

TRACS

Trail Assessment & Condition Surveys



2011
User Guide

Collect the right information the first time...

Table of Contents



Introduction to TRACS

Why Trail Condition Surveys?	Introduction - 1
The TRACS Approach	Introduction - 3
TRACS Qualification Process	Introduction - 8

Trail Fundamentals 1

Trail Management Objectives

TMO: Setting the Standard	5
TMO Form	7
TMO Form Instructions	11
TMO Examples	17

National Quality Standards for Trails..... 31

Trail Class Matrix 33

Design Parameters..... 49

CASM: Survey Accuracy and Specificity

How Much Information to Collect?	67
Trail Condition Assessment Survey Matrix	68
GIS, GPS, and TRACS: What's the Connection?	69

Trails Data Dictionary

What's Included?	73
TRACS Condition Codes	74
Trails Data Dictionary: Features	75
Trails Data Dictionary: Tasks	85

TRACS Surveys

TRACS Surveys: What, How, Who, and When	139
TRACS Survey Form	141
TRACS Survey Form Instructions	143
TRACS Survey Examples	149

Productivity Factors

Collecting Key Site Information	161
Productivity Factor Codes	163
Productivity Factor Form	167
Productivity Factor Survey Form Instructions	169
Productivity Factor Survey Example	171

TRACS Sign Inventory	
Building and Maintaining a Sign Inventory.....	173
TRACS Sign Inventory Form	175
TRACS Sign Inventory Photo Record.....	176
TRACS Sign Inventory Form Instructions.....	177
TRACS Sign Inventory Example.....	179
TRACS Photo Record	
Creating a Visual Record.....	181
TRACS Photo Log Form.....	183
TRACS Photo Record Form	184
TRACS Photo Record Instructions	185
TRACS Photo Log Example	187
Trail Bridges	
Trail Bridge Inventory & Inspection.....	189
Trail Bridge Matrix.....	191
Is it a Trail Bridge?.....	195
eTRACS	
Electronic Field Data Collection.....	207
Appendices:	
Appendix A: Federal Trail Data Standards	A - 1
Appendix B: References	B - 1
Appendix C: Glossary.....	C - 1
Appendix D: National Trail Drawings.....	D - 1
Appendix E: TRACS Forms	E - 1
Appendix F: TRACS Tips.....	F - 1
Appendix G: My TRACS Stuff.....	G - 1

Introduction to TRACS



Why Trail Condition Surveys?

First-Hand Trails Knowledge

For decades, trail managers and technicians have relied on first-hand knowledge of trail conditions to determine trail maintenance and reconstruction needs, schedules, budgets and priorities.

In recent years, however, decreased budgets, reduction of personnel and competing priorities have had a big impact on the amount and quality of trail condition surveys being accomplished. Prior to 1999, trail condition surveys were not done on many units as limited funding was directed toward the accomplishment of trail maintenance, environmental analysis, and other priorities. Additionally, the loss of experienced trails personnel through retirements and downsizing has resulted in a loss of first-hand knowledge of trail conditions and a clear perception of trail program priorities. The combined result has often been a reduced knowledge of actual trail conditions and, in some cases, an accurate picture of program priorities and needs.

Program Management and Accountability

In the mid 1980s, agency managers and Congress were concerned that there was no system for gathering credible data on real property inventory, facility conditions, program priorities, and budget needs across many resource areas. In 1991, the Chief of the Forest Service directed the national Trails program to develop a system for identifying National Forest System Trail inventory, the condition of trails, and the cost of maintaining those trails to standard and reducing maintenance backlog. This resulted in development of Infra Trails, the Forest Service's corporate database for storing trail inventory, condition, and cost data.

In 1999, the Forest Service established national requirements for conducting trail inventories and condition assessments, and for deferred maintenance data collection and reporting. With this came the requirement for completing an assigned percentage of trail condition surveys on an annual basis. The data collected from condition surveys provides current, accurate information that is used for program planning, budget, reporting, and information needs at all levels of the agency.

Collecting the Right Information the First Time

The agency requirement to conduct periodic condition surveys provides managers with an opportunity to make sure that having a current, working knowledge of their trail systems is once again a top priority. To make the most of this opportunity, it is essential to ensure that qualified personnel efficiently collect the type and quantity of trails data that managers need to meet a variety of management and information demands.

In previous years, trail condition information was collected in a variety of ways throughout the Forest Service, ranging from very detailed forms, to informal notes. With reduced budgets and heavy workloads, however, it has become increasingly important that trail condition assessment efforts are efficient and result in the collection of key information in a standardized format that can be used for a variety of purposes. To accomplish this, minimum data requirements have been established and targeted to ensure collection of the appropriate type and quantity of data. By establishing a level of consistency and quality, managers can make sure that only relevant data is collected and that it is collected in an appropriate amount of detail.

TRACS Makes Sense

It is for these reasons that TRACS was developed and implemented agency-wide:

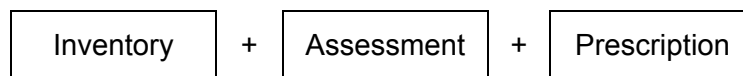
- **Efficient Approach**: Trail managers recognize the importance of having current and accurate trail inventory, condition and prescription information, but are often frustrated by a lack of time, resources, and an efficient approach for accomplishing this.
- **Business Management**: Accurately, efficiently and consistently tracking condition and prescription data for trails and trail structures makes sound business sense.
- **Agency Requirement**: Since 1999, national Forest Service protocols have required the annual completion of trail assessment and condition surveys. For current agency protocols and condition survey frequencies, refer to the annual Deferred Maintenance Protocols for the agency (see also the discussion in the TRACS Survey section of this guide).

The TRACS Approach

What is TRACS?

Trail Assessment and Condition Surveys

TRACS is an organized approach for collecting and updating field data on trail conditions and the work needed to meet standard. A TRACS survey consists of three basic components:



Inventory: Accurate identification of basic information about the trail and constructed features along the trail, including key dimensional information, material type, and quantities.

Assessment: Objective evaluation of the current condition of the trail and constructed features, compared against Trail National Quality Standards and trail-specific expectations outlined in Trail Management Objectives (TMO).

Prescription: Systematic identification and assignment of tasks needed to meet standard and the TMO.

By methodically incorporating inventory, assessment, and trail prescription in each survey, TRACS surveyors leave the field with an accurate, useful, and consistently collected set of data that can be used for a wide variety of purposes.

TRACS compliments the Infra Trails portion of the Forest Service's corporate database by providing trail-specific field data needed for program management and planning. By incorporating a common set of terminology, business rules, data fields, and standard trail specifications and drawings, TRACS and Infra Trails help maximize efficiency and consistency in trails data management.

The completion of trail condition surveys is an on-going process agency-wide, with the goal of developing a complete trails inventory, and subsequently updating trails data on a recurring, sustainable schedule.

The TRACS approach includes:

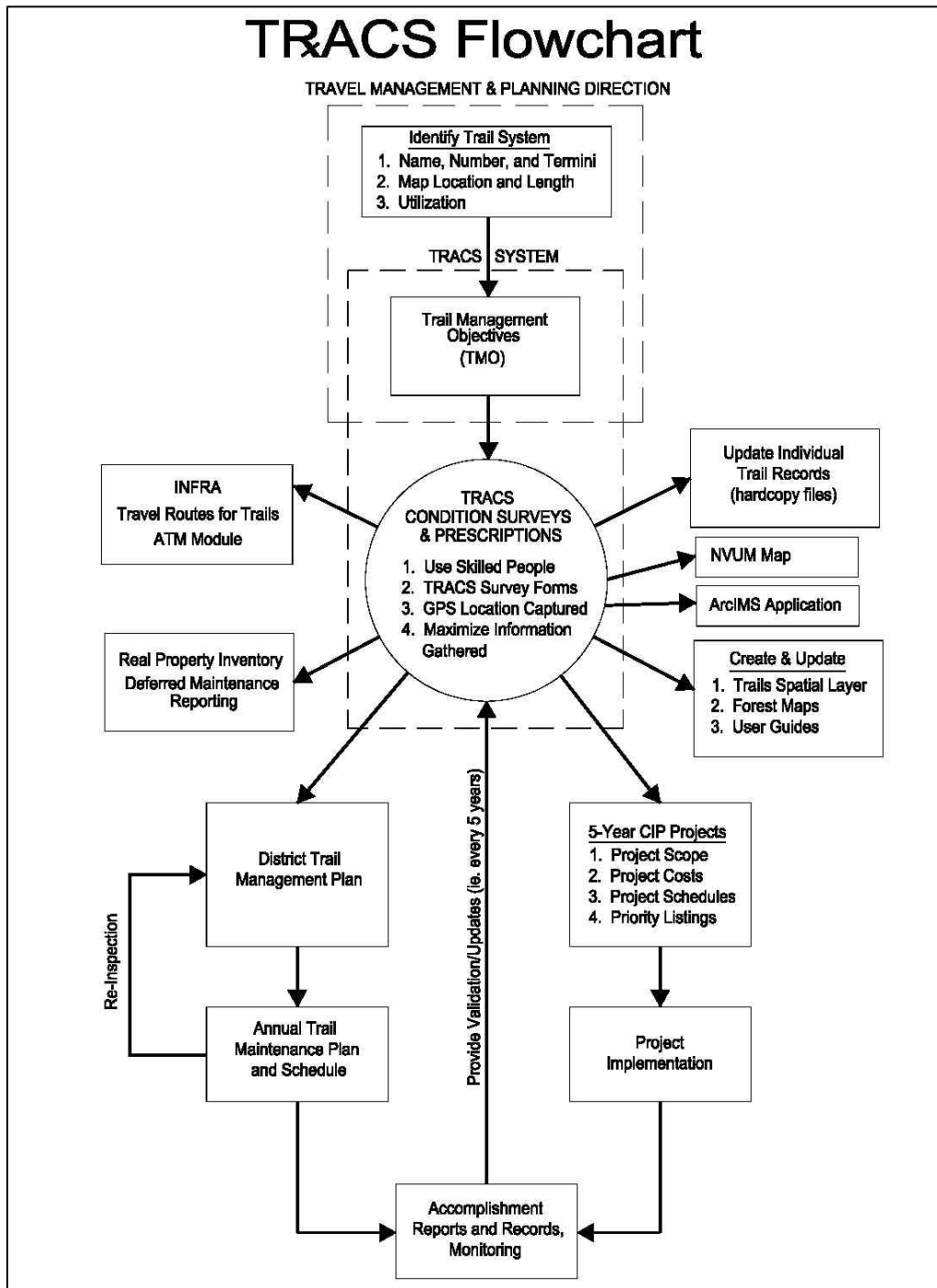
- Consistent application of the 5 Trail Fundamentals
- Establishment of a TMO for each trail
- Implementation of TRACS by qualified personnel.
- Standardized data dictionary for consistent and efficient field data collection.
- Standardized process for completing trail logs, condition surveys and prescriptions.
- Standardized TRACS forms.

Each of these elements is covered in the following sections of the TRACS User Guide. The sections on each TRACS form include an overview, detailed instructions, examples and blank copies of forms.

Appendices A through D provide several key reference materials and a glossary. Appendix E includes a complete set of blank TRACS forms that can be used to make copies. Appendix G provides a place to file TRACS tips and related information, and Appendix H provides a place to file additional notes.

TRACS as a Trail Management Tool

To understand TRACS' role as a key trail management tool, consider three aspects of trails management: forest plan and travel management direction; the need for trail condition surveys and prescriptions prepared by qualified personnel; and utilization of that data for a variety of trail management planning, reporting and information needs.



Forest Plan and Travel Management Direction

Forest plans and travel management direction provide the starting point for implementing TRACS. The identification of system trails, location of routes and termini, and identification of the appropriate uses for each trail is a management decision. This is the essential first step in managing a trail system.

Based on forest plan and travel management direction, Trail Management Objectives (TMOs) must be documented for each trail. Trail Management Objectives provide the basic and essential foundation for subsequent trail condition surveys and prescriptions.

Trail Management Objectives are specific to a given trail, or trail segment, and are comprised of several factors. These include the Trail Type, Trail Class, Recreation Opportunity Spectrum and Wilderness Recreation Opportunity Spectrum (ROS and WROS respectively), Designed Use and Travel Management Strategies. The combination of these factors identifies the TMO—the standard to which a specific trail should be constructed, managed and maintained. It is this standard that is used to assess a trail's condition and maintenance or reconstruction needs.

Quality Trail Assessments and Prescriptions

TRACS is a standardized approach for completing trail conditions surveys and prescriptions. TRACS focuses field data collection efforts, while still providing flexibility to address trail-specific and program-specific data collection needs.

As illustrated on the TRACS Flowchart, quality trail inventory, assessment, and prescription information is central to effective management of a trails program. By targeting which data is collected, and using a consistent approach that's based on a common set of terminology and business rules, the TRACS approach helps trail managers collect the right information the first time. This accurate, core set of data can be used to meet a variety of established and changing information, planning and reporting needs. Most importantly, the TRACS approach provides trails managers with the quality information they need to effectively manage their trail program.

What does TRACS Provide?

TRACS condition surveys and prescriptions provide accurate, quality data for:

- Establishing and maintaining an accurate trail inventory
- Identifying needed work and the cost to meet National Quality Standards
- Quantifying and reporting annual maintenance, deferred maintenance, and capital improvement needs
- Developing and updating District Trail Management Plans
- Developing Capital Investment Program project narratives, budgets, schedules and priorities
- Developing annual trail maintenance plans and schedules
- Developing trail-specific, itemized work assignments and accomplishment logs
- Creating and updating trails spatial layers, maps and visitor information materials

TRACS Products

Four primary products of the TRACS approach are TMOs, TRACS surveys, Trail Logs, and Trail Work Lists.

- **TMO:** As addressed in detail in the next section of this User Guide, TMOs are the cornerstone of sound trail management and effective trail condition surveys.
- **TRACS Surveys:** TRACS surveys include trail-specific condition and prescription data, systematically collected and used for a variety of management purposes. TRACS surveys include the TRACS Survey Form (trail log, condition survey, and prescription), TRACS Productivity Factors Form, TRACS Sign Inventory, and TRACS Photo Record.

TRACS survey data is used to develop District Trail Maintenance Plans and schedules, and Capital Investment Program proposals. This data is also used to provide an accurate and consistent comparison of trail conditions and needs at the district, forest, and regional level—important information for establishing priorities and allocating budgets.

- **Trail Log:** TRACS surveys provide the basic information needed to create Trail Logs, where trail dimensions, constructed features, and identified tasks are listed sequentially by milepost. Trail Logs are generated electronically via Infra Trails and are used for a variety of purposes including project planning and analysis, project development and implementation, and for providing site-specific location and reference information for agency personnel, partners, volunteers and the public.
- **Trail Work List:** TRACS survey data can be used to create trail and crew-specific work assignments and accomplishment logs. Using TRACS data recorded in Infra Trails, trail managers can easily review the tasks identified during the most recent TRACS survey and then narrow the list to include only those tasks which are relevant for a particular field crew assignment. Examples include selecting a subset of routine maintenance tasks for assignment to a volunteer crew, or selecting tasks associated with repair and reconstruction of puncheon and turnpike for a trained construction crew. The Trail Work List is then printed and assigned to a field crew which uses it to locate and complete the identified trail work, document task accomplishment and quantities, and note any other needed work or observations.

Completed Trail Work Lists, compiled electronically and/or in a binder, provide managers with a listing of annual trail work, accomplishments and field notes. Field notes recorded on the Trail Work Lists are used to update task and accomplishment records in Infra Trails.

TRACS Qualification Process

A Recommended Approach to Personnel Qualifications and Training

Who is Responsible for *Makin' TRACS*?

To ensure that trails assessments and condition surveys are reliable, accurate and of high quality, it is essential that personnel conducting the surveys are properly trained and experienced. Personnel conducting TRACS Surveys must:

1. Fully understand the Trail Management Objectives for a given trail.
2. Be able to identify in detail whether the trail meets standards and/or what it would take to meet standards.
3. Develop a reasonable prescription for the trail. The prescription must take into account national direction to operate an economical trail system, budget constraints, non-recreation resource concerns or requirements, political concerns, etc.

Recommended Qualifications

Three levels of qualification skills have been identified for TRACS surveyors: TRACS Apprentice, Journey-level Tracker, and TRACS Master Performer. These are recommended qualifications that, if met, will ensure quality results from the investment of time and personnel to collect TRACS field data. It is recognized that many units may not be able to immediately meet these recommended qualifications, but can use these as a goal to work toward.

TRACS Apprentice

The TRACS Apprentice works directly under an assigned Journey-level Tracker and/or TRACS Master Performer. The goal of the Apprentice is to gain enough expertise through training, experience conducting TRACS Surveys, and mentor support to eventually become qualified as a Journey-level Tracker.

TRACS Apprentice qualifications include:

1. Background in trails management strongly encouraged (field and/or programmatic);
2. Successful completion of the TRACS Training Course; followed by
3. The assignment of an experienced mentor or TRACS Master Performer to provide additional field guidance; and
4. One or more field seasons of experience completing TRACS Surveys, with periodic field and office reviews by the assigned TRACS Master.

