measure: SAFETY & SECURITY

1. *Hazards do not exist on or along the trail.[1]
2. Applicable laws, regulations, and special orders are enforced.

Key Measure: RESPONSIVENESS

1. *When a trail is signed as accessible, it meets current agency policy and accessibility guidelines.[1]
2. Information is posted in a clear and professional manner.
3. Visitors are provided opportunities to communicate their expectations for and satisfaction with NFS trails.

Key Measure: CONDITION OF FACILITIES

1. Annual/Routine Maintenance. The trail and its structures are serviceable and in good repair throughout their designed service life.
2. Deferred Maintenance. Trails that are in disrepair due to lack of scheduled maintenance, are in violation of applicable safety codes or other regulatory requirements (such as applicable accessibility guidelines), or are beyond their designed service life are repaired, rehabilitated, replaced, or decommissioned, as appropriate.
3. Capital Improvement. New, altered, or expanded trails meet Forest Service design standards and are consistent with standards and guidelines in the applicable land management plan.

[1] Indicates a Critical National Quality Standard. If it cannot be met, action must be taken as soon as practicable to correct or mitigate the problem. Refer to FSH 2309.18, section 15.

Trail Class Matrix (FSH 2353.142, Exhibit 01)

Trail Classes are general categories reflecting trail development scale, arranged along a continuum. The Trail Class identified for a National Forest System (NFS) trail prescribes its development scale, representing its intended design and management standards.[1] Local deviations from any Trail Class descriptor may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Identify the appropriate Trail Class for each NFS trail or trail segment based on the management intent in the applicable land management plan, travel management decisions, trail-specific decisions, and other related direction. Apply the Trail Class that most closely reflects the management intent for the trail or trail segment, which may or may not reflect the current condition of the trail.

Trail Attributes	Trail Class 1 Minimally Developed	Trail Class 2 Moderately Developed	Trail Class 3 Developed	Trail Class 4 Highly Developed	Trail Class 5 Fully Developed
Tread & Traffic Flow	◆ Tread intermittent and often indistinct. ◆ May require route finding. ◆ Single lane, with no allowances constructed for passing. ◆ Predominantly native materials.	◆ Tread continuous and discernible, but narrow and rough. ◆ Single lane, with minor allowances constructed for passing. ◆ Typically native materials.	◆ Tread continuous and obvious. ◆ Single lane, with allowances constructed for passing where required by traffic volume in places where there is no reasonable opportunity to pass. ◆ Native or imported materials.	◆ Tread wide and relatively smooth, with few irregularities. ◆ Single lane, with allowances constructed for passing where required by traffic volume in places where there is no reasonable opportunity to pass. ◆ Double lane where traffic volume is high and passing is frequent. ◆ Native or imported materials. ◆ May be hardened.	◆ Tread wide, firm, stable, and generally uniform. ◆ Single lane, with frequent turnouts where traffic volume is low to moderate. ◆ Double lane where traffic volume is moderate to high. ◆ Commonly hardened with asphalt or other imported material.
Obstacles	◆ Obstacles common, naturally ocurring, often substantial, and intended to provide increased challenge. ◆ Narrow passages; brush, steep grades, rocks and logs present.	◆ Obstacles may be common, substantial, and intended to provide increased challenge. ◆ Blockages cleared to define route and protect resources. ◆ Vegetation may encroach into trailway.	◆ Obstacles may be common, but not substantial or intended to provide challenge. ◆ Vegetation cleared outside of trailway.	◆ Obstacles infrequent and insubstantial. ◆ Vegetation cleared outside of trailway.	◆ Obstacled not present. ◆ Grades typically < 8%.

10/16/2008

Trail Attributes	Trail Class 1 Minimally Developed	Trail Class 2 Moderately Developed	Trail Class 3 Developed	Trail Class 4 Highly Developed	Trail Class 5 Fully Developed
Constructed Features & Trail Elements	◆ Structures minimal to non-existent. ◆ Drainage typically provided without structures. ◆ Natural fords. ◆ Typically no bridges.	◆ Structures of limited size, scale, and quantity; typically constructed of native materials. ◆ Structures adequate to protect trail infrastructure and resources. ◆ Natural fords. ◆ Bridges as needed for resource protection and appropriate access.	◆ Structures may be common and substantial; constructed of imported or native materials. ◆ Natural or constructed fords. ◆ Bridges as needed for resource protection and appropriate access.	◆ Structures frequent and substantial; typically constructed of imported materials. ◆ Contructed or natural fords. ◆ Bridges as needed for resource protection and user convenience. ◆ Trailside amenities may be present.	◆ Structures frequent or continuous; typically constructed of imported materials. ◆ May include bridges, boardwalks, curbs, handrails, trailside amenities, and similar features.
Signs[2]	◆ Route identification signing limited to junctions. ◆ Route markers present when trail location is not evident. ◆ Regulatory and resource protection signing infrequent. ◆ Destination signing, unless required, generally not present. ◆ Information and interpretive signing generally not present.	◆ Route identification signing limited to junctions. ◆ Route markers present when trail location is not evident. ◆ Regulatory and resource protection signing infrequent. ◆ Destination signing typically infrequent outside wilderness areas; generally not present in wilderness areas. ◆ Information and interpretive signing uncommon.	◆ Route identification signing at junctions and as needed for user reassurance. ◆ Route markers as needed for user reassurance. ◆ Regulatory and resource protection signing may be common. ◆ Destination signing likely outside wilderness areas; generally not present in wilderness areas. ◆ Information and interpretive signs may be present outside wilderness areas.	◆ Route identification signing at junctions and as needed for user reassurance. ◆ Route markers as needed for user reassurance. ◆ Regulatory and resource protection signing common. ◆ Destination signing common outside wilderness areas; generally not present in wilderness areas. ◆ Information and interpretive signs may be common outside wilderness areas. ◆ Accessibility information likely displayed at trailhead.	◆ Route identification signing at junctions and for user reassurance. ◆ Route markers as needed for user reassurance. ◆ Regulatory and resource protection signing common. ◆ Destination signing common. ◆ Information and interpretive signs common. ◆ Accessibility information likely displayed at trailhead.
Typical Recreation Environs & Experience[3]	◆ Natural and unmodified. ◆ ROS: Typically Primitive to Roaded Natural. ◆ WROS: Typically Primitive to Semi-Primitive.	◆ Natural and essentially unmodified. ◆ ROS: Typically Primitive to Roaded Natural. ◆ WROS: Typically Primitive to Semi-Primitive.	◆ Natural and primarily unmodified. ◆ ROS: Typically Primitive to Roaded Natural. ◆ WROS: Typically Semi-Primitive to Transition.	◆ May be modified. ◆ ROS: Typically Semi-Primitive to Rural ◆ WROS: Typically Portal or Transition.	◆ May be highly modified. ◆ Commonly associated with visitor centers or high-use recreation sites. ◆ ROS: Typically Roaded Natural to Urban. ◆ Generally not present in Wilderness areas.