NOTE: Step 2 is a prerequisite for all TRACS Apprentices. It may be determined, however, that some individuals with considerable trails and/or relevant engineering experience already meet the TRACS Apprentice requirements for Steps 3 and 4.

These exceptions will be individually recommended by the assigned TRACS Master Performer and approved by the Regional Trails Coordinator.

A TRACS Apprentice should work with a Journey-level Tracker when completing the first several TRACS Surveys. Following this initial learning period, the Apprentice can begin completing TRACS Surveys on less-complex trails, under continued off-site supervision by the Tracker. TRACS Surveys on more complex trails usually require the on-site involvement of a Tracker.

Journey-level Tracker

Ideally, all TRACS Surveys are done by Journey-level Trackers. They are able to work independently with a high level of quality. Trackers are responsible for scheduling and quality control of the unit's TRACS Surveys, and can assist in training TRACS Apprentices.

Tracker qualifications include successful completion of TRACS Apprentice requirements; and

1. Completion of one or more regionally approved technical trails training sessions such as Trails Survey and Design, Trails Project Preparation, Trails Drainage Structures, etc; and
2. Recommendation by the assigned TRACS Master for qualification as a Journey-level Tracker.

TRACS Master

Designation as a TRACS Master Performer indicates that an individual has a strong and successful background in all aspects of trails field and program management, and is a skilled communicator. The technical training and experience of a TRACS Master enables them to train and review the work of TRACS Apprentices and Trackers to ensure successful, effective, and consistent implementation of the TRACS approach. Recognizing that many forests might not have someone with TRACS Master skills, in many cases the TRACS Master would be "zoned" or assigned as a multi-forest resource.

The TRACS Master is responsible for providing training and mentor support to assigned TRACS Apprentices and Trackers. This includes the identification and review of skill development plans, on-site assistance, and quality assurance. The TRACS Master is responsible, with assistance from Trackers, for training TRACS Apprentices and helping them become qualified as Journey-level Trackers.

To be designated as a TRACS Master Performer, an individual must be appointed by the Regional Trail Coordinator.



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 actively 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.

* 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 prerequisite 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, on the USFS internal website for Recreation & Heritage Resources Integrated Business Systems (<http://fswb.wo.fs.fed.us/rhwr/ibsc/index.shtml>), and on the USFS external website for Trail Management (<http://www.fs.fed.us/recreation/programs/trail-management/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 (Excel Form)1



TRACS Trail Management Objectives

Region: Forest: District:

Trail Name:

Trail Beginning Termini:

Trail Ending Termini:

Trail Inventory Length: Miles

Trail Number:

Beg. Milepost:

End. Milepost:

Trail Mileage Source: Wheel GPS Map Unknown

TMO Trail Section

Sec.#	Section Beg. Termini: <input style="width: 90%;" type="text"/>	Beg. Milepost: <input style="width: 40%;" type="text"/>
	Section End. Termini: <input style="width: 90%;" type="text"/>	End. Milepost: <input style="width: 40%;" type="text"/>

Designed Use Objectives

Trail Type (Check one)

Standard Terra Trail

Snow Trail

Water Trail

Trail Class (Check one)

1 (Primitive/Undeveloped)

2 (Simple/Minor Development)

3 (Developed/Improved)

4 (Highly Developed)

5 (Fully Developed)

ROSWROS Class (Check one)

<p>ROS</p> <p style="font-size: small;">Non-Motorized</p> <p><input type="checkbox"/> Urban</p> <p><input type="checkbox"/> Rural</p> <p><input type="checkbox"/> Roaded Modified</p> <p><input type="checkbox"/> Roaded Natural</p> <p><input type="checkbox"/> Semi-Primitive Motorized</p> <p><input type="checkbox"/> Semi-Primitive NonMotorized</p> <p><input type="checkbox"/> Primitive</p>	<p>WROS</p> <p style="font-size: small;">Motorized</p> <p><input type="checkbox"/> WROS 1</p> <p><input type="checkbox"/> WROS 2</p> <p><input type="checkbox"/> WROS 3</p> <p><input type="checkbox"/> WROS 4</p> <p><input type="checkbox"/> WROS 5</p> <p><input type="checkbox"/> WROS 6</p>
--	---

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 _____

1 The Excel TMO form presented here is for reference to discuss TMO terminology and data fields. For Instructions on using the Infra Trails electronic TMO form, refer to Infra Trails Online Help.



TRACS Trail Management Objectives

Trail Name: Trail Number:

Travel Management Strategies FSM 2353.19

Managed Use

(Fill in all that apply)*

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

Prohibited Use

(Check if applicable)

	From Date (m/m/dd)	To Date (m/m/dd)
<input type="checkbox"/> All Motorized Use		
(Or, fill in all that apply)		
<input type="checkbox"/> Hiker / Pedestrian		
<input type="checkbox"/> Pack & Saddle		
<input type="checkbox"/> Bicycle		
<input type="checkbox"/> Motorcycle		
<input type="checkbox"/> All Terrain Vehicle (ATV)		
<input type="checkbox"/> 4WD Vehicle > 50"		
<input type="checkbox"/> _____		
<input type="checkbox"/> _____		
<input type="checkbox"/> Cross-Country Ski		
<input type="checkbox"/> Snowshoe		
<input type="checkbox"/> Snowmobile		
<input type="checkbox"/> _____		
<input type="checkbox"/> Watercraft- NonMotorized		
<input type="checkbox"/> Watercraft- Motorized		

Other Use

(Optional: Check any that apply)*

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

Special Considerations

(Check any that apply. Underline appropriate clarification in parentheses. 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
 Title

Signature
 Date



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.)

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 important for this specific trail segment and 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:

<u>Task:</u>	<u>Frequency:</u>	<u>Recorded As:</u>
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 1²

Special Considerations

T&E or Sensitive Species Present X³

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 (Excel 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

<input type="text"/>	Section Beg. Termini: <input type="text"/>	Beg. Milepost: <input type="text"/>
Sec.#	Section End. Termini: <input type="text"/>	End. Milepost: <input type="text"/>

Designed Use Objectives

(Check one)

Trail Type Standard Terra Trail
 Snow Trail
 Water Trail

(Check one)

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

ROS/WROS Class (Check one)

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

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 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)
<input checked="" type="checkbox"/> Hiker / Pedestrian	05/01	10/31
<input checked="" type="checkbox"/> Pack & Saddle	05/01	10/31
<input type="checkbox"/> Bicycle		
<input type="checkbox"/> Motorcycle		
<input type="checkbox"/> All Terrain Vehicle (ATV)		
<input type="checkbox"/> 4WD Vehicle > 50"		
<input type="checkbox"/> _____		
<input type="checkbox"/> Cross-Country Ski		
<input type="checkbox"/> Snowshoe		
<input type="checkbox"/> Snowmobile		
<input type="checkbox"/> _____		
<input type="checkbox"/> Watercraft-NonMotorized		
<input type="checkbox"/> Watercraft - Motorized		

Prohibited Use

(Check if applicable)

All Motorized Use

(Or, fill in all that apply)

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

Other Use

(Optional: Check any that apply)*

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

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**

Title **District Ranger**

Signature *Grant Marnier*

Date **10/16/2008**

TMO Example 1 (Infra Trails Form)

	<h2 style="margin: 0;">Trail Management Objectives</h2> <h3 style="margin: 0;">Sweet Grass Trail #122 (Standard/Terra)</h3>	TMO Status : APPROVED 10/16/2008																											
Region : 01	Forest : Gallatin National Forest	District : 011101 - Big Timber Ranger District																											
Beginning Milepost : 0.0000	Beginning Termini : West Boulder Trailhead (# 12905)																												
Ending Milepost : 10.7000	Ending Termini : Continental Divide NST																												
Trail Length : 10.7000	Mileage Source : Measuring Wheel (0.0000 to 10.7000)																												
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">TMO</td> <td style="width: 35%;">BMP (mi): 0.0000</td> <td style="width: 50%;">EMP (mi): 10.7000</td> </tr> </table>			TMO	BMP (mi): 0.0000	EMP (mi): 10.7000																								
TMO	BMP (mi): 0.0000	EMP (mi): 10.7000																											
This TMO documents the intended purpose and management of National Forest System trail segments, and may or may not reflect the current condition of the trail.																													
<h3>Travel Management Strategies</h3>																													
<h4>ATM Managed Use</h4> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Strategy</th> <th>Travel ID</th> <th>Mode of Travel</th> <th>BMP (mi)</th> <th>EMP (mi)</th> <th>Length</th> <th>From</th> <th>To</th> <th>Comment</th> </tr> </thead> <tbody> <tr> <td>Manage</td> <td>2.1</td> <td>HIKER/PEDESTRIAN</td> <td>0.0000</td> <td>10.7000</td> <td>10.7000</td> <td>05/01</td> <td>10/31</td> <td></td> </tr> <tr> <td>Manage</td> <td>2.2</td> <td>PACK AND SADDLE</td> <td>0.0000</td> <td>10.7000</td> <td>10.7000</td> <td>05/01</td> <td>10/31</td> <td></td> </tr> </tbody> </table>			Strategy	Travel ID	Mode of Travel	BMP (mi)	EMP (mi)	Length	From	To	Comment	Manage	2.1	HIKER/PEDESTRIAN	0.0000	10.7000	10.7000	05/01	10/31		Manage	2.2	PACK AND SADDLE	0.0000	10.7000	10.7000	05/01	10/31	
Strategy	Travel ID	Mode of Travel	BMP (mi)	EMP (mi)	Length	From	To	Comment																					
Manage	2.1	HIKER/PEDESTRIAN	0.0000	10.7000	10.7000	05/01	10/31																						
Manage	2.2	PACK AND SADDLE	0.0000	10.7000	10.7000	05/01	10/31																						
<h3>Designed Use Objectives</h3>																													
<h4>ROS/WROS Class</h4> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>BMP (mi)</th> <th>EMP (mi)</th> <th>Length</th> <th>Value</th> <th>Comments</th> </tr> </thead> <tbody> <tr> <td>0.0000</td> <td>10.7000</td> <td>10.7000</td> <td>RN - ROADED NATURAL</td> <td></td> </tr> </tbody> </table>			BMP (mi)	EMP (mi)	Length	Value	Comments	0.0000	10.7000	10.7000	RN - ROADED NATURAL																		
BMP (mi)	EMP (mi)	Length	Value	Comments																									
0.0000	10.7000	10.7000	RN - ROADED NATURAL																										
<h4>Trail Class</h4> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>BMP (mi)</th> <th>EMP (mi)</th> <th>Length</th> <th>Value</th> <th>Comments</th> </tr> </thead> <tbody> <tr> <td>0.0000</td> <td>10.7000</td> <td>10.7000</td> <td>TC4 - HIGHLY DEVELOPED</td> <td></td> </tr> </tbody> </table>			BMP (mi)	EMP (mi)	Length	Value	Comments	0.0000	10.7000	10.7000	TC4 - HIGHLY DEVELOPED																		
BMP (mi)	EMP (mi)	Length	Value	Comments																									
0.0000	10.7000	10.7000	TC4 - HIGHLY DEVELOPED																										
<h4>Designed Use</h4> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>BMP (mi)</th> <th>EMP (mi)</th> <th>Length</th> <th>Value</th> <th>Comments</th> </tr> </thead> <tbody> <tr> <td>0.0000</td> <td>10.7000</td> <td>10.7000</td> <td>PACK - PACK AND SADDLE</td> <td></td> </tr> </tbody> </table>			BMP (mi)	EMP (mi)	Length	Value	Comments	0.0000	10.7000	10.7000	PACK - PACK AND SADDLE																		
BMP (mi)	EMP (mi)	Length	Value	Comments																									
0.0000	10.7000	10.7000	PACK - PACK AND SADDLE																										
<hr/> Oct 16 2008 03:37 PM Page 1 of 3																													



Trail Management Objectives

Sweet Grass Trail #122 (Standard/Terra)

TMO Status : APPROVED 10/16/2008

Region : 01

Forest : Gallatin National Forest

District : 011101 - Big Timber Ranger District

Beginning Milepost : 0.0000
 Ending Milepost : 10.7000
 Trail Length : 10.7000

TMO	BMP (mi): 0.0000	EMP (mi): 10.7000
------------	-------------------------	--------------------------

Design Parameter Segment

BMP (mi)	EMP (mi)	Length	Trail Class - Designed Use
0.0000	10.7000	10.7000	TC4 - PACK AND SADDLE
		Design Parameter	Trail DP Value
		Design Tread Width - Wilderness (Single Lane)	34" May be up to 48" along steep side slopes 48" - 60" or greater along predpices
		Design Tread Width - Non-Wilderness 1 (Single Lane)	48" 48" - 60" or greater along predpices
		Design Tread Width - Non-Wilderness 2 (Double Lane)	Not applicable
		Design Tread Width - Structures (Minimum Width)	Other than bridges: 36" Bridges without handrails: 60" Bridges with handrails: 84" clear width
		Design Surface - Type	Native, with improved sections of borrow or imported material, routine grading Minor roughness
		Design Surface - Protrusions	3" Uncommon, not continuous
		Design Surface - Obstacles (Maximum Height)	3"
		Design Grade - Target Grade	10%
		Design Grade - Short Pitch Maximum	15%
		Design Grade - Maximum Pitch Density	5% of trail
		Design Cross Slope - Target Cross Slope	5%
		Design Cross Slope - Maximum Cross Slope	5%
		Design Clearing - Height	10'
		Design Clearing - Width	98"
		Design Clearing - Shoulder Clearance	12" Pack clearance: 36" x 36"
		Design Turn - Radius	6'

Target Task Frequency

Routine Tasks

Task ID	Description	BMP (mi)	EMP (mi)	Length	Frequency	TMO Reference Information
TW-CLR-01F	Trail Opening	0.0000	10.7000	10.7000	1.000	
TW-TRD-01A	Tread Maintenance	0.0000	10.7000	10.7000	0.500	
TW-TRD-01B	Tread Drainage	0.0000	10.7000	10.7000	0.500	
TW-CLR-01A	Logging Out	0.0000	10.7000	10.7000	0.500	
TW-CLR-01B	Brushing Or Mowing	0.0000	10.7000	10.7000	0.500	
TW-S&D-01A	Trails Survey	0.0000	10.7000	10.7000	0.200	



Trail Management Objectives
Sweet Grass Trail #122 (Standard/Terra)

TMO Status : APPROVED 10/16/2008

Region : 01

Forest : Gallatin National Forest

District : 011101 - Big Timber Ranger District

Beginning Milepost : 0.0000
Ending Milepost : 10.7000
Trail Length : 10.7000

TMO	BMP (mi): 0.0000	EMP (mi): 10.7000
------------	-------------------------	--------------------------

TMO Status : APPROVED	
Line Officer : Name : Grant Mamler	Signature : _____
Title : District Ranger	Date : 10/16/2008

TMO Example 2 (Excel Form)



TRACS Trail Management Objectives

Region: Forest: District:

Trail Name: <input type="text" value="Sweet Grass X-Ski Trail"/>		Trail Number: <input type="text" value="SNO-122"/>
Trail Beginning Termini: <input type="text" value="West Boulder Trailhead (#12905)"/>		Beg. Milepost: <input type="text" value="0.0000"/>
Trail Ending Termini: <input type="text" value="Dead End"/>		End. Milepost: <input type="text" value="2.8700"/>
Trail Inventory Length: <input type="text" value="2.87001"/> Miles	Trail Mileage Source: <input checked="" type="checkbox"/> Wheel <input type="checkbox"/> GPS <input type="checkbox"/> Map <input type="checkbox"/> Unknown	

TMO Trail Section

1	Section Beg. Termini: <input type="text" value="West Boulder Trailhead"/>	Beg. Milepost: <input type="text" value="0.000"/>
Sec.#	Section End. Termini: <input type="text" value="Wilderness Boundary"/>	End. Milepost: <input type="text" value="2.260"/>

Designed Use Objectives

(Check one)

Trail Type

Standard Terra Trail

Snow Trail

Water Trail

(Check one)

Trail Class

1 (Primitive/Undeveloped)

2 (Simple/Minor Development)

3 (Developed/Improved)

4 (Highly Developed)

5 (Fully Developed)

ROS/WROS Class (Check one)

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

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 Trail Management Objectives

Trail Name: **Sweet Grass Trail**

Trail Number: **SNO-122**

Travel Management Strategies FSM 2353.19

Managed Use

(Fill in all that apply)*

	From Date (mm/dd)	To Date (mm/dd)
<input type="checkbox"/> Hiker / Pedestrian		
<input type="checkbox"/> Pack & Saddle		
<input type="checkbox"/> Bicycle		
<input type="checkbox"/> Motorcycle		
<input type="checkbox"/> All Terrain Vehicle (ATV)		
<input type="checkbox"/> 4WD Vehicle > 50"		
<input type="checkbox"/> _____		
<input type="checkbox"/> _____		
<input checked="" type="checkbox"/> Cross-Country Ski	12/01	03/31
<input checked="" type="checkbox"/> Snowshoe	12/01	03/31
<input type="checkbox"/> Snowmobile		
<input type="checkbox"/> _____		
<input type="checkbox"/> Watercraft-NonMotorized		
<input type="checkbox"/> Watercraft - Motorized		

Prohibited Use

(Check if applicable)

	From Date (mm/dd)	To Date (mm/dd)
<input type="checkbox"/> All Motorized Use		
(Or, fill in all that apply)		
<input type="checkbox"/> Hiker / Pedestrian		
<input type="checkbox"/> Pack & Saddle		
<input type="checkbox"/> Bicycle		
<input type="checkbox"/> Motorcycle		
<input type="checkbox"/> All Terrain Vehicle (ATV)		
<input type="checkbox"/> 4WD Vehicle > 50"		
<input type="checkbox"/> _____		
<input type="checkbox"/> _____		
<input type="checkbox"/> Cross-Country Ski		
<input type="checkbox"/> Snowshoe		
<input type="checkbox"/> Snowmobile		
<input type="checkbox"/> _____		
<input type="checkbox"/> Watercraft - NonMotorized		
<input type="checkbox"/> Watercraft - Motorized		

Other Use

(Optional: Check any that apply)*

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

Special Considerations

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

<input type="checkbox"/> Shared System (shared with other system road or trail)
<input type="checkbox"/> Accessible per Current Agency Guidelines
<input type="checkbox"/> Mechanized Tools or Equipment Prohibited
<input type="checkbox"/> T&E or Sensitive Species Present (Plant / Wildlife)
<input type="checkbox"/> Heritage Resource Present
<input type="checkbox"/> Easement across Non-FS Land (Existing / Needed)
<input checked="" type="checkbox"/> Existing Permit or Agreement (Trail-Specific / Area)
<input type="checkbox"/> _____

Remarks / Reference Information

¹ 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 **10/16/2008**



TRACS Trail Management Objectives

Region: 01 Forest: Gallatin District: 011001 Big Timber District

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

Trail Beginning Termini: West Boulder Trailhead (#12905) Beg. Milepost: 0.0000

Trail Ending Termini: Dead End End. Milepost: 2.8700

Trail Inventory Length: 2.87001 Miles Trail Mileage Source: Wheel GPS Map Unknown

TMO Trail Section

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

Sec.# Section End. Termini: Dead End End. Milepost: 2.870

Designed Use Objectives

(Check one)

Trail Type Standard Terra Trail Snow Trail Water Trail

(Check one)

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

ROS/WROS Class (Check one)

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

Designed Use
(Check one)

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)

36 Tread Width (inches)

15 Target Grade (%)

20 Short Pitch Maximum (%) (up to 200' lengths)

5 Target Cross-Slope (%)

4 Clearing Width (feet)

6 Clearing Height (feet)

8 Switchback Radius (feet)

Target Frequency Per Year
(Fill in all that apply)

1 Trail Opening

NA Tread Repair

NA Drainage Cleanout

0.5 Logging Out

0.5 Brushing

NA Snow Trail Grooming

0.2 Condition Survey



TRACS Trail Management Objectives

Trail Name: **Sweet Grass Trail**

Trail Number: **SNO-122**

Travel Management Strategies FSM 2353.19

Managed Use

(Fill in all that apply)*

	From Date (mm/dd)	To Date (mm/dd)
<input type="checkbox"/> Hiker / Pedestrian		
<input type="checkbox"/> Pack & Saddle		
<input type="checkbox"/> Bicycle		
<input type="checkbox"/> Motorcycle		
<input type="checkbox"/> All Terrain Vehicle (ATV)		
<input type="checkbox"/> 4WD Vehicle > 50"		
<input type="checkbox"/> _____		
<input checked="" type="checkbox"/> Cross-Country Ski	12/01	03/31
<input checked="" type="checkbox"/> Snowshoe	12/01	03/31
<input type="checkbox"/> Snowmobile		
<input type="checkbox"/> _____		
<input type="checkbox"/> Watercraft-NonMotorized		
<input type="checkbox"/> Watercraft - Motorized		

Prohibited Use

(Check if applicable)

	From Date (mm/dd)	To Date (mm/dd)
<input checked="" type="checkbox"/> All Motorized Use	01/01	12/31
(Or, fill in all that apply)		
<input type="checkbox"/> Hiker / Pedestrian		
<input type="checkbox"/> Pack & Saddle		
<input type="checkbox"/> Bicycle		
<input type="checkbox"/> Motorcycle		
<input type="checkbox"/> All Terrain Vehicle (ATV)		
<input type="checkbox"/> 4WD Vehicle > 50"		
<input type="checkbox"/> _____		
<input type="checkbox"/> Cross-Country Ski		
<input type="checkbox"/> Snowshoe		
<input type="checkbox"/> Snowmobile		
<input checked="" type="checkbox"/> All Mechanized	01/01	12/31
<input type="checkbox"/> Watercraft - NonMotorized		
<input type="checkbox"/> Watercraft - Motorized		

Other Use

(Optional: Check any that apply)*

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

Special Considerations

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

<input type="checkbox"/> Shared System (shared with other system road or trail)
<input type="checkbox"/> Accessible per Current Agency Guidelines
<input checked="" type="checkbox"/> Mechanized Tools or Equipment Prohibited
<input type="checkbox"/> T&E or Sensitive Species Present (<u>Plant / Wildlife</u>)
<input type="checkbox"/> Heritage Resource Present
<input type="checkbox"/> Easement across Non-FS Land (<u>Existing / Needed</u>)
<input checked="" type="checkbox"/> Existing Permit or Agreement (<u>Trail-Specific / Area</u>)
<input type="checkbox"/> _____

Remarks / Reference Information

¹ Special use permit with Big Timber Cross Country Ski Club to maintain the trail for x-skiing.

² Primitive tools only.

Line Officer: Name **Grant Marnier**

Title **District Ranger**

Signature *Grant Marnier*

Date **10/16/2008**

TMO Example 2 (Infra Trails Form)



Trail Management Objectives Sweet Grass X-Ski Trail #SNO-122 (Snow)

TMO Status : APPROVED 10/16/2008

Region : 01 Forest : Gallatin National Forest District : 011101 - Big Timber Ranger District

Beginning Milepost : 0.0000 Beginning Termini : West Boulder Trailhead (#12905)
Ending Milepost : 2.8700 Ending Termini : Dead End
Trail Length : 2.8700

TMO	BMP (mi): 0.0000	EMP (mi): 2.8700
-----	------------------	------------------

This TMO documents the intended purpose and management of National Forest System trail segments, and may or may not reflect the current condition of the trail.

Travel Management Strategies

ATM Managed Use

Strategy	Travel ID	Mode of Travel	BMP (mi)	EMP (mi)	Length	From	To	Comment
Manage	3.2.1	CROSS COUNTRY SKI	0.0000	2.8700	2.8700	12/01	03/31	
Manage	3.2.2	SNOW SHOE	0.0000	2.8700	2.8700	12/01	03/31	

ATM Prohibited Use

Strategy	Travel ID	Mode of Travel	BMP (mi)	EMP (mi)	Length	From	To	Primary Reason
Prohibit	2.3	MECHANIZED	2.6700	2.8700	0.2000	01/01	12/31	PROTECT WILDERNESS ENVIRONMENT/VALUES
Prohibit	1	MOTOR VEHICLE	2.6700	2.8700	0.2000	01/01	12/31	PROTECT WILDERNESS ENVIRONMENT/VALUES
Prohibit	3.1	MTR OVER-SNOW VEHICLE	2.6700	2.8700	0.2000	01/01	12/31	PROTECT WILDERNESS ENVIRONMENT/VALUES

Designed Use Objectives

ROS/WROS Class

BMP (mi)	EMP (mi)	Length	Value	Comments
0.0000	2.2600	2.2600	RN - ROADED NATURAL	
2.2600	2.8700	0.6100	WROS 3	

Trail Class

BMP (mi)	EMP (mi)	Length	Value	Comments
0.0000	2.2600	2.2600	TC3 - DEVELOPED	
2.2600	2.8700	0.6100	TC2 - MODERATELY DEVELOPED	

Designed Use

BMP (mi)	EMP (mi)	Length	Value	Comments
0.0000	2.8700	2.8700	XSKI - CROSS COUNTRY SKI	



Trail Management Objectives
Sweet Grass X-Ski Trail #SNO-122 (Snow)

TMO Status : APPROVED 10/16/2008

Region : 01

Forest : Gallatin National Forest

District : 011101 - Big Timber Ranger District

Beginning Milepost : 0.0000
 Ending Milepost : 2.8700
 Trail Length : 2.8700

TMO	BMP (mi): 0.0000	EMP (mi): 2.8700
-----	------------------	------------------

Design Parameter Segment

BMP (mi)	EMP (mi)	Length	Trail Class - Designed Use
0.0000	2.2600	2.2600	TC3 - CROSS COUNTRY SKI

Design Parameter	Trail DP Value	Exceptions
Design Groomed Width - Single Lane	6" (or width of grooming equipment)	
Design Groomed Width - Double Lane	Not applicable	
Design Groomed Width - Structures (Minimum Width)	36"	
Design Grooming And Surface - Type	May receive occasional machine grooming for snow compaction and track setting	
Design Grooming And Surface - Protrusions	No protrusions	
Design Grooming And Surface - Obstacles (Maximum Height)	8" Uncommon (no obstacles if machine groomed)	
Design Grade - Target Grade	10%	
Design Grade - Short Pitch Maximum	15%	
Design Grade - Maximum Pitch Density	5% of trail	
Design Cross Slope - Target Cross Slope	5%	
Design Cross Slope - Maximum Cross Slope (For up to 50')	15%	
Design Clearing - Height (Above normal maximum snow level)	8" (or height of grooming machinery)	
Design Clearing - Width	96" Light vegetation may encroach into clearing area	
Design Clearing - Shoulder Clearance	12"	
Design Turn - Radius	15' (or to accommodate grooming equipment)	

Design Parameter Segment

BMP (mi)	EMP (mi)	Length	Trail Class - Designed Use
2.2600	2.8700	0.6100	TC2 - CROSS COUNTRY SKI



Trail Management Objectives

Sweet Grass X-Ski Trail #SNO-122 (Snow)

TMO Status : APPROVED 10/16/2008

Region : 01

Forest : Gallatin National Forest

District : 011101 - Big Timber Ranger District

Beginning Milepost : 0.0000
 Ending Milepost : 2.8700
 Trail Length : 2.8700

TMO	BMP (mi): 0.0000	EMP (mi): 2.8700
-----	------------------	------------------

Design Parameter	Trail DP Value	Exceptions
Design Groomed Width - Single Lane	3'	Typically not groomed
Design Groomed Width - Double Lane	Not applicable	
Design Groomed Width - Structures (Minimum Width)	36"	
Design Grooming And Surface - Type	Generally no machine grooming	
Design Grooming And Surface - Protrusions	No protrusions	
Design Grooming And Surface - Obstacles (Maximum Height)	12"	Uncommon
Design Grade - Target Grade	15%	
Design Grade - Short Pitch Maximum	20%	
Design Grade - Maximum Pitch Density	10% of trail	
Design Cross Slope - Target Cross Slope	5%	
Design Cross Slope - Maximum Cross Slope (For up to 50')	20%	
Design Clearing - Height (Above normal maximum snow level)	6'	
Design Clearing - Width	48'	Light vegetation may encroach into clearing area
Design Clearing - Shoulder Clearance	6'	
Design Turn - Radius	8'	

Target Task Frequency

Routine Tasks

Task ID	Description	BMP (mi)	EMP (mi)	Length	Frequency	TMO Reference Information
TW-CLR-01F	Trail Opening	0.0000	2.8700	2.8700	1.000	
TW-CLR-01A	Logging Out	0.0000	2.8700	2.8700	0.500	
TW-CLR-01B	Brushing Or Mowing	0.0000	2.8700	2.8700	0.500	
TW-TRD-01D	Trailway-Tread And Prism-Snow Grooming - Track-Setting With Snowmobile	0.0000	2.2600	2.2600	9.000	
TW-S&D-01A	Tracs Survey	0.0000	2.8700	2.8700	0.200	

Special Considerations

Consideration	BMP (mi)	EMP (mi)	Length	Comments
Existing permit requirements/considerations (specify in Comments)	0.0000	2.2600	2.2600	Special Use permit with Big Timber Cross Country Ski Club to maintain the trail for x-skiing



Trail Management Objectives
Sweet Grass X-Ski Trail #SNO-122 (Snow)

TMO Status : APPROVED 10/16/2008

Region : 01

Forest : Gallatin National Forest

District : 011101 - Big Timber Ranger District

Beginning Milepost : 0.0000
 Ending Milepost : 2.8700
 Trail Length : 2.8700

TMO BMP (mi): 0.0000 EMP (mi): 2.8700

TMO Status : APPROVED
 Line Officer : Name : Grant Mamier Signature :
 Title : District Ranger Date : 10/16/2008



National Quality Standards for Trails

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.



National Quality Standards for Trails

FSH 2309.18., Section 15

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
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.²
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.²

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.

² For definitions of Annual Maintenance, Deferred Maintenance, and Capital Improvement, refer to Appendix A of this Training Package.



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	<ul style="list-style-type: none"> ♦ Tread intermittent and often indistinct. ♦ May require route finding. ♦ Single lane, with no allowances constructed for passing. ♦ Predominantly native materials. 	<ul style="list-style-type: none"> ♦ Tread continuous and discernible, but narrow and rough. ♦ Single lane, with minor allowances constructed for passing. ♦ Typically native materials. 	<ul style="list-style-type: none"> ♦ 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. 	<ul style="list-style-type: none"> ♦ 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. 	<ul style="list-style-type: none"> ♦ 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	<ul style="list-style-type: none"> ♦ Obstacles common, naturally occurring, often substantial, and intended to provide increased challenge. ♦ Narrow passages; brush, steep grades, rocks and logs present. 	<ul style="list-style-type: none"> ♦ Obstacles may be common, substantial, and intended to provide increased challenge. ♦ Blockages cleared to define route and protect resources. ♦ Vegetation may encroach into trailway. 	<ul style="list-style-type: none"> ♦ Obstacles may be common, but not substantial or intended to provide challenge. ♦ Vegetation cleared outside of trailway. 	<ul style="list-style-type: none"> ♦ Obstacles infrequent and insubstantial. ♦ Vegetation cleared outside of trailway. 	<ul style="list-style-type: none"> ♦ Obstacles 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	<ul style="list-style-type: none"> Structures minimal to non-existent. Drainage typically provided without structures. Natural fords. Typically no bridges. 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Structures frequent and substantial; typically constructed of imported materials. Constructed or natural fords. Bridges as needed for resource protection and user convenience. Trailside amenities may be present. 	<ul style="list-style-type: none"> Structures frequent or continuous; typically constructed of imported materials. May include bridges, boardwalks, curbs, handrails, trailside amenities, and similar features.
Signs²	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 Environments & Experience³	<ul style="list-style-type: none"> Natural and unmodified. ROS: Typically Primitive to Roded Natural. WROS: Typically Primitive to Semi-Primitive. 	<ul style="list-style-type: none"> Natural and essentially unmodified. ROS: Typically Primitive to Roded Natural. WROS: Typically Primitive to Semi-Primitive. 	<ul style="list-style-type: none"> Natural and primarily unmodified. ROS: Typically Primitive to Roded Natural. WROS: Typically Semi-Primitive to Transition. 	<ul style="list-style-type: none"> May be modified. ROS: Typically Semi-Primitive to Rural WROS: Typically Portal or Transition. 	<ul style="list-style-type: none"> May be highly modified. Commonly associated with visitor centers or high-use recreation sites. ROS: Typically Roded 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.

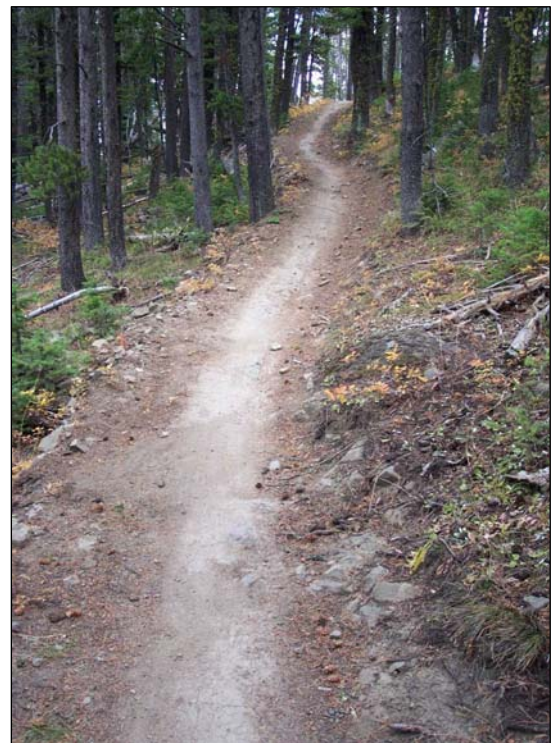


TC3 – Typical Rec. Environment / Experience: Recreation environment natural and primarily unmodified.

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.



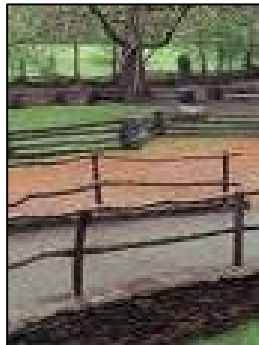
TC5 – Obstacles: Obstacles not present. Grades typically < 8%.