[1] For National Quality Standards for Trails, Potential Appropriateness of Trail Classes for Managed Uses, Design Parameters, and other related guidance, refer to FSM 2353 and FSH 2309.18.

[2] For standards and guidelines on the use of signs and posters on trails, refer to the Sign and Poster Guidelines for the Forest Service (EM-7100-15).

[3] The Trail Class Matrix shows combinations of Trail Class and Recreation Opportunity Spectrum (ROS) or Wilderness Recreation Opportunity Spectrum (WROS) settings that commonly occur, although trails in all Trail Classes may and do occur in all settings. For guidance on the application of the ROS and WROS, refer to FSM 2310 and 2353 and FSH 2309.18.

USFS Trail Classes

Photo Examples

Updated 10/16/2008

The photos below provide visual examples of typical Trail Class scenarios. Remember that Trail Classes are general categories reflecting development scale, arranged along a continuum, with no hard and fast lines drawn between the classes. The photos below can be used as visual aids to assist in consistent application of trail classification.

Trail Class 1

TC1 – Tread: Tread intermittent and indistinct.

TC1 – Obstacles: Obstacles common, naturally occurring, often substantial

TC1 – Constructed Features: Constructed features minimal to non-existent.

TC1 – Signs: Route identification signing limited to junctions. Route markers present when trail location is not evident.

TC1 – Typical Rec. Environment / Experience: Recreation environment natural and unmodified.

Trail Class 2

TC2 – Tread: Tread continuous and discernible, but narrow and rough.

TC2 – Obstacles: Obstacles may be common and substantial. Blockages cleared to define route and protect resource. Vegetation may encroach into trailway.

TC2 – Constructed Features: Structures are of limited size, scale, and quantity.

TC2 – Signs: Route identification signing limited to junctions. Route markers present when location is not evident.

TC2 – Typical Rec. Environment / Experience: Recreation environment natural and essentially unmodified.

Trail Class 3

TC3 – Tread: Tread continuous and obvious.

TC3 – Obstacles: Obstacles may be common. Vegetation cleared outside of trailway.

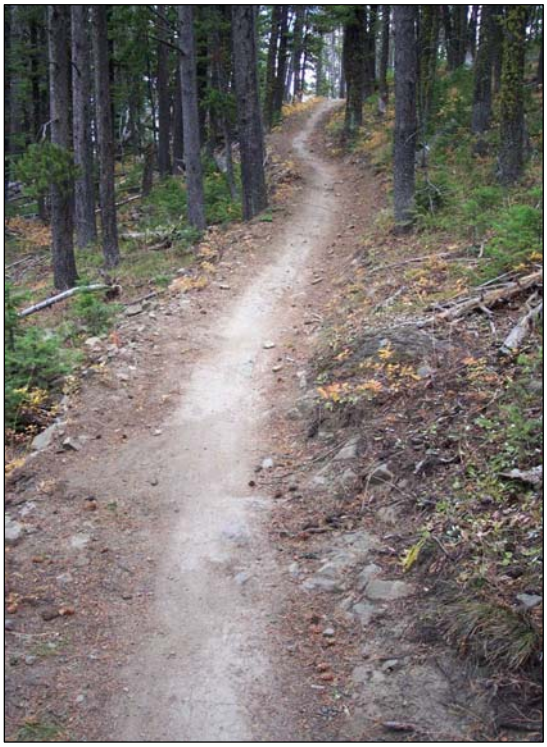
TC3 – Constructed Features: Trail structures (walls, steps drainage, raised trail) may be common and substantial.

TC3 – Signs: Route identification signing at junctions and as needed for user reassurance. Route markers as needed for user reassurance. Destination signing likely outside of wilderness.

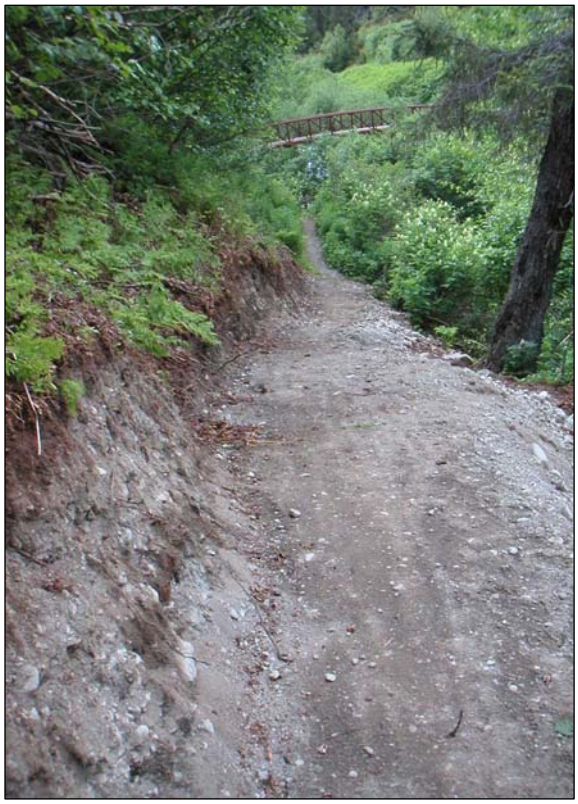
TC3 – Typical Rec. Environment / Experience: Recreation environment natural and primarily unmodified.

Trail Class 4

TC4 – Tread: Tread wide and relatively smooth, with few irregularities.



TC4 – Obstacles: Obstacles infrequent and insubstantial. Vegetation cleared outside of trailway.



TC4 – Constructed Features: Structures frequent and substantial. Trailside amenities may be present.

TC4 – Signs: Wide variety of signs likely present, informational signs likely, interpretive signs possible.

TC4 – Typical Rec. Environment / Experience: Recreation environment may be modified.

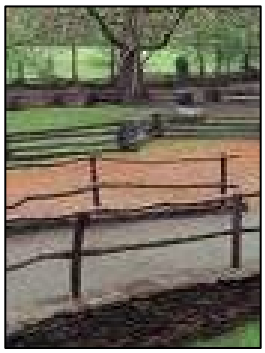
Trail Class 5

TC5 – Tread: Tread wide, firm, stable, and generally uniform. Commonly hardened with asphalt or other imported material.

TC5 – Obstacles: Obstacles not present. Grades typically < 8%.

TC5 – Constructed Features: Structures frequent or continuous; may include bridges, boardwalks, curbs, handrails, trailside amenities, and similar features.

TC5: – Signs: Wide variety of signs present, information and interpretive signs common.



TC5 – Typical Rec. Environment / Experience: Recreation environment may be highly modified.