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 intent¹. 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 intent¹. 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 Surface²	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 intent¹. 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 Surface²	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 Grade²	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 intent¹. 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 Surface²	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 Grade²	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 intent¹. 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 Surface²	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	
	Target Grade		10% – 25%	5% – 15%	3% – 10%	
Design Grade²	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 intent¹. 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 Surface²	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 Grade²	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 intent¹. 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 Surface²	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 Grade²	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 intent¹. 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 Surface²	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 Grade²	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 intent¹. 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.



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 to 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	<i>Walk-through & Make Notes on Map or GPS</i> 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	<i>Inter-visible Alignment Changes, 2% Grade Changes, or 25 Feet</i>
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	<i>Formidable Obstacles</i> (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.

GIS, GPS, and TRACS: What's the Connection?

GIS, GPS and TRACS are three important tools used for trail data collection, management, and utilization. This section explains the interaction between them.

GIS: Two components of data comprise the Forest Service GIS system:

- Spatial data for trails exists as vector arcs in GIS coverages.
- These arcs are linked or routed to corresponding tabular information in the Infra corporate database.

GPS: The GPS survey method is particularly suited for collecting spatial information.

TRACS: The TRACS field survey method is intended for collecting the tabular information, including the mileposting of features and tasks along a trail.

Collecting GIS Spatial Data for Trails

The use of GPS as a surveying tool has revolutionized the mapping of trails on National Forests.

Since roads are generally visible on aerial photos, they were historically mapped with reasonable accuracy using photogrammetry. The mapping of trails however, which are not generally visible on aerial photos, has enjoyed no such accuracy. Historically, mapping trails involved an individual either in the office plotting the course on a map by memory or an individual walking the trail and plotting the route on an aerial photo or a quadrangle map. In areas with landmarks and notable topography, this sort of manual mapping has been surprisingly accurate. GPS surveying however, with its considerable accuracy, has surfaced manual mapping limitations. Anyone that has spent time comparing GPS locations with historical trail maps can attest to those limitations.

Over time, the need to update map locations to reflect location adjustments, decommissioned routes, and other changes has been problematic. Forests were asked to update maps every 10 years or so to reflect current locations. These updates, if done at all for trails, took years to work their way through the primary, secondary, and USGS quad map edits. It's no surprise the spatial data for trail is often in such poor condition.

GPS is helping change that. Folks with fairly inexpensive GPS units have the capability to re-map their trails to well within geometronic mapping standards (less than 40 feet from their actual location). As the Forest Service migrates from manual mapping to digital mapping, it becomes more critical for trail managers to provide higher accuracy routes for use in GIS systems, mapping systems, and third party enterprises.

GPS provides an essential spatial base for TRACS. Once TRACS field survey data is recorded in Infra Trails, the Forest Service GIS system uses the spatial information surveyed by GPS, among other methods, to locate Infra Trails data onto maps accurately. Infra stores trail information by milepost. These mileposts are scaled onto the spatial data assigned to that trail record. Improved spatial information results in improved mapped trail information.

Collecting GIS Tabular Data for Trails

The TRACS process collects the field-based tabular information which is recorded in Infra Trails and used for costing, planning and management. TRACS has not focused on collecting the spatial data side of GIS and to that end has relied primarily on ground-based measuring devices for collecting measure points for features and tasks. The cyclometer, the digital measuring instrument (DMI), and the odometer have been the recommended devices for measuring distances. GPS and its associated data collectors and data dictionaries have been used by some units to simultaneously collect tabular and spatial information.

TRACS, from the beginning, has assumed that GPS technology, its costs, and its associated skills were out of reach for most units in the Forest Service. The timeframe that was imposed on the agency to collect deferred maintenance information on trails forced developers to keep as close to the technological-lowest-common-denominator as possible to be in sync with the resources available at all units.

GPS is an outstanding tool for collecting trails spatial data. Attempting, however, to combine the collection of spatial data while simultaneously collecting TRACS tabular data can present several problems and is generally not recommended. Simultaneous collection presents the following difficulties:

- GPS surveys are premised on line-of-sight radio waves from multiple satellites. Trees and mountains tend to interrupt these signals.
- Quality GPS surveys generally require four satellites in a reasonable constellation. A lesser number of satellites or poor constellation geometry can significantly degrade the quality of the survey. Fewer than three satellites or very poor geometry will produce no useable survey.
- Swapping constellation geometry by going in and out of tree canopy or behind rocks or mountains tends to create an erratic looking survey than doesn't accurately represent the trail location.
- Moving slowly and steadily along the trail seems to produce the most representative GPS survey. Stopping and starting a lot to take specific measurements and record information on trail features and tasks can dramatically degrade the survey by forcing the GPS receiver to swap from desired satellites to the less desirable. This is further exacerbated when it occurs under tree canopies, behind large rock outcrops, or narrow canyons. This creates survey spiking that doesn't represent the trail location.
- Quality GPS surveys must be planned for the time of day the satellite geometry is at its optimum. This optimal geometry frequently does not coincide with a surveyor's work schedule, with the tree cover, or with mountain shadowing. This can usually be overcome with good satellite availability planning, but may limit the number of hours in a day a survey will be successful.
- GPS surveys accurate enough for spatial covers need to be differentially corrected for things like atmospheric conditions. Real time correction is possible in some locations, but requires paid subscriptions and visibility.
- Editing the survey for spikes and multi-pathing signals is critical before a GPS survey is capable of meeting cartographic mapping standards. This editing usually occurs after field data collection and office differential correction.

Because of the limitations listed above, it is very difficult to simultaneously collect accurate mileposted tabular information while also collecting quality GPS data. It's not impossible, but each of the limitations above must be addressed and virtually eliminated. Simultaneously collecting trail tabular and spatial data on trails through prairies, where there are no mountains and trees, stands a reasonable chance at accuracy. Those trails, however, represent a small fraction of the National Forest Trail System.

Ground-based measuring devices bring none of the limitations discussed above. With the possible exception of eTRACS which is currently under development, the lowest-common-denominator for completing quality TRACS Surveys continues to be pencil, paper, and a cyclometer.

(For an explanation of eTRACS, see the *eTRACS* section of this guide.)

TRACS Data Dictionary



What's Included?

The TRACS Data Dictionary is the comprehensive reference document that identifies the Forest Service's standardized set of trail features, tasks, units of measure, and severity factors that are used as the basis for TRACS Surveys and the entry of Infra Trails Feature and Task data. The TRACS Data Dictionary includes:

Data Dictionary Item	Example (based on Trail Feature: Standard Puncheon)
Trail Feature	Standard Puncheon
Feature Type	Trail Structure
Feature Category	Puncheon, Standard
Feature Codes	TS-PUN-PU1
USFS Standard Drawing Number (by Feature)	Drawing 932-2
USFS Standard Specification	Spec 932.01 - 932.13
Point or Line Feature?	Line Feature
Inventory Unit of Measure	Square Feet (SF)
Feature Beginning Measure Point (BMP)	BMP Required
Feature Ending Measure Point (EMP)	EMP Optional
Feature Quantity	Required (itemized by puncheon, not grouped)
Material Type (primary)	Required
Required Feature Dimensions	Length, Width, Distance to Material Source
Optional Feature Dimensions	(not applicable for puncheon)
Task Code	TS-PUN-DCK-05C, etc...
Task Description	Increase structure width (modification to substructure)
Task Type	Capital Improvement
Task Unit of Measure	Square Feet (SF)
Task Condition Class	Expansion
Task Severity Factors (if applicable)	Simple Pilings with Complex Spread Footings, etc.
Task % Breakout by Labor, Equip, Materials	Labor 25%; Equipment 15%, Materials 60%
Linear Events Applied in Task Costing	Non-Mechanized Work (if applicable)
Productivity Factors Applied in Task Costing	None

The TRACS Data Dictionary includes hundreds of trail features, tasks, and corresponding data attributes. As such, it can be overwhelming when viewed in its entirety and is usually best viewed by looking at subset of the factors you are interested in. Two views of the TRACS Data Dictionary Data are provided on the following pages: 1) Features listed by required dimensions and material type; and 2) Tasks listed by feature and severity factor. The entire data dictionary and these views are available on the IBS website, via Infra Trails, and in Infra Trails documentation.

TRACS Condition Codes

(4/15/2001)

TRACS condition codes are used to consistently identify the condition of the trail and constructed features along the trail. Condition codes are identified numerically 1 – 7, and grouped by Annual Maintenance, Deferred Maintenance, and Capital Improvement³.

Condition codes are incorporated into each trail task code in the TRACS Data Dictionary, indicating the general condition of the trail segment or feature. For example, in the task code for basic maintenance of a Standard Puncheon (TS-PUN-STD-01a), “01” indicates that the feature requires routine maintenance.

Condition Code	Condition Class	Condition Class Description	Annual Maintenance	Deferred Maintenance	Capital Improvement
1	Routine Maintenance	Feature is functioning within standard as designed and is within normal maintenance cycle (generally at a cost of less than 20% of replacement)	●		
2	Repair/Rehab	Feature is in disrepair , and may or may not be useable, but needs to be repaired to bring feature to standard (generally at a cost between 21% & 50% of replacement)		●	
3	Replace in-kind	Feature is dysfunctional and is beyond it's designed lifecycle or generally has deteriorated to a point where unable to perform as designed or constructed (generally at a cost of over 51% of new construction and includes demolition and removal of existing)		●	
4	Decommission	Feature is not needed for the operation of the trail or is inappropriate for the setting and should be removed from system with no replacement planned.		●	
5	Expansion	Feature is basically functioning as designed but is undersized . Would typically be lengthened or widened, but in some cases size may be reduced.			●
6	Alter Function	Modify feature to change function to increase capacity, change function, or change durability.			●
7	Install New	New feature is needed.			●

³ These task types reflect the Forest Service's Common Definitions for Maintenance and Construction Terms (Appendix A).

Trails Data Dictionary: Features



Trail Data Dictionary: Features, Dimensions, Material Type (updated 4/27/2011)

Feature / Tasks		Basic Inventory & Dimensions										Materials																							
Feature / Task Code	Feature ¹	Line or Point Feature	Task UoM (Unit of Measure)	Standard Drawing	BMP: mi, ft (km, m)	EMP: mi, ft (km, m)	Quantity: ea	Length: ft (m)	Width in (mm)	Depth: in (mm)	Height: in (mm)	Radius: ft (m)	Diameter: in (mm)	Material Type (primary)	Distance to Material Source or Nearest Trailhead: ft (m)	Rock	Native Log	Treated Log	Native Sawn Wood	Treated Sawn Wood	Metal	Concrete	Composites	Plastic or Rubber	Native Soil	Select Borrow	Aggregate	Asphalt	Chunk Wood	Clay	Other (or unknown)				
TRAILWAY																																			
TW-CHTR	Charters / Rentals		LS																																
TW-OPS	Operations		LF	(NA)																															
TW-CDR	Corridor Maintenance		LF	(NA)																															
TW-S&D	Survey, Preparation, and Administration		LF	(NA)																															
TW-TRD	Tread and Prism	L	SF	912-1, 912-2	R	R ^{lgh}	R ¹	R	R																										
TW-CLR	Clearing Limits	L	CF	911-1	R	R ^{lgh}	R ¹	R	R		R																								
TW-SRF	Surfacing	L																																	
TW-SRF-AGG	Aggregate	L	SF	942-1	R	O	R ¹	R	R	O				R	R																				
TW-SRF-ASP	Asphalt	L	SF	942-2	R	O	R ¹	R	R	O				R	R																				
TW-SRF-GD1	Grid-UnitType I	L	SF	944-1	R	O	R ¹	R	R	O				R	R																				
TW-SRF-RRP	Riprap	L	SF	(needed)	R	O	R ¹	R	R	O				R	R																				
TW-SRF-CHK	Chunk Wood	L	SF	(needed)	R	O	R ¹	R	R	O				R	R																				
TW-SRF-CON	Concrete	L	SF	(needed)	R	O	R ¹	R	R	O				R	R																				
TW-SRF-CLY	Imported Clay	L	SF	(needed)	R	O	R ¹	R	R	O				R	R																				
TW-SRF-OTH	Other	L	SF	(needed)	R	O	R ¹	R	R	O				R	R																				
TW-CTN	Climbing Turn	P	EA	912-9,912-10	R		O					O																							
TW-TAL	Talus Section	L	SF	912-3	R	O	R ¹	R	R					R	R																				
TW-TOT	Turnout	L	LF	912-6	R	O	R ¹	R	O																										
TW-PSS	Passing Section	L	LF	912-6	R	O	R ¹	R	O																										
TW-FRD	Ford	L	LF		R	O	R ¹	R	R																										
TW-FRD-NFD	Natural	L	SF	(needed)	R	O	R ¹	R	R																										
TW-FRD-CFD	Constructed	L	SF	912-7,912-8	R	O	R ¹	R	R					R																					
TW-SST	Stepping Stones	P	EA	912-7,912-8	R		O	R						R	R																				
TRAIL STRUCTURES																																			
TS-SBK	Switchback	P			R		R ¹	O	O			R																							
TS-SBK-RAD	Type I - Radiused	P	EA	914-1	R		R ¹	O	O			R																							
TS-SBK-CIR	Type II - Circular Landing	P	EA	914-2	R		R ¹	O	O			R																							
TS-SBK-REC	Type III - Rectangular Landing	P	EA	914-3	R		R ¹	O	O			R																							
TS-RET	Retaining Wall	L																																	
TS-RET-LOG	Log Crib	L	SF	934-1	R	O	R ¹	R		O	R			R	R																				
TS-RET-PLK	Post and Plank (w/ tie-backs)	L	SF	(needed)	R	O	R ¹	R		O	R			R	R																				
TS-RET-RCK	Stacked Rock	L	SF	935-1	R	O	R ¹	R		O	R			R	R																				
TS-RET-MAS	Masonry Rock	L	SF		R	O	R ¹	R		O	R			R	R																				

Trail Data Dictionary: Features, Dimensions, Material Type (updated 4/27/2011)

Feature / Tasks		Basic Inventory & Dimensions												Materials																			
Feature / Task Code	Feature ¹	Line or Point Feature	Task UoM (Unit of Measure)	Standard Drawing	BMP: mi, ft (km, m)	EMP: mi, ft (km, m)	Quantity: ea	Length: ft (m)	Width in (mm)	Depth: in (mm)	Height: in (mm)	Radius: ft (m)	Diameter: in (mm)	Material Type (primary)	Distance to Material Source or Nearest Trailhead: ft (m)	Rock	Native Log	Treated Log	Native Sawn Wood	Treated Sawn Wood	Metal	Concrete	Composites	Plastic or Rubber	Native Soil	Select Borrow	Aggregate	Asphalt	Chunk Wood	Clay	Other (or unknown)		
TS-RET-CON	Cast-in-place Concrete	L	SF	(needed)	R	O	R ¹	R		O	R			R	R								•										
TS-RET-GAB	Wire Basket	L	SF	(needed)	R	O	R ¹	R		O	R			R	R	•																	
TS-SWY	Stairway	L / P																															
TS-SWY-STP	Individual Steps	P	EA	933-3,933-4	R	R+	R+	O	O					R	R	•	•	•	•	•	•	•										•	
TS-SWY-OST	Overlapping Steps	L	SF	(needed)	R	O	R ¹	R	R					R	R	•			•	•	•	•										•	
TS-SWY-CRB	Crib Ladder (partially manufactured materials)	L	SF	933-1,933-2	R	O	R ¹	R	R					R	R	•	•	•	•	•	•	•										•	
TS-SWY-CAS	Staircase (completely manufactured materials)	L	SF	(needed)	R	O	R ¹	R	R					R	R		•	•	•	•	•	•										•	
TS-SWY-LAD	Ladder (rigid, rope, or cable)	L	SF	(needed)	R	O	R ¹	R	R					R	R		•	•	•	•	•	•										•	
TS-HND	Handrail	L	EA																														
TS-HND-BLT	Site-built	L	LF	(needed)	R	O	R ¹	R			O			R	R		•	•	•	•	•			•								•	
TS-HND-MOD	Modular	L	LF	(needed)	R	O	R ¹	R			O			R	R		•	•	•	•	•			•								•	
TS-BAR	Barrier	L																															
TS-BAR-RCK	Stacked Rock	L	LF	953-5	R	O	R ¹	R		O	O			R	R	•																	
TS-BAR-MAS	Masonry Rock	L	LF	(needed)	R	O	R ¹	R		O	R			R	R	•						•											
TS-BAR-OGR	Rail On-Grade	L	LF	953-1,953-3	R	O	R ¹	R			O		O	R	R	•	•	•	•	•	•	•											•
TS-BAR-PST	Rail On-Posts	L	LF	953-2,953-4	R	O	R ¹	R			O		O	R	R	•	•	•	•	•	•	•											•
TS-BAR-GRD	Guardrail	L	LF	953-2,953-4	R	O	R ¹	R			R		O	R	R	•	•	•	•	•	•	•											•
TS-BAR-CRB	Curb	L	LF	953-2,953-4	R	O	R ¹	R	O		R			R	R	•	•	•	•	•	•	•	•	•				•					•
TS-CGD	Cattleguard	P																															
TS-CGD-STD	Standard	P	SF	(needed)	R		R ¹	R	R					R	R	•	•	•	•	•	•												•
TS-CGD-BRG	Fence-Bridge	P	SF	(needed)	R		R ¹	R	R		O			R	R				•	•													•
TS-SAR	Slope Armoring	L																															
TS-SAR-RIP	Rip Rap Rock	L	SF	(needed)	R	O	R ¹	R		O	R			R	R	•																	•
TS-SAR-MSC	Miscellaneous	L	SF	(needed)	R	O	R ¹	R		O	R			R	R		•	•			•	•						•					•
TS-TPK	Turnpike (aka Causeway)	L																															
TS-TPK-STD	Type I - Standard	L	SF	913-1	R	O	R ¹	R	R	O				R	R	•	•	•	•	•	•												•
TS-TPK-FDN	Type II - Standard w/ Foundation	L	SF	913-2	R	O	R ¹	R	R	O				R	R	•	•	•	•	•	•												•
TS-PUN	Puncheon	L																															
TS-PUN-STD	Standard	L	SF	932-2	R	O	R ¹	R	R					R	R	•	•	•	•	•	•												•
TS-PUN-NOD	No-Deck	L	SF	932-1	R	O	R ¹	R	R					R	R	•	•	•	•	•	•												•
TS-BWK	Boardwalk	L																															
TS-BWK-STD	Standard	L	SF	(needed)	R	O	R ¹	R	R					R	R	•	•	•	•	•	•		•	•									•
TS-BWK-SNR	Step and Run	L	SF	(needed)	R	O	R ¹	R	R					R	R				•	•													•