Design Parameters (FSH 2309.18, Section 23.11, Exhibit 01)

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent[1]. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Designed Use HIKER/PEDESTRIAN		**Trail Class 1**	**Trail Class 2**	**Trail Class 3** [2]	**Trail Class 4** [2]	**Trail Class 5** [2]
Design Tread Width	**Wilderness** (Single Lane)	0" – 12"	6" – 18"	12" – 24" Exception: may be 36" – 48" at steep side slopes	18" – 24" Exception: may be 36" – 48" at steep side slopes	Not applicable
	Non-Wilderness (Single Lane)	0" – 12"	6" – 18"	18" – 36"	24" – 60"	36" – 72"
	Non-Wilderness (Double Lane)	36"	36"	36" – 60"	48" – 72"	72" – 120"
	Structures (Minimum Width)	18"	18"	18"	36"	36"
Design Surface[3]	**Type**	Native, ungraded May be continuously rough	Native, limited grading May be continuously rough	Native, with some on-site borrow or imported material where needed for stabilization and occasional grading Intermittently rough	Native with improved sections of borrow or imported material, and routine grading Minor roughness	Likely imported material, and routine grading Uniform, firm, and stable
	Protrusions	≤ 24" Likely common and continuous	≤ 6" May be common and continuous	≤ 3" May be common, not continuous	≤ 3 " Uncommon, not continuous	No protrusions
	Obstacles (Maximum Height)	24"	14"	10"	8"	No obstacles
Design Grade [3]	**Target Grade**	5% – 25%	5% – 18%	3% – 12%	2% – 10%	2% – 5%
	Short Pitch Maximum	40%	35%	25%	15%	5% FSTAG: 5% – 12%[2]
	Maximum Pitch Density	20% – 40% of trail	20% – 30% of trail	10% – 20% of trail	5% – 20% of trail	0% – 5% of trail

10/16/2008

Designed Use HIKER/PEDESTRIAN		Trail Class 1	Trail Class 2	Trail Class 3 [2]	Trail Class 4 [2]	Trail Class 5 [2]
Design Cross Slope	**Target Cross Slope**	Natural side slope	5% – 20%	5% – 10%	3% – 7%	2% – 3% (or crowned)
	Maximum Cross Slope	Natural side slope	25%	15%	10%	3%
Design Clearing	**Height**	6'	6' – 7'	7' – 8'	8' – 10'	8' – 10'
	Width	≥ 24" Some vegetation may encroach into clearing area	24" – 48" Some light vegetation may encroach into clearing area	36" – 60"	48" – 72"	60" – 72"
	Shoulder Clearance	3" – 6"	6" – 12"	12" – 18"	12" – 18"	12" – 24"
Design Turn	**Radius**	No minimum	2' – 3'	3' – 6'	4' – 8'	6' – 8'

[1] For definitions of Design Parameter attributes (e.g., Design Tread Width and Short Pitch Maximum) see FSH 2309.18, section 05.

[2] Trail Classes 3, 4, and 5, in particular, have the potential to provide accessible passage. If assessing or designing trails for accessibility, refer to the Forest Service Trail Accessibility Guidelines (FSTAG) for more specific technical provisions and tolerances (FSM 2350).

[3] The determination of trail-specific Design Grade, Design Surface, and other Design Parameters should be based upon soils, hydrological conditions, use levels, erosion potential, and other factors contributing to surface stability and overall sustainability of the trail.

Design Parameters (FSH 2309.18, Section 23.12, Exhibit 01)

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent[1]. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Designed Use **PACK AND SADDLE**		**Trail Class 1**	**Trail Class 2**	**Trail Class 3**	**Trail Class 4**	**Trail Class 5**
Design Tread Width	**Wilderness** (Single Lane)	Typically not designed or actively managed for equestrians, although use may be allowed	12” – 18” May be up to 48” along steep side slopes 48” – 60” or greater along precipices	18” – 24” May be up to 48” along steep side slopes 48” – 60” or greater along precipices	24” May be up to 48” along steep side slopes 48” – 60” or greater along precipices	Typically not designed or actively managed for equestrians, although use may be allowed
	Non-Wilderness (Single Lane)		12” – 24” May be up to 48” along steep side slopes 48” – 60” or greater along precipices	18” – 48” 48” – 60” or greater along precipices	24” – 96” 48” – 60” or greater along precipices	
	Non-Wilderness (Double Lane)		60”	60” – 84”	84” – 120”	
	Structures (Minimum Width)		Other than -bridges: 36” Bridges without handrails: 60” Bridges with handrails: 84” clear width	Other than bridges: 36” Bridges without handrails: 60” Bridges with handrails: 84” clear width	Other than bridges: 36” Bridges without handrails: 60” Bridges with handrails: 84” clear width	
Design Surface[2]	**Type**		Native, with limited grading May be frequently rough	Native, with some on-site borrow or imported material where needed for stabilization and occasional grading Intermittently rough	Native, with improved sections of borrow or imported material and routine grading Minor roughness	
	Protrusions		≤ 6” May be common and continuous	≤ 3” May be common, not continuous	≤ 3” Uncommon, not continuous	
	Obstacles (Maximum Height)		12”	6”	3”	

10/16/2008

Designed Use PACK AND SADDLE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Grade [2]	**Target Grade**		5% – 20%	3% – 12%	2% – 10%	
	Short Pitch Maximum		30%	20%	15%	
	Maximum Pitch Density		15% – 20% of trail	5% – 15% of trail	5% – 10% of trail	
Design Cross Slope	**Target Cross Slope**		5% – 10%	3% – 5%	0% – 5%	
	Maximum Cross Slope		10%	8%	5%	
Design Clearing	**Height**		8’ – 10’	10’	10’ – 12’	
	Width		72” Some light vegetation may encroach into clearing area	72” – 96”	96”	
	Shoulder Clearance		6” – 12” Pack clearance: 36” x 36”	12” – 18” Pack clearance: 36” x 36”	12” – 18” Pack clearance: 36” x 36”	
Design Turn	**Radius**		4’ – 5’	5’ – 8’	6’ – 10’	

[1] For definitions of Design Parameter attributes (e.g., Design Tread Width and Short Pitch Maximum) see FSH 2309.18, section 05.

[2] The determination of trail-specific Design Grade, Design Surface, and other Design Parameters should be based upon soils, hydrological conditions, use levels, erosion potential, and other factors contributing to surface stability and overall sustainability of the trail.

Design Parameters (FSH 2309.18, Section 23.13, Exhibit 01)

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent[1]. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Designed Use **BICYCLE**		**Trail Class 1**	**Trail Class 2**	**Trail Class 3**	**Trail Class 4**	**Trail Class 5**
Design Tread Width	**Single Lane**	6" – 12"	12" – 24"	18" – 36"	24" – 48"	36" – 60"
	Double Lane	36" – 48"	36" – 48"	36" – 48"	48" – 84"	72" – 120"
	Structures (Minimum Width)	18"	18"	36"	48"	60"
Design Surface[2]	**Type**	Native, ungraded May be continuously rough Sections of soft or unstable tread on grades < 5% may be common and continuous	Native, with limited grading May be continuously rough Sections of soft or unstable tread on grades < 5% may be common	Native, with some on-site borrow or imported material where needed for stabilization and occasional grading Intermittently rough Sections of soft or unstable tread on grades < 5% may be present, but not common	Native, with improved sections of borrow or imported materials and routine grading Stable, with minor roughness	Likely imported material and routine grading Uniform, firm, and stable
	Protrusions	≤ 24" Likely common and continuous	≤ 6" May be common and continuous	≤ 3" May be common, but not continuous	≤ 3" Uncommon and not continuous	No protrusions
	Obstacles (Maximum Height)	24"	12"	10"	8"	No obstacles
Design Grade [2]	**Target Grade**	5% – 20%	5% – 12%	3% – 10%	2% – 8%	2% – 5%
	Short Pitch Maximum	30% 50% on downhill segments only	25% 35% on downhill segments only	15%	10%	8%
	Maximum Pitch Density	20% – 30% of trail	10% – 30% of trail	10% – 20% of trail	5% – 10% of trail	0% – 5% of trail

10/16/2008

Designed Use BICYCLE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Cross Slope	**Target Cross Slope**	5% – 10%	5% – 8%	3% – 8%	3% – 5%	2% – 3%
	Maximum Cross Slope	10%	10%	8%	5%	5%
Design Clearing	**Height**	6’	6’ – 8’	8’	8’ - 9’	8’ - 9’
	Width	24” – 36” Some vegetation may encroach into clearing area	36” – 48” Some light vegetation may encroach into clearing area	60” – 72”	72” – 96”	72” – 96”
	Shoulder Clearance	0’ – 12”	6” – 12”	6” – 12”	6” – 18”	12” – 18”
Design Turn	**Radius**	2’ – 3’	3’ – 6’	4’ – 8’	8’ – 10’	8’ - 12’

[1] For definitions of Design Parameter attributes (e.g., Design Tread Width and Short Pitch Maximum) see FSH 2309.18, section 05.

[2] The determination of trail-specific Design Grade, Design Surface, and other Design Parameters should be based upon soils, hydrological conditions, use levels, erosion potential, and other factors contributing to surface stability and overall sustainability of the trail.

Design Parameters (FSH 2309.18, Section 23.21, Exhibit 01)

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent[1]. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Designed Use MOTORCYCLE		**Trail Class 1**	**Trail Class 2**	**Trail Class 3**	**Trail Class 4**	**Trail Class 5**
Design Tread Width	**Single Lane**	Typically not designed or actively managed for motorcycles, although use may be allowed	8" – 24"	18" – 36"	24" – 48"	Typically not designed or actively managed for motorcycles, although use may be allowed
	Double Lane		48"	48 " – 60"	60" – 72"	
	Structures (Minimum Width)		36"	48"	48"	
Design Surface[2]	**Type**		Native, with limited grading May be continuously rough Sections of soft or unstable tread on grades < 5% may be common and continuous	Native, with some onsite borrow or imported material where needed for stabilization and occasional grading Intermittently rough Sections of soft or unstable tread on grades < 5% may be present	Native, with imported materials for tread stabilization likely and routine grading Minor roughness Sections of soft tread not common	
	Protrusions		≤ 6" May be common and continuous	≤ 3" May be common, but not continuous	≤ 3" Uncommon and not continuous	
	Obstacles (Maximum Height)		18" May be common or placed for increased challenge	12" Common and left for increased challenge	3" Uncommon	
Design Grade[2]	**Target Grade**		10% – 25%	5% – 20%	3% – 10%	
	Short Pitch Maximum		40%	25%	15%	
	Maximum Pitch Density		20% – 40% of trail	15% – 30% of trail	10% – 20% of trail	

10/16/2008

Designed Use MOTORCYCLE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Cross Slope	**Target Cross Slope**		5% – 10%	5% – 8%	3% – 5%	
	Maximum Cross Slope		15%	10%	10%	
Design Clearing	**Height**		6' – 7'	6' - 8'	8' - 10'	
	Width (On steep side-hills, increase clearing on uphill side by 6" – 12")		36" – 48" Some light vegetation may encroach into clearing area	48" – 60"	60" - 72"	
	Shoulder Clearance		6" – 12"	12" – 18"	12" – 24"	
Design Turn	**Radius**		3' – 4'	4' – 6'	5' – 8'	

[1] For definitions of Design Parameter attributes (e.g., Design Tread Width and Short Pitch Maximum) see FSH 2309.18, section 05.

[2] The determination of trail-specific Design Grade, Design Surface, and other Design Parameters should be based upon soils, hydrological conditions, use levels, erosion potential, and other factors contributing to surface stability and overall trail sustainability.

Design Parameters (FSH 2309.18, Section 23.22, Exhibit 01)

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent[1]. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Designed Use **ALL-TERRAIN VEHICLE**		**Trail Class 1**	**Trail Class 2**	**Trail Class 3**	**Trail Class 4**	**Trail Class 5**
Design Tread Width	**Single Lane**	Typically not designed or actively managed for ATVs, although use may be allowed	48” – 60”	60”	60” – 72”	Typically not designed or actively managed for ATVs, although use may be allowed
	Double Lane		96”	96” – 108”	96” – 120”	
	Structures (Minimum Width)		60”	60”	60”	
Design Surface[2]	**Type**		Native, with limited grading May be continuously rough Sections of soft or unstable tread on grades < 5% may be common and continuous	Native, with some onsite borrow or imported material where needed for stabilization and occasional grading Intermittently rough Sections of soft or unstable tread on grades < 5% may be present	Native, with imported materials for tread stabilization likely and routine grading Minor roughness Sections of soft tread uncommon	
	Protrusions		≤ 6” May be common and continuous	≤ 3” May be common, but not continuous	≤ 3” Uncommon and not continuous	
	Obstacles (Maximum Height)		12” May be common or placed for increased challenge	6” May be common and left for increased challenge	3” Uncommon	
Design Grade[2]	**Target Grade**		10% – 25%	5% – 15%	3% – 10%	
	Short Pitch Maximum		35%	25%	15%	
	Maximum Pitch Density		20% – 40% of trail	15% – 30% of trail	10% – 20% of trail	

10/16/2008

Designed Use ALL-TERRAIN VEHICLE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Cross Slope	**Target Cross Slope**		5% – 10%	3% – 8%	3% – 5%	
	Maximum Cross Slope		15%	10%	8%	
Design Clearing	**Height**		6’ – 7’	6’ – 8’	8’ – 10’	
	Width (On steep side hills, increase clearing on uphill side by 6” – 12”)		60” Some light vegetation may encroach into clearing area	60” – 72”	72” – 96”	
	Shoulder Clearance		0” – 6”	6” – 12”	12” – 18”	
Design Turn	**Radius**		6’ – 8’	8’ – 10’	8’ – 12’	

[1] For definitions of Design Parameter attributes (e.g., Design Tread Width and Short Pitch Maximum) see FSH 2309.18, section 05.

[2] The determination of trail-specific Design Grade, Design Surface, and other Design Parameters should be based upon soils, hydrological conditions, use levels, erosion potential, and other factors contributing to surface stability and overall sustainability of the trail.