Trail Data Dictionary: Features, Dimensions, Material Type (updated 4/27/2011)

Feature / Tasks						Basic Inventory & Dimensions										Materials																			
Feature / Task Code	Feature ¹	Line or Point Feature	Task UoM (Unit of Measure)	Standard Drawing	BMP: mi, ft (km, m)	EMP: mi, ft (km, m)	Quantity: ea	Length: ft (m)	Width in (mm)	Depth: in (mm)	Height: in (mm)	Radius: ft (m)	Diameter: in (mm)	Material Type (primary)	Distance to Material Source or Nearest Trailhead: ft (m)	Rock	Native Log	Treated Log	Native Sawn Wood	Treated Sawn Wood	Metal	Concrete	Composites	Plastic or Rubber	Native Soil	Select Borrow	Aggregate	Asphalt	Chunk Wood	Clay	Other (or unknown)				
TS-CDY	Corduroy	L																																	
TS-CDY-STD	Standard	L	SF	(needed)	R	O	R ¹	R	R					R	R		•	•	•	•													•		
TS-TUN	Tunnel	L																																	
TS-TUN-STD	Standard	L	CF	(needed)	R	O	R ¹	R	R		R			R	R	•			•	•	•	•											•		
TS-SHD	Snow Shed	L																																	
TS-SHD-STD	Standard	L	CF	(needed)	R	O	R ¹	R	R		R			R	R	•			•	•	•	•											•		
TS-OVL	Overlook	P		(needed)																															
TS-OVL-GRD	On-Grade	P	SF	(needed)	R		R ¹	R	R					R	R	•	•	•	•	•	•	•	•	•				•	•				•		
TS-OVL-ELV	Elevated	P	SF	needed	R		R ¹	R	R					R	R	•	•	•	•	•	•	•	•	•									•		
TS-CUS	Custom	L / P																																	
TS-CUS-TS1	Type 1 (by each)	P	EA		R		R ¹	R	R					R	R	•	•	•	•	•	•	•	•	•									•		
TS-CUS-TS2	Type 2 (by linear foot)	L	LF		R	O	R ¹	R	O					R	R	•	•	•	•	•	•	•	•	•									•		
TS-CUS-TS3	Type 3 (by square foot)	L	SF		R	O	R ¹	R	R					R	R	•	•	•	•	•	•	•	•	•									•		
TRAIL BRIDGES																																			
TB	TRAIL BRIDGE	L																																	
TB-SUS	Cable Suspension	L	SF	Special													•	•	•	•	•													•	
TB-CDK	Cable Deck	L	SF	Special																	•													•	
TB-CST	Cable Stayed	L	SF	Special													•	•	•	•	•													•	
TB-DGR	Deck Girder	L	SF	Special													•	•	•	•	•	•												•	
TB-DTR	Deck Truss	L	SF	Special													•	•	•	•	•		•											•	
TB-SGR	Side Girder	L	SF	Special															•	•	•													•	
TB-STR	Side Truss	L	SF	Special													•	•	•	•	•		•											•	
TB-DAR	Deck Arch	L	SF	Special															•	•	•	•	•											•	
TB-SAR	Suspended Arch	L	SF	Special															•	•	•	•	•											•	
TB-SUB	Single Unit	L	SF	Special													•	•	•	•	•	•												•	
DRAINAGE STRUCTURES																																			
TD-DIP	Drain Dip	P																																	
TD-DIP-STD	Standard	P	EA	912-4,912-5	R	R+	R+										•																	•	
TD-WBR	Waterbar	P																																	
TD-WBR-RCK	Rock	P	EA	922-1	R	R+	R+		O					R	R	•						•													
TD-WBR-LOG	Log	P	EA	922-2	R	R+	R+		O				O	R	R	•	•	•	•	•															•
TD-WBR-BLT	Belted	P	EA	922-3	R	R+	R+		O					R	R									•										•	
TD-CVT	Culvert	P																																	
TD-CVT-STD	Standard	P	EA	921-2	R	R+	R+	R						R	R								•	•		•								•	

Trail Data Dictionary: Features, Dimensions, Material Type (updated 4/27/2011)

Feature / Tasks		Basic Inventory & Dimensions										Materials																						
Feature / Task Code	Feature ¹	Line or Point Feature	Task UoM (Unit of Measure)	Standard Drawing	BMP: mi, ft (km, m)	EMP: mi, ft (km, m)	Quantity: ea	Length: ft (m)	Width in (mm)	Depth: in (mm)	Height: in (mm)	Radius: ft (m)	Diameter: in (mm)	Material Type (primary)	Distance to Material Source or Nearest Trailhead: ft (m)	Rock	Native Log	Treated Log	Native Sawn Wood	Treated Sawn Wood	Metal	Concrete	Composites	Plastic or Rubber	Native Soil	Select Borrow	Aggregate	Asphalt	Chunk Wood	Clay	Other (or unknown)			
TD-CVT-HDW	Standard w/ Headwalls	P	EA	921-1	R	R+	R+	R					R	R	R							•	•	•								•		
TD-CVT-RCK	Rock	P	EA	921-3	R	R+	R+	R	O		O			R	R	•																	•	
TD-CVT-BOX	Box	P	EA	921-4a,b	R	R+	R+	R	O		O			R	R				•	•		•	•										•	
TD-CVT-ACH	Bottomless Arch	P	EA	(needed)	R	R+	R+	R					R	R	R							•	•										•	
TD-CVT-OPT	Open-Top Drain	P	EA	(needed)	R	R+	R+	R	O		O			R	R	•	•	•	•	•	•	•	•										•	
TD-SPY	Spillway	P																															•	
TD-SPY-RCK	Rock	P	SF	923-1	R	R+	R+		R		R			R	R	•						•											•	
TD-DAM	Check Dam	P																															•	
TD-DAM-STD	Standard	P	EA	915-2	R	R+	R+		O		O		O	R	R	•	•	•	•	•	•	•											•	
TD-DIT	Ditch	L																																
TD-DIT-SID	Side	L	LF	(needed)	R	R+	R+	R	O	O						•									•									
TD-DIT-LED	Leadoff	L	LF	(needed)	R	R+	R+	R	O	O						•									•									
TD-BRM	Berm	L																																
TD-BRM-STD	Standard Earth	L	LF	(needed)	R	R+	R+	R	O		O														•									
TD-UDN	Underdrain (aka French Drain)	L																																
TD-UDN-RCK	Rock	L	SF	924-1	R	O	R+	R	R	O				R	R	•																		•
TD-UDN-GEO	Geotextile	L	SF	(needed)	R	O	R+	R	R	O				R	R									•									•	
TD-CUS	Custom	L / P																																
TD-CUS-DS1	Type 1 (by each)	P	EA		R	O	R+	R	R	O				R	R	•	•	•	•	•	•	•	•	•	•								•	
TD-CUS-DS2	Type 2 (by linear foot)	L	LF		R	O	R+	R	R	O				R	R	•	•	•	•	•	•	•	•	•	•								•	
TD-CUS-DS3	Type 3 (by square foot)	L	SF		R	O	R+	R	R	O				R	R	•	•	•	•	•	•	•	•	•	•								•	
TRAILSIDE STRUCTURES																																		
SS-CNT	Traffic Counter	P																																
SS-CNT-BRD	Buried	P	EA	(needed)	R		R ¹							R	R							•											•	
SS-CNT-TRE	Tree-Mounted	P	EA	(needed)	R		R ¹							R	R						•												•	
SS-RBX	Registration Box	P																																
SS-RBX-RBG	Ground-Mounted	P	EA	(needed)	R		R ¹							R	R				•	•	•			•									•	
SS-RBX-RBE	Post-Mounted	P	EA	(needed)	R		R ¹							R	R				•	•	•			•									•	
SS-DOK	Dock	P																																
SS-DOK-STA	Stationary	P	SF	(needed)	R		R ¹	R	R		O			R	R	•	•	•	•	•	•	•	•										•	
SS-DOK-FLT	Floating (Simple)	P	SF	(needed)	R		R ¹	R	R		O			R	R	•	•	•	•	•	•	•											•	
SS-BNH	Bench	P																																
SS-BNH-PRM	Primitive	P	EA	(needed)	R	R+	R+	O	O		O			R	R	•	•	•	•	•	•	•	•	•	•								•	
SS-BNH-MNF	Manufactured	P	EA	(needed)	R	R+	R+	O	O		O			R	R	•	•	•	•	•	•	•	•	•	•								•	

Trail Data Dictionary: Features, Dimensions, Material Type (updated 4/27/2011)

Feature / Tasks		Basic Inventory & Dimensions										Materials																						
Feature / Task Code	Feature ¹	Line or Point Feature	Task UoM (Unit of Measure)	Standard Drawing	BMP: mi, ft (km, m)	EMP: mi, ft (km, m)	Quantity: ea	Length: ft (m)	Width in (mm)	Depth: in (mm)	Height: in (mm)	Radius: ft (m)	Diameter: in (mm)	Material Type (primary)	Distance to Material Source or Nearest Trailhead: ft (m)	Rock	Native Log	Treated Log	Native Sawn Wood	Treated Sawn Wood	Metal	Concrete	Composites	Plastic or Rubber	Native Soil	Select Borrow	Aggregate	Asphalt	Chunk Wood	Clay	Other (or unknown)			
SS-INF	Information	P																																
SS-INF-PAN	Flat-Panel	P	SF	(needed)	R		R ¹		R		R			R	R		•	•	•	•	•	•	•										•	
SS-INF-KSK	Kiosk	P	SF	(needed)	R		R ¹		R		R			R	R	•	•	•	•	•	•	•	•										•	
SS-GAR	Garbage Container																																	
SS-GAR-CAN	Residential-Style Can	P	EA	(needed)	R		R ¹	R	R					R	R	•	•	•	•	•	•	•	•	•	•								•	
SS-GAR-BIN	Commercial Bin	P	EA	(needed)	R		R ¹	R	R					R	R	•	•	•	•	•	•	•	h	•	h								•	
SS-CUS	CUSTOM	L / P																																
SS-CUS-SS1	Type 1 (by each)	P	EA		R		R ¹	R	R					R	R	•	•	•	•	•	•	•	•	•	•								•	
SS-CUS-SS2	Type 2 (by linear foot)	L	LF		R	O	R ¹	R	O					R	R	•	•	•	•	•	•	•	•	•	•								•	
RESTRICTION DEVICES																																		
RD-BCD	Barricade	P																																
RD-BCD-BDR	Boulder	P	EA	(needed)	R		R ¹		O		O			R	R	•																		
RD-BCD-BOL	Single Post Bollard	P	EA	(needed)	R		R		O	O	R		O	R	R	•	•	•	•	•	•	•	•	•	•									•
RD-BCD-MNF	Manufactured	P	EA	(needed)	R		R ¹		O		O			R	R	•	•	•	•	•	•	•	•	•	•									•
RD-STL	Stile	P																																
RD-STL-STD	Standard	P	EA	(needed)	R		R ¹		O		O			R	R	•	•	•	•	•	•	•	•	•										•
RD-FNC	Fence	L																																
RD-FNC-WIR	Post and Wire	L	LF	(needed)	R		R ¹	R			O			R	R						•													•
RD-FNC-RAL	Post and Rail	L	LF	(needed)	R		R ¹	R			O			R	R		•	•	•	•	•	•	•	•										•
RD-FNC-WOV	Woven Wire	L	LF	(needed)	R		R ¹	R			O			R	R						•													•
RD-FNC-JAC	Jackleg	L	LF	(needed)	R		R ¹	R			O			R	R		•	•	•	•	•	•	•	•										•
RD-FNC-STK	Stacked Rail (Worm)	L	LF	(needed)	R		R ¹	R			O			R	R		•	•	•	•	•	•	•	•										•
RD-GAT	Gate	P																																
RD-GAT-WIR	Wire	P	EA	(needed)	R		R ¹		R		O			R	R						•													•
RD-GAT-SWG	Swinging	P	EA	(needed)	R		R ¹		R		O			R	R		•	•	•	•	•	•	•	•										•
RD-GAT-RAL	Loose Rail	P	EA	(needed)	R		R ¹		R		O			R	R		•	•	•	•	•	•	•	•										•
RD-CUS	CUSTOM	L / P																																
RD-CUS-RD1	Type 1 (by linear each)	P	EA		R		R ¹		R		O			R	R	•	•	•	•	•	•	•	•	•	•									•
RD-CUS-RD2	Type 2 (by linear foot)	L	LF		R		R ¹		R		O			R	R	•	•	•	•	•	•	•	•	•	•									•
ROUTE MARKERS & SIGNS																																		
RM-CRN	Cairn	P																																
RM-CRN-SMP	Simple Rock	P	EA	952-1	R	R+	R+				O		O	R	R	•																		•
RM-CRN-RCK	Rock	P	EA	952-1	R	R+	R+				O		O	R	R	•																		•
RM-CRN-SHP	Shepherders	P	EA	(needed)	R	R+	R+				O		O	R	R	•																		•

Trail Data Dictionary: Features, Dimensions, Material Type (updated 4/27/2011)

Feature / Tasks				Basic Inventory & Dimensions										Materials																					
Feature / Task Code	Feature ¹	Line or Point Feature	Task UoM (Unit of Measure)	Standard Drawing	BMP: mi, ft (km, m)	EMP: mi, ft (km, m)	Quantity: ea	Length: ft (m)	Width in (mm)	Depth: in (mm)	Height: in (mm)	Radius: ft (m)	Diameter: in (mm)	Material Type (primary)	Distance to Material Source or Nearest Trailhead: ft (m)	Rock	Native Log	Treated Log	Native Sawn Wood	Treated Sawn Wood	Metal	Concrete	Composites	Plastic or Rubber	Native Soil	Select Borrow	Aggregate	Asphalt	Chunk Wood	Clay	Other (or unknown)				
RM-PST	Post	P		(needed)																															
RM-PST-STD	Standard	P	EA	952-1	R	R+	R+				O		O	R	R		•	•	•	•	•	•	•	•									•		
RM-BLZ	Tree Blaze	P		(needed)																															
RM-BLZ-NFS	Standard FS	P	EA	952-1	R	R+	R+																										•		
RM-BZR	Route Blazer	P		(needed)																															
RM-BZR-MNF	Manufactured	P	EA	952-1	R	R+	R+							R						•	•	•		•	•								•		
RM-BOY	Buoy	P																																	
RM-BOY-REG	Regulatory	P	EA	(needed)	R	R+	R+							R	R							•			•								•		
RM-BOY-ANC	Anchor	P	EA	(needed)	R	R+	R+							R	R							•			•								•		
RM-MMK	Mileage Marker	P		952-1																															
RM-MMK-STD	Tree-Mounted	P	EA	952-1	R	R+	R+				O			R	R					•	•			•	•								•		
RM-MMK-PST	Post-Mounted	P	EA	952-1	R	R+	R+				O			R	R					•	•			•	•								•		
RM-MMK-SCR	Scribed	P	EA	952-1	R	R+	R+				O																				•		•		
RM-SGN	Sign	P																																	
RM-SGN-GUI	Guide or Destination	P	EA	952-1	R		R ¹	R	R	R	R	R	R	R	R					•	•	•		•	•								•		
RM-SGN-BDY	Boundary	P	EA	952-1	R		R ¹	R	R		O			R	R					•	•	•		•	•								•		
RM-SGN-WRN	Warning	P	EA	952-1	R		R ¹	R	R		O			R	R					•	•	•		•	•								•		
RM-SGN-REG	Regulatory	P	EA	952-1	R		R ¹	R	R		O			R	R					•	•	•		•	•								•		
RM-SGN-INF	Informational	P	EA	(needed)	R		R ¹	R	R		O			R	R					•	•	•		•	•								•		
RM-SGN-INT	Interpretive	P	EA	(needed)	R		R ¹	R	R		O			R	R					•	•	•		•	•								•		
RM-SGN-OTH	Other	P	EA	(needed)	R		R ¹	R	R		O			R	R					•	•	•		•	•								•		
RM-CUS	Custom	P / L																																	
RM-CUS-RM1	Type 1 (by each)	P	EA		R		R ¹	R	R		O			R	R		•	•	•	•	•	•	•	•	•								•		
RM-CUS-RM2	Type 2 (by linear foot)	L	LF		R		R ¹	R	R		O			R	R		•	•	•	•	•	•	•	•	•								•		
ADJACENT REFERENCE POINTS²																																			
RP-CON	CONSTRUCTED ADJACENT REFERENCE POINT																																		
RP-CON-TJT	Trail Junction	P			O ^{RP}																														
RP-CON-RJT	Road Junction	P			O ^{RP}																														
RP-CON-NJT	Non-System Route Junction	P			O ^{RP}																														
RP-CON-BLG	Building	P			O ^{RP}																														
RP-CON-THD	Trailhead	P			O ^{RP}																														
RP-CON-CUA	Concentrated Use Area (CUA)	P			O ^{RP}	O ^{RP}																													
RP-CON-UTO	Overhead Utility	L			O ^{RP}	O ^{RP}																													
RP-CON-UTB	Buried Utility	L			O ^{RP}	O ^{RP}																													

Trail Data Dictionary: Features, Dimensions, Material Type (updated 4/27/2011)

Feature / Tasks				Basic Inventory & Dimensions										Materials																			
Feature / Task Code	Feature ¹	Line or Point Feature	Task UoM (Unit of Measure)	Standard Drawing	BMP: mi, ft (km, m)	EMP: mi, ft (km, m)	Quantity: ea	Length: ft (m)	Width in (mm)	Depth: in (mm)	Height: in (mm)	Radius: ft (m)	Diameter: in (mm)	Material Type (primary)	Distance to Material Source or Nearest Trailhead: ft (m)	Rock	Native Log	Treated Log	Native Sawn Wood	Treated Sawn Wood	Metal	Concrete	Composites	Plastic or Rubber	Native Soil	Select Borrow	Aggregate	Asphalt	Chunk Wood	Clay	Other (or unknown)		
RP-CON-RRX	Railroad Crossing	P																															
RP-ADM	ADMINISTRATIVE ADJACENT REFERENCE POINT	P																															
RP-ADM-BRY	Administrative Boundary	P			O ^{RP}																												
RP-ADM-MON	Monument (legal corners, etc.)	P			O ^{RP}																												
RP-ADM-LLS	Large Diameter Log Source	P			O ^{RP}			O ^{RP}					O ^{RP}																				
RP-ADM-RCK	Structural Rock Source	P			O ^{RP}			O ^{RP}																									
RP-ADM-SEL	Select Borrow Source	P			O ^{RP}			O ^{RP}																									
RP-NAT	NATURAL ADJACENT REFERENCE POINT	P																															
RP-NAT-STM	Stream Crossing Name	P			O ^{RP}																												
RP-NAT-PSS	Mountain Pass	P			O ^{RP}																												
RP-NAT-SMT	Mountain Summit	P			O ^{RP}																												
RP-NAT-VPT	Viewpoint	P			O ^{RP}																												
RP-NAT-CHT	Avalanche Chute	P			O ^{RP}																												

Trail Data Dictionary: Features, Dimensions, Material Type (updated 4/27/2011)

Footnotes:

- Note¹ These features, with the exception of Adjacent Reference Points, define the basic trail structure. When they exist or are needed to meet standard, inventory these features to meet minimum protocol standards.
- Note² Adjacent Reference Points (ARP) are a TRACS survey item, and intended only to create mile-posted trail logs. When recording ARPs in Infra, the BPM and EMP must be recorded. ARP data fields cannot be used for recording required inventory or cost data for Trails,

Required / Optional Indicators:

- (auto) = Automatically populated, unless created by user.
- R = Measurement required to calculate feature unit of measure for inventory.
- R = Required for feature inventory & costing
- R¹ = Record as individual feature (entry defaults to 1)
- R+ = May be recorded as multiple features, grouped by quantity between segment BMP & EMP.
(Refer to CASM for guidance on grouping by feature type and Trail Class.)
- R^{length} = EMP may be used to determine feature length, instead of calculating length during field surveys.
- O = Measurement is optional.
- O^{RP} = If recording an Adjacent Reference Point, the BMP must be recorded. (see Note² above.)

Trails Data Dictionary: Tasks



Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TRAILWAY									
TW-CHTR	Charters / Rentals		LS						
TW-CHTR-OPS	Charter / rentals for operation crews		LS	Operations					
TW-CHTR-AM	Charter / rentals for annual maintenance crews		LS	Annual					
TW-CHTR-DM	Charter / rentals for deferred maintenance crews		LS	Deferred Maintenance					
TW-CHTR-CI	Charter / rentals for capital improvement crews		LS	Capital Improvement					
TW-OPS	Operations		LF						
TW-OPS-SET-01.01	Mitigate trail use / environmental law conflicts through signing, patrol, or closure (operations crew)		MI	Operations	Custom				
TW-OPS-SET-01.02	Identify appropriate mitigation of trail use / environmental law conflicts (management crew)		MI	Operations	Custom				
TW-OPS-SET-02.01	Field assessment for consistency with ROS		MI	Operations	AutoCalculated				
TW-OPS-SET-03.01	Field assessment for consistency with RMS / Forest Plan		MI	Operations	AutoCalculated				
TW-OPS-SS-01.01	Mitigate hazards along trail through signing, patrol, or closure (operations crew)		MI	Operations	Custom				
TW-OPS-SS-01.02	Identify and prescribe hazard mitigation along trail (management crew)		MI	Operations	Custom				
TW-OPS-SS-02.01	Regulation enforcement (36 CFR 261)		MI	Operations	AutoCalculated				
TW-OPS-RSP-01.01	Periodic review of accessibility signs for accuracy / consistency with agency guidelines		MI	Operations	AutoCalculated				
TW-OPS-RSP-02.01	Complete visitor satisfaction / needs assessment		MI	Operations	AutoCalculated				
TW-CDR	Corridor Maintenance		LF						
TW-CDR-HC-01.01	Remove / dispose of human waste		MI	Annual	AutoCalculated				
TW-CDR-HC-02.01	Remove / dispose of litter and dog waste		MI	Annual	AutoCalculated				
TW-CDR-HC-03.01	Remove graffiti		MI	Annual	AutoCalculated				
TW-CDR-RSP-01.01	Ensure posted information is appropriate and current		MI	Annual	AutoCalculated				
TW-S&D	Survey, Preparation, and Administration		LF						

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TW-S&D-01a	Routine TRACS Survey		MI	Annual	> 9 miles per day in field	7-9 miles per day in field	5-7 miles per day in field	3-5 miles per day in field	< 3 miles per day in field
TW-S&D-01b	Administration of operations tasks		EA	Operations	5% of all operations costs				
TW-S&D-01c	Administration of routine maintenance tasks		EA	Annual	10% of all annual maintenance costs				
TW-S&D-02a	Survey, design, and administration of deferred maintenance tasks		EA	Repair	30% of all deferred maintenance costs				
TW-S&D-02b	Trail-specific NEPA and/or clearances for deferred maintenance projects		EA	All DM	Produce letter to file	Produce CE	Produce simple EA and decision		
TW-S&D-07a	Survey, design, and administration of capital improvement tasks		EA	Install New	30% of all capital improvement costs				
TW-S&D-07b	Trail-specific NEPA and/or clearances for capital improvement projects		EA	All CI	Produce letter to file	Produce CE	Produce simple EA and decision	Produce Complex EA & Decision	Produce EIS & Decision
TW-TRD	Tread and Prism	L	SF						
TW-TRD-01a	Routine tread maintenance		MI	Annual	AutoCalculated				
TW-TRD-01b	Routine tread drainage		MI	Annual	AutoCalculated				
TW-TRD-01c	Snow grooming - large dual-track class		MI	Annual	6-8 mph	4-6 mph	2-4 mph	< 2 mph	
TW-TRD-01d	Snow grooming - track-setting with snowmobile		MI	Annual	15-20 mph	10-15 mph	5-10 mph		
TW-TRD-02a	Re-establish original native tread		LF	Repair	Recut < 10% of original prism dimensions	Recut 10-25% of original prism	Recut 25-50% of original prism	Recut 50-100% of original prism	Recut 100% of original prism
			MI	Repair	Recut < 10% of original prism dimensions	Recut 10-25% of original prism	Recut 25-50% of original prism	Recut 50-100% of original prism	Recut 100% of original prism
TW-TRD-02b	Stump removal		EA	Repair	Less than 6 inch diameter	6-12 inch diameter	12-24 inch diameter	24-48 inch diameter	Greater 48 inch diameter
			MI	Repair	1-3 per mile	3-5 per mile	5-10 per mile	Greater 10 per mile	
TW-TRD-02c	Flatten steep backslope		LF	Repair	Flatten by an additional 1/4:1	Flatten by an additional 1/2:1	Flatten by an additional 3/4:1		
TW-TRD-02d	Repair trenched tread		LF	Repair	Cut slope edges	Combo: slope edges and borrow	Fill with borrow		
TW-TRD-02e	Recompact native tread		LF	Repair	3-pass machine compaction	T-99 spec compaction			
TW-TRD-02f	Add soil ammendments / stabilizers		SY	Repair	Generic type				
TW-TRD-02g	Major slide / slump excavation		LF	Repair	Debris composed primarily of soil	Debris composed of soil and rock	Debris composed of soil, rock, stumps, and logs		
TW-TRD-02h	Import and place top soil		SF	Repair	1/2 inch deep	1 inch deep	2 inch deep		
TW-TRD-02i	Berm removal		LF	Repair	<12 inch above tread in common soil	<12 inch above tread in compact rocky soil	>15 inch above tread in common soil	>15 inch above tread in compact rocky soil	

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TW-TRD-03a	Relocate to meet current standard for size, capacity, and function (composite construction)		LF	Replace in-kind	Decrease length by 25%	Same length	Increase length by 150%	Increase length by 200%	Increase length by 300%
TW-TRD-04a	Obliterate abandoned trailbed		LF	Decom	Block entrances and drain	Check dams, drainage, and slash	Scarify, check dams, and slash	Recontour / fill and slash	Recontour, slash, and revegetation
TW-TRD-05a	Increase native tread width (composite construction)		LF	Expan	Widen 1 foot	Widen 2 feet	Widen 3-5 feet	Widen 5-10 feet	Widen > 10 feet
TW-TRD-07a	Construct new native tread (does not include clearing and grubbing or revegetation)		LF	Install New	No additional compaction	Machine compaction	T-99 spec compaction		
TW-TRD-07b	Composite trail construction (includes excavation and clearing and grubbing)		LF	Install New	No additional compaction	Machine Compaction	T-99 Spec Compaction		
TW-TRD-07c	Install erosion filtration measures (includes removal and disposal)		LF	Install New	Slash filter	Straw bale filter	Geosynthetic fence filter	6 foot wide sediment filtration basin	
TW-CLR	Clearing Limits	L	CF						
TW-CLR-01a	Routine logging out		MI	Annual	AutoCalculated				
TW-CLR-01b	Routine brushing or mowing		MI	Annual	AutoCalculated				
TW-CLR-01c	Spray for noxious weeds inside 20-foot trail corridor, single pass		LF	Annual	Production of > 5 miles per day per person	Production of 3-5 miles per day per person	Production of 2-3 miles per day per person	Production of 1-2 miles per day per person	Production of < 1 mile per day per person
TW-CLR-01d	Hand-pull noxious weeds inside 20-foot trail corridor		LF	Annual	Production of > 5 miles per day per person	Production of 3-5 miles per day per person	Production of 1-3 miles per day per person	Production of 1/2 mile per day per person	Production of < 1/4 mile per day per person
TW-CLR-01e	Remove hazard tree		EA	Annual	Less than 6 inch diameter	Between 6-12 inch diameter	12-24 inch diameter	24-48 inch diameter	> 48 inch diameter
TW-CLR-01f	Trail opening (first-of-season opening by 2-persons)		MI	Annual	> 20 miles per day	12-20 miles per day	8-12 miles per day	5-8 miles per day	3-5 miles per day
TW-CLR-02a	Decrease total cleared opening by slashing		LF	Repair	By 2-4 feet	By 4-8 feet	By 8-12 feet		
TW-CLR-02b	Re-establish total cleared opening (deferred logging and brushing)		LF	Repair	Production of > 5 miles per day per person	Production of 3-5 miles per day per person	Production of 2-3 miles per day per person	Production of 1-2 miles per day per person	Production of < 1 mile per day per person
			MI	Repair	Production of > 5 miles per day per person	Production of 3-5 miles per day per person	Production of 2-3 miles per day per person	Production of 1-2 miles per day per person	Production of < 1 mile per day per person
TW-CLR-02c	Revegetate bare cuts and fills		SF	Repair	Seeding only	Seed and fertilizer	Seed, fertilizer, and mulch	Sod	
TW-CLR-05a	Increase clearing width		LF	Expan	By 2-4 feet	By 4-8 feet	By 8-12 feet	By over 12 feet	
TW-CLR-05b	Increase clearing height		LF	Expan	By 1-2 feet	By 2-4 feet	By 4-6 feet		
TW-CLR-05c	Tree / brush planting		EA	Expan	Seedlings	Stock < 3 feet	Stock 3-5 feet	Stock > 5 feet (tree spading)	
TW-CLR-07a	Clearing for new construction		LF	Install New	Scattered timber and/or light brush	Scattered timber and heavy brush	Dense timber and light brush	Dense timber and heavy brush	Very dense and heavy timber and brush
TW-SRF	Surfacing	L							
TW-SRF-AGG	Aggregate	L	SF						

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TW-SRF-AGG-01a	Basic maintenance		LF	Annual	Basic maintenance				
TW-SRF-AGG-01b	Surface grading		LF	Annual	Without water	With water			
TW-SRF-AGG-02a	Resurface		CY	Repair	No additional compaction	Machine compaction	T-99 spec compaction		
TW-SRF-AGG-02b	Repair broken edge		LF	Repair	Hand compaction	Machine compaction	T-99 spec compaction		
TW-SRF-AGG-02c	Repair / replace retainers		LF	Repair	One side	Both sides			
TW-SRF-AGG-05a	Increase width		CY	Expan	No additional compaction	Machine compaction	T-99 spec compaction		
TW-SRF-AGG-07a	Install new aggregate		CY	Install New	No additional compaction	Machine compaction	T-99 spec compaction		
TW-SRF-AGG-07b	Install retainers		LF	Install New	One side	Both sides			
TW-SRF-AGG-07c	Add soil ammendments / stabilizers or dust abatement		SY	Install New	Generic type				
TW-SRF-ASP	Asphalt	L	SF						
TW-SRF-ASP-01a	Basic maintenance		LF	Annual	Basic maintenance				
TW-SRF-ASP-02a	Patch potholes and edge		SF	Repair	Intermittent	Frequent	Continuous		
TW-SRF-ASP-02b	Seal cracks		SF	Repair	0-10 feet per station	10-20 feet per station	> 20 feet per station		
TW-SRF-ASP-02c	Apply sealcoat		SF	Repair	Fog seal	Chip seal			
TW-SRF-ASP-02d	1-inch overlay		SF	Repair	Cold mix	Hot mix			
TW-SRF-ASP-02e	Repair / replace retainers		LF	Repair	One side	Both sides			
TW-SRF-ASP-02f	Paint / repaint stripes		LF	Repair	Single stripe, latex without glass beads	Single stripe, latex with glass beads			
TW-SRF-ASP-03a	Replace in-kind (includes removal and disposal of existing)		CY	Replace in-kind	Cold mix	Hot mix			
TW-SRF-ASP-04a	Demolish and dispose		SF	Decom	Cold or hot mix				
TW-SRF-ASP-05a	Increase width		CY	Expan	Cold mix	Hot mix			
TW-SRF-ASP-07a	Install new asphalt		CY	Install New	Cold mix	Hot mix			
TW-SRF-ASP-07b	Install retainers		LF	Install New	One side	Both sides			
TW-SRF-GD1	Grid-UnitType I	L	SF						
TW-SRF-GD1-01a	Basic Maintenance		LF	Annual	Basic maintenance				
TW-SRF-GD1-02a	Replace units		SF	Repair	1-2 units per 10 feet	2-4 units per 10 feet	4-6 units per 10 feet	> 6 units per 10 feet	