Design Parameters (FSH 2309.18, Section 23.23, Exhibit 01)

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent[1]. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Designed Use **FOUR-WHEEL DRIVE VEHICLE > 50"**		**Trail Class 1**	**Trail Class 2**	**Trail Class 3**	**Trail Class 4**	**Trail Class 5**
Design Tread Width	**Single Lane**	Typically not designed or actively managed for 4WD Vehicles > 50", although use may be allowed	72" – 84"	72" – 96"	96" – 120"	Typically not designed or actively managed for 4WD Vehicles > 50", although use may be allowed
	Double Lane		16'	16'	16'	
	Structures (Minimum Width)		96"	96"	96"	
Design Surface[2]	**Type**		Native, with limited grading May be continuously rough Sections of soft or unstable tread on grades < 5% may be common and continuous	Native, with some on-site borrow or imported material where needed for stabilization and occasional grading Intermittently rough Sections of soft or unstable tread on grades < 5% may be present	Native, with imported materials for tread stabilization likely and routine grading Minor roughness Sections of soft tread uncommon	
	Protrusions		≤ 12" May be common and continuous	≤ 8" May be common and continuous	≤ 4" May be common and continuous	
	Obstacles (Maximum Height)		36" May be common or placed for increased challenge	24" Common and left for increased challenge	12" Uncommon	
Design Grade[2]	**Target Grade**		10% – 21%	5% – 18%	5% – 12%	
	Short Pitch Maximum		25%	20%	15%	
	Maximum Pitch Density		20% – 30% of trail	10% – 20% of trail	5% – 10% of trail	

10/16/2008

Designed Use FOUR WHEEL DRIVE VEHICLE > 50"		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Cross Slope	**Target Cross Slope**		8% – 15%	5% – 12%	5% – 8%	
	Maximum Cross Slope		15%	12%	8%	
Design Clearing	**Height**		6’ – 8’	6’ – 8’	8’ – 10’	
	Width		72” – 84” Some light vegetation may encroach into clearing area	72” – 96”	96” – 144”	
	Shoulder Clearance		0” – 6”	6” – 12”	12” – 18”	
Design Turn	**Radius**		10’ – 15’	15’ – 20’	20’ – 30’	

[1] For definitions of Design Parameter attributes (e.g., Design Tread Width and Short Pitch Maximum) see FSH 2309.18, section 05.

[2] The determination of trail-specific Design Grade, Design Surface, and other Design Parameters should be based upon soils, hydrological conditions, use levels, erosion potential, and other factors contributing to surface stability and overall sustainability of the trail.

Design Parameters (FSH 2309.18, Section 23.31, Exhibit 01)

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent[1]. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Designed Use **CROSS-COUNTRY SKI**		**Trail Class 1**	**Trail Class 2**	**Trail Class 3**	**Trail Class 4**	**Trail Class 5**
Design Groomed Width	**Single Lane**	Typically not designed or actively managed for cross-country skiing, allow use may be allowed	2' – 4' Typically not groomed	6' – 8' Or width of grooming equipment	8'– 10" Or width of grooming equipment)	Typically not designed or actively managed for cross-country skiing, allow use may be allowed
	Double Lane		6' – 8'	8' – 12'	12' – 16'	
	Structures (Minimum Width)		36"	36"	36"	
Design Grooming and Surface[2]	**Type**		Generally no machine grooming	May receive occasional machine grooming for snow compaction and track setting	Regular machine grooming for snow compaction and track setting	
	Protrusions		No protrusions	No protrusions	No protrusions	
	Obstacles (Maximum Height)		12" Uncommon	8" Uncommon (no obstacles if machine groomed)	No obstacles	
Design Grade[2]	**Target Grade**		5% – 15%	2% – 10%	0% – 8%	
	Short Pitch Maximum		25%	20%	12%	
	Maximum Pitch Density		10% – 20% of trail	5% – 15% of trail	0% – 10% of trail	
Design Cross Slope	**Target Cross Slope**		0% – 10%	0% – 5%	0% – 5%	
	Maximum Cross Slope (For up to 50')		20%	15%	10%	

10/16/2008

Designed Use CROSS-COUNTRY SKI		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Clearing	**Height** (Above normal maximum snow level)		6' – 8'	8' Or height of grooming equipment	8' – 10'	
	Width		24" – 60" Light vegetation may encroach into clearing area	72" – 120"' Light vegetation may encroach into clearing area	96"' – 168" Widen clearing at turns or if increased sight distance needed	
	Shoulder Clearance		0" – 6"	0" – 12"	0" – 24"	
Design Turn	**Radius**		8' – 10'	15' – 20' Or to accommodate grooming equipment	≥ 25'	

[1] For definitions of Design Parameter attributes (e.g., Design Tread Width and Short Pitch Maximum) see FSH 2309.18, section 05.

[2] The determination of trail-specific Design Grades, Design Surface, and other Design Parameters should be based upon soils, hydrological conditions, use levels, erosion potential and other factors contributing to surface stability and overall sustainability of the trail.

Design Parameters (FSH 2309.18, Section 23.32, Exhibit 01)

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent[1]. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Designed Use SNOWSHOE		**Trail Class 1**	**Trail Class 2**	**Trail Class 3**	**Trail Class 4**	**Trail Class 5**
Design Tread Width	**Single Lane**	Typically not designed or actively managed for snowshoe, although use may be allowed	36”	36” – 48”	36’ – 60’	Typically not designed or actively managed for snowshoe, although use may be allowed
	Double Lane		60”	72”	72” – 96”	
	Structures (Minimum Width)		36”	48”	48”	
Design Surface[2]	**Type**		Generally no machine grooming	May receive occasional machine grooming for snow compaction	Likely to receive occasional machine grooming for snow compaction	
	Protrusions		No protrusions	No protrusions	No protrusions	
	Obstacles (Maximum Height)		12” Uncommon	8” Uncommon (no obstacles if machine groomed)	No obstacles	
Design Grade[2]	**Target Grade**		10% – 20%	5% – 15%	0% – 10%	
	Short Pitch Maximum		30%	20%	15%	
	Maximum Pitch Density		5% – 20% of trail	5% – 25% of trail	0% – 10% of trail	
Design Cross Slope	**Target Cross Slope**		0% – 10%	0% – 5%	0% – 5%	
	Maximum Cross Slope		20%	15%	10%	

10/16/2008

Designed Use SNOWSHOE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Clearing	**Height** (Above normal maximum snow level)		6' – 8'	8'	8' – 10'	
	Width		48" Some light vegetation may encroach into clearing area	72" Light vegetation may encroach into clearing area	72" – 96"	
	Shoulder Clearance		0"	12"	12" – 24"	
Design Turn	**Radius**		3' – 4'	3' – 6'	4' – 8' Or to accommodate grooming equipment	

[1] For definitions of Design Parameter attributes (e.g., Design Tread Width and Short Pitch Maximum) see FSH 2309.18, section 05.

[2] The determination of trail-specific Design Grade, Design Surface, and other Design Parameters should be based upon soils, hydrological conditions, use levels, erosion potential, and other factors contributing to surface stability and overall sustainability of the trail.

Design Parameters (FSH 2309.18, Section 23.33, Exhibit 01)

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent[1]. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Designed Use SNOWMOBILE		**Trail Class 1**	**Trail Class 2**	**Trail Class 3**	**Trail Class 4**	**Trail Class 5**
Design Tread Width	**Single Lane**	Typically not designed or actively managed for snowmobiles, although use may be allowed	4' – 6' Typically not groomed	6' – 8' Or width of grooming equipment On turns with tight radius, increase groomed width to ≥ 10'	8' – 10' Or minimum width of grooming equipment On turns with tight radius, increase groomed width to ≥ 12'	Typically not designed or actively managed for snowmobiles, although use may be allowed
	Double Lane		10' Typically not groomed	10' – 12'	12' – 20'	
	Structures (Minimum Width)		6'	12'	18'	
Design Surface[1]	**Type**		Generally no machine grooming Commonly rough and bumpy	May receive occasional machine grooming for snow compaction and conditioning Frequently rough and bumpy	Regular machine grooming for snow compaction and conditioning Commonly smooth	
	Protrusions		No protrusions	No protrusions	No protrusions	
	Obstacles (Maximum Height)		12" Uncommon	6" Uncommon (no obstacles if machine groomed)	No obstacles	
Design Grade[2]	**Target Grade**		0% – 12%	0% – 10%	0% – 8%	
	Short Pitch Maximum		35%	25%	20%	
	Maximum Pitch Density		15% – 30% of trail	10% – 20% of trail	5% – 10% of trail	

10/16/2008

Designed Use SNOWMOBILE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Cross Slope	**Target Cross Slope**		0% – 10%	0% – 5%	0%	
	Maximum Cross Slope		15%	10%	5%	
Design Clearing	**Height** (Above normal maximum snow level)		6’	6’ – 8’ Provide sufficient clearance for grooming equipment	8’ – 12’ Provide sufficient clearance for grooming equipment	
	Width		6’ – 12’ Some light vegetation may encroach into clearing area	8’ – 14’ Light vegetation may encroach into clearing area	10’ – 22’ Widen clearing at turns or if increased sight distance needed	
	Shoulder Clearance		6” – 12”	12” – 18”	12” – 24”	
Design Turn	**Radius**		8’ – 10’	15’ – 20’ Or sufficient radius for grooming equipment	25’ – 50’	

[1] For definitions of Design Parameter attributes (e.g., Design Tread Width and Short Pitch Maximum) see FSH 2309.18.

[2] The determination of trail-specific Design Grade, Design Surface, and other Design Parameters should be based upon soils, hydrological conditions, use levels, erosion potential, and other factors contributing to surface stability and overall sustainability of the trail.

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CASM: Survey Accuracy and Specificity

How Much Information to Collect?

Trail condition surveys provide an important opportunity for managers and technicians to get a first-hand look and gather current information on trail inventory and conditions. The decision to send a survey crew into the field and the subsequent need to update and maintain the collected data, however, isn't cheap.

Before beginning a trail condition survey, it is important to assign the task to qualified TRACS surveyors and choose the right tools for the job. It's equally important to identify the survey expectations in terms of accuracy and specificity. How much information is too much or too little, too detailed or too general, useful or not? Should all trails be surveyed equally, from minimally developed to highly developed trails?

What's CASM?

CASM is an acronym for Trail Condition Assessment Survey Matrix and is the Forest Service's guide to recommended trail condition survey methods and accuracies. CASM was developed o help ensure the effective and efficient use of limited personnel, time and funding for trail condition surveys and the collection of quality data.

CASM is a common-sense approach that identifies appropriate survey methods and expected data accuracy and specificity, based on the level of trail development or Trail Class, investment in trail structures, and visitor expectations. The higher the level of trail development, investment and visitor expectation, the higher the expectation for survey accuracy and specificity. On a very primitive Trail Class 1 with little-to-no development, it usually makes sense to complete an adequate, but basic condition survey in terms of detail and accuracy. Whereas on a fully developed Trail Class 5 with extensive trail structures, financial investment, and high visitor expectations for user accommodations and convenience, there is usually a need for greater data specificity, detail and accuracy.

The CASM approach for trail condition survey accuracy and specificity has been incorporated into the USFS Trail Deferred Maintenance Protocols since 2001. CASM is also reflected in Infra Trails in terms of the expected data accuracy and specificity expected by Trail Class, and in the resulting information available for managers and other internal and external customers.

CASM

Trail Condition Assessment Survey Matrix

A Guide to Recommended Survey Methods & Accuracies

4/27/2005

CASM is the Forest Service's guide for conducting efficient and appropriate trail inventory and condition surveys, based on the 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 & Make Notes on Map or GPS* [2]	Cyclometer or GPS [2]	Cyclometer or GPS [2]	Cyclometer	Tape or Cyclometer & Hand Level with Digital Readout
Recommended Survey Accuracy & Specificity					
Measurement Interval [3]	Major Physiographic Changes	Minor Physiographic Changes or ½ Mile	Typical Grade Changes of 10% or 500 Feet	Typical Grade Changes of 10% or 500 Feet	*Inter-visible Alignment Changes,* *2% Grade Changes,* or 25 Feet
Typical Grade [4]	+/- 10%	+/- 10%	+/- 5%	+/- 5%	+/- 1%
Typical Width [5]	Not Measured	Optional +/- 6"	+/- 6"	+/- 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 Inventoried & Assessed Individually	Each Feature & Task Inventoried & 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.

Appendix A

	United States Department of Agriculture	**Forest Service**	**Washington Office**	**14th & Independence SW P.O. Box 96090 Washington, DC 20090-6090**

File Code: File Code: 6400/6500 **Date:** September 29, 1998

Route To: Route To: 2200/2300/7100/6500/6400

Subject: Financial Health—Common Definitions for Maintenance and Construction Terms

To: Regional Foresters, Station Directors, and WO Staff Directors

An important part of meeting our goal of financial health in the Forest Service (FS) is to provide consistent information based on common definitions that are used throughout the organization. Recent Office of the Inspector General (QIG) and congressional reports have made it clear that the Forest Service does not have standard definitions related to maintenance and construction activities. The OIG has recommended and Congress has directed that we develop and implement standard definitions.

The enclosed July 22, 1998, document, Common Definitions for Maintenance and Construction Terms, provides definitions based on standards developed by the Federal Accounting Standards Advisory Board, and required by the Office of Management and Budget. These definitions are also consistent with definitions recently developed by the Department of the Interior.

With this letter I am instructing you to start using these definitions. They form the basis for consistent identification and reporting of information related to maintenance and construction in the FS. Since these and similar terms are used throughout our directives system, budget and reporting processes, and in our everyday work, it will be a significant task to fully implement these definitions. As directives are issued, revised and edited, these definitions will be incorporated. Protocols for collecting and reporting maintenance and capitol improvement information are now being developed in various program areas, and will be distributed in the next few weeks.

If you have questions or need more information about these definitions, please contact Jim Padgett at (202) 205-1448.