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TW-SRF-GD1-03a	Replace in-kind (includes removal and disposal of existing)		SF	Replace in-kind	Replace				
TW-SRF-GD1-04a	Demolish and dispose		SF	Decom	Demolish and dispose				
TW-SRF-GD1-05a	Increase width		SF	Expan	Increase width				
TW-SRF-GD1-07a	Install new		SF	Install New	Install new				
TW-SRF-RRP	Riprap	L	SF						
TW-SRF-RRP-01a	Basic maintenance		LF	Annual	Basic maintenance				
TW-SRF-RRP-02a	Replace rocks		LF	Repair	1-2 rocks per 10 feet	2-4 rocks per 10 feet	4-6 rocks per 10 feet	> 6 rocks per 10 feet	
TW-SRF-RRP-03a	Replace in-kind (includes removal and disposal of existing)		SF	Replace in-kind	Replace				
TW-SRF-RRP-04a	Demolish and dispose		SF	Decom	Demolish and dispose				
TW-SRF-RRP-05a	Increase width		LF	Expan	Increase width				
TW-SRF-RRP-07a	Install new		SF	Install New	Install new				
TW-SRF-CHK	Chunk Wood	L	SF						
TW-SRF-CHK-01a	Basic maintenance		LF	Annual	Basic maintenance				
TW-SRF-CHK-02a	Resurface		SF	Repair	1 inch loose	2 inch loose	3 inch loose		
TW-SRF-CHK-02b	Replace retainers		LF	Repair	One side	Both sides			
TW-SRF-CHK-03a	Replace in-kind (includes removal and disposal of existing)		CY	Replace in-kind	Replace				
TW-SRF-CHK-04a	Demolish and dispose		SF	Decom	Demolish and dispose				
TW-SRF-CHK-05a	Increase width		CY	Expan	Increase width				
TW-SRF-CHK-07a	Install new		CY	Install New	Install new				
TW-SRF-CHK-07b	Install retainers		LF	Install New	One side	Both sides			
TW-SRF-CON	Concrete	L	SF						
TW-SRF-CON-01a	Basic maintenance		LF	Annual	Basic maintenance				
TW-SRF-CON-02a	Patch spalling		SF	Repair	< 5% of area	5-10% of area	> 10% of area		
TW-SRF-CON-02b	Seal cracks		SF	Repair	< 10 feet of cracks per station	10-20 feet of cracks per station	> 20 feet of cracks per station		

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TW-SRF-CON-03a	Replace in-kind (includes removal and disposal of existing)		CY	Replace in-kind	Replace				
TW-SRF-CON-04a	Demolish and dispose		SY	Decom	Demolish and dispose				
TW-SRF-CON-05a	Increase width		CY	Expan	Increase width				
TW-SRF-CON-07a	Install new		CY	Install New	Install new				
TW-SRF-CLY	Imported Clay	L	SF						
TW-SRF-CLY-01a	Basic maintenance		LF	Annual	Basic maintenance				
TW-SRF-CLY-02a	Grade and compact		SF	Repair	Grade and compact				
TW-SRF-CLY-02b	Overlay		SF	Repair	1 inch compacted	2 inch compacted			
TW-SRF-CLY-02c	Repair / replace retainers		LF	Repair	One side	Both sides			
TW-SRF-CLY-03a	Replace in-kind (includes removal and disposal of existing)		CY	Replace in-kind	Machine compaction				
TW-SRF-CLY-04a	Demolish and dispose		SF	Decom	Demolish and dispose				
TW-SRF-CLY-05a	Increase width		CY	Expan	Machine compaction				
TW-SRF-CLY-07a	Install new		CY	Install New	Machine compaction				
TW-SRF-CLY-07b	Install retainers		LF	Install New	One side	Both sides			
TW-SRF-OTH	Other	L	SF						
TW-SRF-OTH-01a	Basic maintenance		LF	Annual	Custom				
TW-SRF-OTH-02a	Overlay		SF	Repair	Custom				
TW-SRF-OTH-02b	Repair / replace retainers		LF	Repair	One side	Both sides			
TW-SRF-OTH-03a	Replace in-kind (includes removal and disposal of existing)		CY	Replace in-kind	Custom				
TW-SRF-OTH-04a	Demolish and dispose		SF	Decom	Custom				
TW-SRF-OTH-05a	Increase width		CY	Expan	Custom				
TW-SRF-OTH-07a	Install new		CY	Install New	Custom				
TW-SRF-OTH-07b	Install retainers		LF	Install New	One side	Both sides			
TW-CTN	Climbing Turn	P	EA						
TW-TAL	Talus Section	L	SF						

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TW-TAL-01a	Basic maintenance		LF	Annual	Basic maintenance				
TW-TAL-02a	Add cushion material		SF	Repair	1 inch	2 inch	3 inch	4 inch	5 inch
TW-TAL-04a	Obliterate		SF	Decom	Obliterate				
TW-TAL-05a	Increase width		SF	Expan	Increase width				
TW-TAL-07a	Construct new		SF	Install New	Construct new				
TW-TOT	Turnout	L	LF						
TW-TOT-01a	Basic maintenance		LF	Annual	Basic maintenance				
TW-TOT-02a	Tread repair		LF	Repair	Light	Heavy			
TW-TOT-04a	Decommission		LF	Decom	Obliterate				
TW-TOT-05a	Expand capacity, length, or width		LF	Expan	Double size	Triple size			
TW-TOT-07a	Construct new (composite construction)		LF	Install New	Light	Heavy			
TW-PSS	Passing Section	L	LF						
TW-PSS-01a	Basic maintenance		LF	Annual	Basic maintenance				
TW-PSS-02a	Tread repair		LF	Repair	Light	Heavy			
TW-PSS-04a	Decommission		LF	Decom	Obliterate				
TW-PSS-05a	Expand capacity, length, or width		LF	Expan	Double size	Triple size			
TW-PSS-07a	Construct new (composite construction)		LF	Install New	Light	Heavy			
TW-FRD	Ford	L	LF						
TW-FRD-NFD	Natural	L	SF						
TW-FRD-NFD-01a	Basic maintenance		LF	Annual	Basic maintenance				
TW-FRD-NFD-07a	Construct new		LF	Install New	2-4 feet wide	4-8 feet wide	8-12 feet wide		
TW-FRD-CFD	Constructed	L	SF						
TW-FRD-CFD-01a	Basic maintenance		LF	Annual	Basic maintenance				
TW-FRD-CFD-02a	Replace checkdam componets		EA	Repair	Replace component				
TW-FRD-CFD-03a	Replace washed-out		LF	Replace in-kind	2-4 feet wide	4-8 feet wide	8-12 feet wide		
TW-FRD-CFD-03b	Replace to meet fish passage		LF	Replace in-kind	2-4 feet wide	4-8 feet wide	8-12 feet wide		

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TW-FRD-CFD-04a	Decommission to natural ford		EA	Decom	Decommission to natural ford				
TW-FRD-CFD-07a	Construct new		LF	Install New	2-4 feet wide	4-8 feet wide	8-12 feet wide		
TW-SST	Stepping Stones	P	EA						
TW-SST-01a	Basic maintenance		LF	Annual	Basic maintenance				
TW-SST-02a	Replace lost stones		EA	Repair	Replace stones				
TW-SST-07a	Install new stepping stone segment		LF	Install New	New				
TRAIL STRUCTURES									
TS-SBK	Switchback	P							
TS-SBK-RAD	Type I - Radiused	P	EA						
TS-SBK-RAD-01a	Basic maintenance		EA	Annual	Basic maintenance				
TS-SBK-RAD-02	Generic repair		EA	Repair	Generic repair				
TS-SBK-RAD-02a	Flatten internal grades		EA	Repair	Reduce grades by 5%	Reduce grades by 10%	Reduce grades by 15%		
TS-SBK-RAD-02b	Obliterate shortcut trails		LF	Repair	Drain and slash	Recontour			
TS-SBK-RAD-02c	General rebuild		EA	Repair	Fine/organic soil	Common soil	Talus	Solid Rock	
TS-SBK-RAD-02d	Add or rebuild ditch		LF	Repair	Fine/organic soil	Common soil	Talus	Solid Rock	
TS-SBK-RAD-03a	Replace in-kind		EA	Replace in-kind	Less than 3 foot radius				
TS-SBK-RAD-04a	Decommission		EA	Decom	Drain and slash	Recontour			
TS-SBK-RAD-05a	Increase radius		EA	Expan	Add up to 2 feet	Add 2-4 feet	Add 4-6 feet	Add 6-8 feet	Add more than 8 feet
TS-SBK-RAD-07a	Construct new		EA	Install New	< 3 foot radius	Between 3-5 foot radius	Between 5-7 foot radius	Between 7-13 foot radius	> 13 foot radius
TS-SBK-CIR	Type II - Circular Landing	P	EA						
TS-SBK-CIR-01a	Basic maintenance		EA	Annual	Basic maintenance				
TS-SBK-CIR-02	Generic repair		EA	Repair	Generic repair				
TS-SBK-CIR-02a	Flatten internal grades		EA	Repair	Reduce grades by 5%	Reduce grades by 10%	Reduce grades by 15%		
TS-SBK-CIR-02b	Obliterate shortcut trails		LF	Repair	Drain and slash	Recontour			
TS-SBK-CIR-02c	General rebuild		EA	Repair	Fine/organic soil	Common soil	Talus	Solid Rock	
TS-SBK-CIR-02d	Add or rebuild ditch		LF	Repair	Fine/organic soil	Common soil	Talus	Solid Rock	

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-SBK-CIR-03a	Replace in-kind		EA	Replace in-kind	3-foot radius	4-foot radius	5-foot radius	6-foot radius	
TS-SBK-CIR-04a	Decommission		EA	Decom	Drain and slash	Recontour			
TS-SBK-CIR-05a	Increase radius		EA	Expan	Add up to 2 feet	Add 3 feet	Add 4 feet	Add 5 feet	
TS-SBK-CIR-07a	Construct new		EA	Install new	3-foot radius	4-foot radius	5-foot radius	6-foot radius	
TS-SBK-REC	Type III - Rectangular Landing	P	EA						
TS-SBK-REC-01a	Basic maintenance		EA	Annual	Basic maintenance				
TS-SBK-REC-02	Generic repair		EA	Repair	Generic Repair				
TS-SBK-REC-02a	Flatten internal grades		EA	Repair	Reduce grades by 5%	Reduce grades by 10%	Reduce grades by 15%		
TS-SBK-REC-02b	Obliterate shortcut trails		LF	Repair	Drain and slash	Recontour			
TS-SBK-REC-02c	General rebuild		EA	Repair	Fine/organic soil	Common soil	Talus	Solid Rock	
TS-SBK-REC-02d	Add or rebuild ditch		LF	Repair	Fine/organic soil	Common soil	Talus	Solid Rock	
TS-SBK-REC-03a	Replace in-kind		SF	Replace in-kind	Replace				
TS-SBK-REC-04a	Decommission		EA	Decom	Drain and slash	Recontour			
TS-SBK-REC-05a	Increase platform area		SF	Expan	Expand				
TS-SBK-REC-07a	Construct new		SF	Install New	New				
TS-RET	Retaining Wall	L							
TS-RET-LOG	Log Crib	L	SF						
TS-RET-LOG-01a	Basic maintenance such as repinning cap logs, etc.		SF	Annual	Basic maintenance				
TS-RET-LOG-02	Generic repair		SF	Repair	Generic repair				
TS-RET-LOG-02a	Replace cap logs		LF	Repair	New cap logs				
TS-RET-LOG-03a	Replace in-kind when major deterioration exists (includes removal and disposal of existing)		SF	Replace in-kind	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights 4-6 feet	Wall heights over 6 feet	
TS-RET-LOG-04a	Demolish and dispose		SF	Decom	Let deteriorate, no imminent hazard	Completely remove			
TS-RET-LOG-05a	Increase height		SF	Expan	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights 4-6 feet	Wall heights over 6 feet	
TS-RET-LOG-05b	Increase length		SF	Expan	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights 4-6 feet	Wall heights over 6 feet	
TS-RET-LOG-07a	Install new		SF	Install new	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights 4-6 feet	Wall heights over 6 feet	

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
			CY	Install new	Any wall height				
TS-RET-PLK	Post and Plank (w/ tie-backs)	L	SF						
TS-RET-PLK-01a	Basic maintenance		SF	Annual	Basic maintenance				
TS-RET-PLK-02	Generic repair		SF	Repair	Generic repair				
TS-RET-PLK-02a	Replace damaged top planks		SF	Repair	New top planks				
TS-RET-PLK-02b	Replace failed tie-backs or dead-man		EA	Repair	Replace failed tie-backs or dead-man				
TS-RET-PLK-03a	Replace in-kind (includes removal and disposal of existing)		SF	Replace in-kind	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights 4-6 feet	Wall heights over 6 feet	
TS-RET-PLK-04a	Demolish and dispose		SF	Decom	Let deteriorate, no imminent hazard	Remove completely			
TS-RET-PLK-05a	Increase height		SF	Expan	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights 4-6 feet	Wall heights over 6 feet	
TS-RET-PLK-05b	Increase length		SF	Expan	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights 4-6 feet	Wall heights over 6 feet	
TS-RET-PLK-07a	Install new		SF	Install New	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights 4-6 feet	Wall heights over 6 feet	
TS-RET-RCK	Stacked Rock	L	SF						
TS-RET-RCK-01a	Basic maintenance minor work such as repositioning loose rock work		SF	Annual	Basic maintenance				
TS-RET-RCK-02	Generic repair		SF	Repair	Generic repair				
TS-RET-RCK-02a	Rebuild small failed sections		SF	Repair	Restack				
TS-RET-RCK-02b	Rebuild in-kind when major failures exist, reuse rock		SF	Repair	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights 4-6 feet	Wall heights over 6 feet	
TS-RET-RCK-03a	Replace in-kind (includes removal and disposal of existing)		SF	Replace in-kind	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights 4-6 feet	Wall heights over 6 feet	
TS-RET-RCK-04a	Demolish and dispose		SF	Decom	Let deteriorate, no imminent hazard	Completely Remove		Wall heights over 6 feet	
TS-RET-RCK-05a	Increase height		SF	Expan	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights 4-6 feet	Wall heights over 6 feet	
TS-RET-RCK-05b	Increase length		SF	Expan	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights 4-6 feet	Wall heights over 6 feet	
TS-RET-RCK-07a	Install new		SF	Install New	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights 4-6 feet	Wall heights over 6 feet	
			CY	Install New	Any wall height				
TS-RET-MAS	Masonry Rock	L	SF						