Is/GLORIA MANNING

GLORIA MANNING
Acting Deputy Chief for
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Enclosure

COMMON DEFINITIONS FOR MAINTENANCE AND CONSTRUCTION TERMS

FIXED ASSETS / COMPONENTS

Fixed Asset. A constructed feature such as a building, dam, bridge, road, campground, trail, or other item of infrastructure. Real property improvements. Facilities in the general sense. These are things for which we have a responsibility.

Fixed Asset Component. A subsystem, major item of equipment, or other portion of a fixed asset. Examples of components include:

The roof for a building
The spillway for a dam
The deck for a bridge
The pavement for a road
An interpretive kiosk at a viewing area
The site furnishings (tables, grills, etc.) at a campground

MAINTENANCE

Maintenance. "The act of keeping fixed assets in acceptable condition. It includes preventive maintenance normal repairs, replacement of parts and structural components, and other activities needed to preserve a fixed asset so that it continues to provide acceptable service and achieves its expected life. Maintenance excludes activities aimed at expanding the capacity of an asset or otherwise upgrading it to serve needs different from, or significantly greater than those originally intended."

Maintenance includes work needed to meet laws, regulations, codes, and other legal direction as long as the original intent or purpose of the fixed asset is not changed.

Annual Maintenance. Work performed to maintain serviceability, or repair failures during the year in which they occur. Includes preventive and/or cyclic maintenance performed in the year in which it is scheduled to occur. Unscheduled or catastrophic failures of components or assets may need to be repaired as a part of annual maintenance.

Repair. Work to restore a damaged, broken, or worn-out fixed asset, component, or item of equipment to normal operating condition. Repairs may be done as annual maintenance or deferred maintenance activities.

Preventive Maintenance. Scheduled servicing, repairs, inspections, adjustments, and replacement of parts that result in fewer breakdowns and fewer premature replacements, and help achieve the expected life of the fixed asset. Inspections are a critical part of preventive maintenance as they provide the information for scheduling maintenance and evaluating its effectiveness.

Cyclic Maintenance. Preventive maintenance activities that recur on a periodic and scheduled cycle.

Typical cyclic maintenance includes reroofing or repainting buildings, overhauling engines, replacing of components of gaging stations, rebuilding cable ways, refinishing hardwood floors, activating or shutting down water systems, refinishing sign, etc.

Cyclic maintenance schedules are normally adjusted depending upon the condition of the component or asset. If a roof has reached the scheduled time of replacement, but still has remaining useful life, the maintenance may be delayed to utilize the additional life.

Deferred Maintenance. "Maintenance that was not performed when it should have been or when it was scheduled and which, therefore, was put off or delayed for a future period."

When allowed to accumulate without limits or consideration of useful life, deferred maintenance leads to deterioration of performance, increased costs to repair, and decrease in asset value. Deferred maintenance needs may be categorized as critical or noncritical at any point in time. Continued deferral of noncritical maintenance will normally result in an increase in critical deferred maintenance.

Code compliance (e.g. life safety, ADA, OSHA, environmental, etc.), Forest Plan Direction, Best Management Practices, Biological Evaluations other regulatory or Executive Order compliance requirements, or applicable standards not met on schedule are considered deferred maintenance.

The following actions are taken to reduce or eliminate deferred maintenance:

Repair. Work to restore a damaged, broken, or worn-out fixed asset, component, or item of equipment to normal operating condition. Repairs may be done as annual maintenance or deferred maintenance activities.

Rehabilitation. Renovation or restoration of an existing fixed asset or any of its components in order to restore the functionality or life of the asset. Because there is no significant expansion or change of purpose for the fixed asset, the work primarily addresses deferred maintenance.

Replacement. Substitution or exchange of an existing fixed asset or component with one having essentially the same capacity and purpose.

Replacement eliminates deferred maintenance needs for the replaced fixed asset or component. The decision to replace a fixed asset or component is usually reached when replacement, rather than repair or rehabilitation, is more cost effective, more environmentally sound, or in the best interest of the government. The size or capacity of the existing fixed asset is not significantly expanded in a replacement. Replacement of an asset or component usually occurs when it nears has or exceeded its useful life.

Decommission. Demolition, dismantling, removal, obliteration and/or disposal of a deteriorated or otherwise unneeded asset or component, including necessary cleanup work. This action eliminates the deferred maintenance needs for the fixed asset. Portions of an asset or component may remain if they do not cause problems nor require maintenance.

Total Deferred Maintenance Need. The aggregate of deferred maintenance costs for an organizational unit.

CAPITAL IMPROVEMENT

Capital Improvement. The construction, installation, or assembly of a new fixed asset, or the significant alteration, expansion, or extension of an existing fixed asset to accommodate a change of purpose.

New Construction. The erection, construction, installation, or assembly of a new fixed asset.

Alteration. Work to change the function of an existing fixed asset. The capacity or size of the fixed asset is not significantly changed. Deferred maintenance of the original fixed asset may be reduced or eliminated by an alteration.

Expansion. Increasing the capacity or size of an existing fixed asset to serve needs different from, or significantly greater than, those originally intended.

Expansion is considered a capital improvement activity because it is creating a new or significantly greater (i.e. expanded) asset. Deferred maintenance needs on the original fixed asset may be reduced or eliminated through an expansion.

Total Capital Improvement Need. The aggregate of all capital improvements needed by an organizational unit.

Total Investment Need. The sum of the Total Deferred Maintenance Need and the Total Capital Improvement Need for an organizational unit. Represents the investment necessary to restore assets to acceptable condition and respond to change of function or programmatic needs.

OPERATIONS

Operations. Activities related to the normal performance of the functions for which a fixed asset or component is intended to be used.

Costs such as utilities (electricity, water, sewage), fuel, janitorial services, window cleaning, rodent and pest control, upkeep of grounds, vehicle rentals, waste management, and personnel costs for operating staff are generally included within the scope of operations and are not considered maintenance costs.

UNITS OF WORK

Need. A maintenance, capital improvement, or other programmatic or operational requirement which can be satisfied by a single unit of work.

Reasons:

Health and Safety Need. A requirement that addresses a threat to human safety and health (e.g. violations of National Fire Protection Association 101 Life Safety Code or appropriate Health Code) that requires immediate interim abatement and/or long-term permanent abatement.

Resource Protection Need. A requirement that addresses a threat or risk of damage, obstruction, or negative impact to a natural resource.

Mission Need. A requirement that addresses a threat or risk to carrying out the mission of the organization. Needs related to administration and providing services (transportation, recreation, grazing, etc.). Needs not covered by health and safety or natural resource protection.

Priorities:

Emergency Need. An urgent maintenance need that may result in injury, illness, or loss of life, natural resource, or property; and must be satisfied immediately. Emergency needs generally require a declaration of emergency or disaster, or a finding by a line officer that an emergency exists.

Critical Need. A requirement that addresses a serious threat to public health or safety, a natural resource, or the ability to carry out the mission of the organization.

Noncritical Need. A requirement that addresses potential risk to public or employee safety or health, compliance with codes, standards, regulations etc., or needs that address potential adverse consequences to natural resources or mission accomplishment.

Examples of needs include:

Comply with Notices of Violation (OSHA, EPA, etc.) (critical health and safety need)
Repairs to an essential access road damaged by a flood. (emergency mission need)
Implement court orders for repair or cleanup (critical health and safety need)
Repair safety deficiencies at high hazard dams (critical health and safety need)
Eliminate deficiency in water distribution capability (critical mission need)
Prevent serious decline in fish or wildlife resource (critical resource protection need)
Comply with requirements to provide passage for aquatic organisms (critical resource protection need)
Prevent damage or loss of historic structure (critical resource protection need)
Providing universal ADA accessibility (noncritical health and safety need)
Compliance with Federal state and local building codes (noncritical health and safety need)
Increasing program efficiency. (noncritical mission need)
Meeting increased visitation requirements. (noncritical mission need)
Energy efficiency or renewable energy retrofits. (noncritical mission need)
Replacing vegetation not directly affecting other resources. (noncritical resource need)

Project. A single planned undertaking of maintenance and/or capital improvement to satisfy one or more needs.

CONDITION/PERFORMANCE INDICATORS

Condition Assessment Survey. A periodic inspection of fixed assets and associated resources to determine and document their condition and estimated costs to correct any deficiencies. Condition assessment surveys should be based upon generally accepted methods and standards consistently applied.

Trail Name • Trail Number • Trail Length • Trail Status

Primary Trail Maintainer • Rights-of-Way • Jurisdiction • Managing Org • Admin Org

Trail Class • Managed Use • Designed Use • Accessibility Status • Trail Surface

F T D S

Federal Trail Data Standards

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

What? The FTDS are a core set of 34 standardized trail data attributes with corresponding definitions and values applicable to tabular and spatial data. They include 3 additional attributes applicable only to NSTs and NHTs, and 13 attributes specific to NHTs. The FTDS reflect a core set of interagency questions and data selection criteria, and are not intended to cover all possible trail data or agency-specific data needs.

Why? 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. Ease in sharing data increases the capability for enhanced and consistent mapping, inventory, monitoring, condition assessment, costing, budgeting, information retrieval, and reporting.

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

How? The FTDS 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 FTDS underwent internal and external reviews in 2003 and 2004.

The FTDS are currently being prepared for publication by the Federal Geographic Data Committee (FGDC) as federal trail data standards.

Subsequent steps include identification of any additionally needed ITDS attributes specific to NSTs, followed by the potential expansion of the ITDS to reflect a core set of public information and trail use attributes.

Info? Access the FTDS and find out more at: http://home.nps.gov/gis/trails/

Trail System • County • State • Congressional District • (etc…)

February 2009

F T D S

Federal Trail Data Standards

Data Attributes

The FTDS attributes are listed below by functional category. For complete attribute definitions, corresponding values and data parameters, refer to: http://home.nps.gov/gis/trails/

Basic Trail Information:

- Trail Name
- Trail Number
- Trail Length
- Trail Status
- Trail Surface
- Interagency Identification Code (if applicable)
- Shared Surface (if applicable)

Trail Administrative Unit & Location:

- Admin Org
- Managing Org
- Congressional District
- County
- Jurisdiction
- Municipality
- State

Trail Management and Use:

- Accessibility Status
- Designed Use
- Land Use Plan
- Managed Use
- Motorized Prohibited
- Primary Trail Maintainer
- Prohibited Use
- Road System
- Trail Class
- Trail System

Trail Management Considerations:

- Historic Significance
- National Trail Designation
- Rights-Of-Way
- Special Mgmt Area

Trail Condition & Cost:

- Cost Annual/Cyclic Maintenance
- Cost Annual/Cyclic Operations
- Cost Deferred Maintenance
- Cost Improvement/Construction
- Cost Last Updated
- Trail Condition

Additional NST and/or NHT Basic Information: (applicable only to National Scenic and Historic Trails)

- NHT NST Trail Administrator
- NHT NST Visitor Center Name
- Visitor Facility Type

NHT Heritage Resource Information: (applicable only to NHT routes or associated heritage resource sites)

- NHT Auto-Tour Surface
- NHT Certification Status
- NHT Condition Category
- NHT High Potential Segment
- NHT High Potential Site
- NHT Public Use Segment
- NHT Public Use Site
- NHT Site Name
- NHT Site Number
- NRHP Criteria
- NRHP Property Category
- Type of Route
- Type of Site

Appendix C

References

Trail Fundamentals and Related References:

IBS Website

Current versions and information on the references below can be found on the USFS Recreation, & Heritage Resources Integrated Business Systems website:
http://fsweb.wo.fs.fed.us/rhwr/ibsc/index.shtml

- Trail Fundamentals
- National Trail Management Classes
- Condition Survey Accuracy Matrix (CASM)
- USFS Trail Design Parameters
- TRACS User Guide
- USFS Trail Bridge Matrix

I-Web and InfraNet

Current versions of I-Web and Infra updates, extensive documentation and reference information, Help Desk question and answers, and related links can be found on the following websites:

- **I-Web:** http://i-web.wo.fs.fed.us/
- **InfraNet:** http://infra.wo.fs.fed.us/infra

Federal Trail Data Standards (USFS, BLM, NPS, FWS)

- **FTDS: Federal Trail Data Standards**
  Access via: http://www.fgdc.gov/ or http://www.nps.gov/gis/trails/

General Trail References:

- **FSM 2350 Trail, River, and Similar Recreation Opportunities** [with Amendments]
  Access via: http://www.fs.fed.us/im/directives/dughtml/fsm2000.html

- **FSH 2309.18 Trails Management Handbook** [with Amendments]
  Access via: http://www.fs.fed.us/im/directives/dughtml/fsh2000.html

- **EM-7720-103 Standard Specifications for Construction and Maintenance of Trails**, September 1996. Access via: http://www.fs.fed.us/.ftproot/pub/acad/dev/trails/trails.htm

- **EM-7720-104 Standard Drawings for Construction and Maintenance of Trails**, September 1996. Access via: http://www.fs.fed.us/.ftproot/pub/acad/dev/trails/trails.htm

- **Trail Construction and Maintenance Notebook, 2000 Edition** (0023-2839-MTDC)
  Order copies from FHWA's Recreational Trails Program website:
  http://www.fhwa.dot.gov/environment/fspubs/index.htm

- **Forest Service Trail Bridge Catalog**
  Access via USFS Missoula Technology and Development intranet website:
  http://fsweb.mtdc.wo.fs.fed.us/bridges/

- **Forest Service Trail Accessibility Guidelines (FSTAG)**
  Access via: http://www.fs.fed.us/recreation/programs/accessibility/

- **Forest Service Technology and Development Centers:**

  Missoula Technology and Development Center: http://fsweb.mtdc.wo.fs.fed.us/

  San Dimas Technology and Development Center: http://fsweb.sdtdc.wo.fs.fed.us