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-RET-MAS-01a	Basic maintenance such as replacing a couple of rocks or minor repointing grout		SF	Annual	Basic maintenance				
TS-RET-MAS-02	Generic repair		SF	Repair	Generic repair				
TS-RET-MAS-02a	Replace missing rocks, substantial repointing grout		SF	Repair	Rock replacement and repointing				
TS-RET-MAS-02b	Rebuild small failed sections		SF	Repair	Rebuild section				
TS-RET-MAS-03a	Replace in-kind when major failures exist, reuse rock (includes removal and disposal of existing)		SF	Replace in-kind	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights 4-6 feet	Wall heights over 6 feet	
TS-RET-MAS-04a	Demolish and dispose		SF	Decom	Let deteriorate, no imminent failure or hazard	Remove completely			
TS-RET-MAS-05a	Increase height		SF	Expan	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights 4-6 feet	Wall heights over 6 feet	
TS-RET-MAS-05b	Increase length		SF	Expan	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights 4-6 feet	Wall heights over 6 feet	
TS-RET-MAS-07a	Install new		SF	Install New	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights 4-6 feet	Wall heights over 6 feet	
			CY	Install New	Any wall height				
TS-RET-CON	Cast-in-place Concrete	L	SF						
TS-RET-CON-01a	Basic maintenance such as replacing a couple of rocks or minor repointing grout		SF	Annual	Basic maintenance				
TS-RET-CON-02	Generic repair		SF	Repair	Generic repair				
TS-RET-CON-02a	Patch spalled sections		SF	Repair	Patch spalling				
TS-RET-CON-03a	Replace in-kind when major failures exist (includes removal and disposal of existing)		SF	Replace in-kind	Wall heights up to 4 feet	Wall heights 4-6 feet	Wall heights over 6 feet		
TS-RET-CON-04a	Demolish and dispose		SF	Decom	Let deteriorate, no imminent hazard	Remove completely			
TS-RET-CON-05a	Increase height		SF	Expan	Wall heights up to 4 feet	Wall heights 4-6 feet	Wall heights over 6 feet		
TS-RET-CON-05b	Increase length		SF	Expan	Wall heights up to 4 feet	Wall heights 4-6 feet	Wall heights over 6 feet		
TS-RET-CON-07a	Install new		SF	Install New	Wall heights up to 4 feet	Wall heights 4-6 feet	Wall heights over 6 feet		
			CY	Install New	Any wall height				
TS-RET-GAB	Wire Basket	L	SF						
TS-RET-GAB-01a	Basic maintenance		SF	Annual	Basic maintenance				
TS-RET-GAB-02	Generic repair		SF	Repair	Generic repair				
TS-RET-GAB-02a	Repair ruptured basket		SF	Repair	Basket repair				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-RET-GAB-03a	Replace in-kind, reuse same fill rock (includes removal and disposal of existing wire baskets)		SF	Replace in-kind	Walls 3 feet thick, any height	Walls 6 feet thick, any height	Walls 9 feet thick, any height		
TS-RET-GAB-04a	Demolish and dispose		SF	Decom	Let deteriorate, no imminent failure or hazard	Remove completely			
TS-RET-GAB-05a	Increase height		SF	Expan	Walls 3 feet thick, any height	Walls 6 feet thick, any height	Walls 9 feet thick, any height		
TS-RET-GAB-05b	Increase length		SF	Expan	Walls 3 feet thick, any height	Walls 6 feet thick, any height	Walls 9 feet thick, any height		
TS-RET-GAB-07a	Install new		SF	Install New	Walls 3 feet thick, any height	Walls 6 feet thick, any height	Walls 9 feet thick, any height		
			CY	Install New	Any wall height				
TS-SWY	Stairway	L / P							
TS-SWY-STP	Individual Steps	P	EA						
TS-SWY-STP-01a	Basic maintenance, such as minor resetting or repositioning individual steps		EA	Annual	Basic maintenance				
TS-SWY-STP-02	Generic repair		EA	Repair	Generic repair				
TS-SWY-STP-03a	Replace in-kind when > 50% needs repair		SF	Replace in-kind	Replace				
TS-SWY-STP-04a	Demolish and dispose		EA	Decom	Demolish and dispose				
TS-SWY-STP-07a	Construct new		EA	Install New	New step				
			LF	Install New	Every 100 feet	Every 75 feet	Every 50 feet	Every 12 feet	Every 6 feet
TS-SWY-OST	Overlapping Steps	L	SF						
TS-SWY-OST-01a	Basic maintenance		SF	Annual	Basic maintenance				
TS-SWY-OST-02	Generic repair		SF	Repair	Generic repair				
TS-SWY-OST-02a	Repair, such as reset, etc		SF	Repair	Minor repair				
TS-SWY-OST-03a	Replace in-kind when > 50% needs repair		SF	Replace in-kind	Replace				
TS-SWY-OST-04a	Demolish and dispose		SF	Decom	Demolish and dispose				
TS-SWY-OST-05a	Increase length		SF	Expan	Easy digging and fitting	Tough digging and fitting	Extreme digging and fitting		
TS-SWY-OST-05b	Increase width		SF	Expan	Easy digging and fitting	Tough digging and fitting	Extreme digging and fitting		
TS-SWY-OST-07a	Construct new		SF	Install New	Easy digging and fitting	Tough digging and fitting	Extreme digging and fitting		
TS-SWY-CRB	Crib Ladder (partially manufactured materials)	L	SF						
TS-SWY-CRB-01a	Basic maintenance such as refilling tread		SF	Annual	Basic maintenance				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-SWY-CRB-02	Generic repair		SF	Repair	Generic repair				
TS-SWY-CRB-02a	Repair broken or deteriorated risers and carriages		SF	Repair	Minor repair				
TS-SWY-CRB-03a	Replace in-kind when > 50% deterioration (includes removal and disposal of existing)		SF	Replace in-kind	Replace				
TS-SWY-CRB-04a	Demolish and dispose		SF	Decom	Demolish and dispose				
TS-SWY-CRB-05a	Increase length		SF	Expan	Easy digging and fitting	Tough digging and fitting	Extreme digging and fitting		
TS-SWY-CRB-07a	Install new, no handrails		SF	Install New	Easy digging and fitting	Tough digging and fitting	Extreme digging and fitting		
TS-SWY-CAS	Staircase (completely manufactured materials)	L	SF						
TS-SWY-CAS-01a	Basic maintenance such as refastening, etc.		SF	Annual	Basic maintenance				
TS-SWY-CAS-02	Generic repair		SF	Repair	Generic repair				
TS-SWY-CAS-02a	Repair/replace components		SF	Repair	Component repairs				
TS-SWY-CAS-03a	Replace in-kind when > 50% deterioration or loading capacity is < 80% of design (includes removal and disposal of existing)		SF	Replace in-kind	Without handrail	With single handrail	With double handrail		
TS-SWY-CAS-04a	Demolish and dispose		SF	Decom	Demolish and dispose				
TS-SWY-CAS-05a	Increase length		SF	Expan	Without handrail	With single handrail	With double handrail		
TS-SWY-CAS-07a	Fabricate new		SF	Install New	Without handrail	With single handrail	With double handrail		
TS-SWY-LAD	Ladder (rigid, rope, or cable)	L	SF						
TS-SWY-LAD-01a	Basic maintenance		SF	Annual	Basic maintenance				
TS-SWY-LAD-02	Generic repair		SF	Repair	Generic repair				
TS-SWY-LAD-02a	Repair broken or deteriorated treads		SF	Repair	Minor repair				
TS-SWY-LAD-03a	Replace in-kind when > 50% deterioration or loading capacity is < 80% of design (includes removal and disposal of existing)		SF	Replace in-kind	Replace				
TS-SWY-LAD-04a	Demolish and dispose		SF	Decom	Demolish and dispose				
TS-SWY-LAD-05a	Increase length		SF	Expan	Lengthen				
TS-SWY-LAD-07a	Fabricate new		SF	Install New	New				
TS-HND	Handrail	L	EA						
TS-HND-BLT	Site-built	L	LF						

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-HND-BLT-01a	Basic maintenance such as painting		LF	Annual	Basic Maintenance				
TS-HND-BLT-01b	Seasonal removal/installation		LF	Annual	Seasonal Installation				
TS-HND-BLT-02	Generic repair		LF	Repair	Generic Repair				
TS-HND-BLT-02a	Repair missing, damaged, or deteriorated components		LF	Repair	Minor repair				
TS-HND-BLT-02b	Increase height to standard		LF	Repair	Increase 6 inches	Increase 12 inches	Increase 18 inches	Increase 24 inches	
TS-HND-BLT-02c	Reduce openings to standard		LF	Repair	Decrease 3 inches	Decrease 6 inches	Decrease 9 inches	From wide open	
TS-HND-BLT-03a	Replace in-kind when not capable of supporting 200#/LF (includes removal and disposal of existing)		LF	Replace in-kind	Replace entire structure				
TS-HND-BLT-04a	Demolish and dispose		LF	Decom	Demolish and dispose				
TS-HND-BLT-05a	Increase length		LF	Expan	Easy digging	Tough Digging	Solid rock drilling		
TS-HND-BLT-07a	Install new		LF	Install New	Easy digging	Tough Digging	Solid rock drilling		
TS-HND-MOD	Modular	L	LF						
TS-HND-MOD-01a	Basic maintenance such as straightening, etc.		LF	Annual	Basic Maintenance				
TS-HND-MOD-01b	Seasonal removal/installation		LF	Annual	Seasonal Installation				
TS-HND-MOD-02	Generic repair		LF	Repair	Generic Repair				
TS-HND-MOD-02a	Replace missing, damaged, or deteriorated components		LF	Repair	Minor repair				
TS-HND-MOD-02b	Increase height to standard		LF	Repair	Increase 6 inches	Increase 12 inches	Increase 18 inches	Increase 24 inches	
TS-HND-MOD-02c	Reduce openings to standard		LF	Repair	Decrease 3 inches	Decrease 6 inches	Decrease 9 inches	From wide open	
TS-HND-MOD-03a	Replace in-kind when not capable of supporting 200#/LF (includes removal and disposal of existing)		LF	Replace in-kind	Replace entire structure				
TS-HND-MOD-04a	Demolish and dispose		LF	Decom	Demolish and dispose				
TS-HND-MOD-05a	Increase length		LF	Expan	Easy digging	Tough Digging	Solid rock drilling		
TS-HND-MOD-07a	Install new		LF	Install New	Easy digging	Tough Digging	Solid rock drilling		
TS-BAR	Barrier	L							
TS-BAR-RCK	Stacked Rock	L	LF						
TS-BAR-RCK-01a	Basic Maintenance minor work such as repositioning loose rock work		LF	Annual	Basic Maintenance				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-BAR-RCK-02	Generic repair		LF	Repair	Generic repair				
TS-BAR-RCK-02a	Rebuild minor failed sections		LF	Repair	Minor repair				
TS-BAR-RCK-03a	Replace in-kind		LF	Replace in-kind	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights over 4 feet		
TS-BAR-RCK-04a	Demolish and dispose		LF	Decom	Let deteriorate, no imminent hazard	Remove completely			
TS-BAR-RCK-05a	Increase Height		LF	Expan	increase by 1 foot	Increase by 2 feet	Increase by 3 feet		
TS-BAR-RCK-05b	Increase Length		LF	Expan	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights over 4 feet		
TS-BAR-RCK-07a	Install New		LF	Install New	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights over 4 feet		
			CY	Install New	Any wall height				
TS-BAR-MAS	Masonry Rock	L	LF						
TS-BAR-MAS-01a	Basic maintenance		LF	Annual	Basic maintenance				
TS-BAR-MAS-02	Generic repair		LF	Repair	Generic Repair				
TS-BAR-MAS-02a	Replace missing rocks, substantial repointing grout		LF	Repair	Minor repair				
TS-BAR-MAS-02b	Rebuild minor failed sections		LF	Repair	Rebuild sections				
TS-BAR-MAS-03a	Replace in-kind when major failures exist (includes removal and disposal of existing)		LF	Replace in-kind	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights over 4 feet		
TS-BAR-MAS-04a	Demolish and dispose		LF	Decom	Let deteriorate, no imminent hazard	Remove completely			
TS-BAR-MAS-05a	Increase height		LF	Expan	increase by 1 foot	increase by 2 feet	increase by 3 feet		
TS-BAR-MAS-05b	Increase length		LF	Expan	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights over 4 feet		
TS-BAR-MAS-07a	Install new		LF	Install New	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights over 4 feet		
			CY	Install New	Any wall height				
TS-BAR-OGR	Rail On-Grade	L	LF						
TS-BAR-OGR-01a	Basic maintenance		LF	Annual	Basic maintenance				
TS-HND-MOD-02	Generic repair		LF	Repair	Generic repair				
TS-BAR-OGR-02a	Replace damaged or deteriorated rails		LF	Repair	Minor repair				
TS-BAR-OGR-03a	Replace in-kind when > 50% deterioration (includes removal and disposal of existing)		LF	Replace in-kind	Replace				
TS-BAR-OGR-04a	Demolish and dispose		LF	Decom	Let deteriorate, no imminent hazard	Remove completely			

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-BAR-OGR-05a	Increase length		LF	Expan	Lengthen				
TS-BAR-OGR-07a	Install new		LF	Install New	New				
TS-BAR-PST	Rail On-Posts	L	LF						
TS-BAR-PST-01a	Basic maintenance		LF	Annual	Basic Maintenance				
TS-BAR-PST-02	Generic repair		LF	Repair	Generic Repair				
TS-BAR-PST-02a	Replace damaged or deteriorated rails		LF	Repair	Replace rails				
TS-BAR-PST-02b	Replace damaged or deteriorated posts		EA	Repair	Easy digging	Tough Digging			
TS-BAR-PST-03a	Replace in-kind (includes removal and disposal of existing)		LF	Replace in-kind	Replace				
TS-BAR-PST-04a	Demolish and dispose		LF	Decom	Let deteriorate, no imminent hazard	Remove completely			
TS-BAR-PST-05a	Increase length		LF	Expan	Easy digging	Tough Digging	Solid rock drilling		
TS-BAR-PST-07a	Install new		LF	Install New	Easy digging	Tough Digging	Solid rock drilling		
TS-BAR-GRD	Guardrail	L	LF						
TS-BAR-GRD-01a	Basic maintenance		LF	Annual	Basic maintenance				
TS-BAR-GRD-02	Generic repair		LF	Repair	Generic repair				
TS-BAR-GRD-02a	Replace damaged or deteriorated rails		LF	Repair	Replace rails				
TS-BAR-GRD-02b	Replace damaged or deteriorated posts		EA	Repair	Easy digging	Tough Digging			
TS-BAR-GRD-03a	Replace in-kind (includes removal and disposal of existing)		LF	Replace in-kind	Replace				
TS-BAR-GRD-04a	Demolish and dispose		LF	Decom	Let deteriorate, no imminent hazard	Remove completely			
TS-BAR-GRD-05a	Increase length		LF	Expan	Easy digging	Tough Digging	Solid rock drilling		
TS-BAR-GRD-05b	Increase height		LF	Expan	Up to 2-feet				
TS-BAR-GRD-07a	Install new		LF	Install New	Easy digging	Tough Digging	Solid rock drilling		
TS-BAR-CRB	Curb	L	LF						
TS-BAR-CRB-01a	Basic maintenance		LF	Annual	Basic maintenance				
TS-BAR-CRB-02	Generic repair		LF	Repair	Generic repair				
TS-BAR-CRB-02a	Replace damaged or deteriorated sections		LF	Repair	Minor repair				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-BAR-CRB-03a	Replace in-kind (includes removal and disposal of existing)		LF	Replace in-kind	Replace				
TS-BAR-CRB-04a	Demolish and dispose		LF	Decom	Let deteriorate, no imminent hazard	Remove completely			
TS-BAR-CRB-05a	Increase length		LF	Expan	Lengthen				
TS-BAR-CRB-07a	Install new		LF	Install New	New				
TS-CGD	Cattleguard	P							
TS-CGD-STD	Standard	P	SF						
TS-CGD-STD-01a	Basic maintenance		SF	Annual	Basic maintenance				
TS-CGD-STD-02	Generic repair		SF	Repair	Generic repair				
TS-CGD-STD-02a	Repair broken or damaged components		SF	Repair	Minor repair	Major repair			
TS-CGD-STD-03a	Replace in-kind (includes removal and disposal of existing)		SF	Replace in-kind	Easy digging				
TS-CGD-STD-04a	Demolish and dispose		EA	Decom	Demolish and dispose				
TS-CGD-STD-05a	Increase size		SF	Expan	Easy digging	Tough Digging			
TS-CGD-STD-07a	Install new		SF	Install New	Easy digging	Tough Digging			
TS-CGD-BRG	Fence-Bridge	P	SF						
TS-CGD-BRG-01a	Basic maintenance		SF	Annual	Basic maintenance				
TS-CGD-BRG-02	Generic repair		SF	Repair	Generic repair				
TS-CGD-BRG-02a	Repair broken or damaged components		SF	Repair	Minor repair	Major repair			
TS-CGD-BRG-03a	Replace in-kind (includes removal and disposal of existing)		SF	Replace in-kind	Replace				
TS-CGD-BRG-04a	Demolish and dispose		EA	Decom	Demolish and dispose				
TS-CGD-BRG-05a	Increase size		SF	Expan	Easy digging	Tough Digging			
TS-CGD-BRG-07a	Install new		SF	Install New	Easy digging	Tough Digging			
TS-SAR	Slope Armoring	L							
TS-SAR-RIP	Rip Rap Rock	L	SF						
TS-SAR-RIP-01a	Basic maintenance		SF	Annual	Basic maintenance				
TS-SAR-RIP-02	Generic repair		SF	Repair	Generic repair				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-SAR-RIP-02a	Rebuild damaged/undermined sections		SF	Repair	Side cast	Keyed and placed			
TS-SAR-RIP-03a	Replace in-kind		CY	Replace in-kind	Side cast	Keyed and placed			
TS-SAR-RIP-04a	Demolish and dispose		SF	Decom	Let deteriorate, no imminent hazard	Completely Remove			
TS-SAR-RIP-05a	Increase area		CY	Expan	Side cast	Keyed and placed			
TS-SAR-RIP-07a	Install new		CY	Install New	Side cast	Keyed and placed			
TS-SAR-MS	Miscellaneous	L	SF						
TS-SAR-MS-01a	Basic maintenance		SF	Annual	Basic maintenance				
TS-SAR-MS-02	Generic repair		SF	Repair	Generic repair				
TS-SAR-MS-02a	Rebuild damaged/undermined sections		SF	Repair	Minor repair				
TS-SAR-MS-03a	Replace in-kind (includes removal and disposal of existing)		SF	Replace in-kind	Replace				
TS-SAR-MS-04a	Demolish and dispose		SF	Decom	Let deteriorate, no imminent hazard	Completely Remove			
TS-SAR-MS-05a	Increase area		SF	Expan	Increase size				
TS-SAR-MS-07a	Install new		SF	Install New	New				
TS-TPK	Turnpike (aka Causeway)	L							
TS-TPK-STD	Type I - Standard	L	SF						
TS-TPK-STD-01a	Basic Maintenance such as replacing routine fill material, repinning logs, resetting rocks, etc		SF	Annual	Basic Maintenance				
TS-TPK-STD-02	Generic repair		SF	Repair	Generic Repair				
TS-TPK-STD-02a	Replace retainers		LF	Repair	Replace retainer				
TS-TPK-STD-02b	Repair soft spots		SF	Repair	with select borrow				
TS-TPK-STD-02c	Add or rebuild ditches		LF	Repair	Easy digging	Tough digging			
TS-TPK-STD-03a	Replace in-kind (includes removal and disposal of existing)		SF	Replace in-kind	Replace				
TS-TPK-STD-04a	Demolish and dispose		SF	Decom	Let deteriorate, no imminent hazard	Completely Remove			
TS-TPK-STD-05a	Increase length		SF	Expan	Lengthen				
TS-TPK-STD-05b	Increase width, reuse retainers		SF	Expan	Widen				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-TPK-STD-07a	Construct new		SF	Install New	New				
TS-TPK-FDN	Type II - Standard w/ Foundation	L	SF						
TS-TPK-FDN-01a	Basic maintenance such as replacing fill material, repinning logs, resetting rocks, etc		SF	Annual	Basic Maintenance				
TS-TPK-FDN-02	Generic repair		SF	Repair	Generic Repair				
TS-TPK-FDN-02a	Replace retainers		LF	Repair	Replace retainer				
TS-TPK-FDN-02b	Repair soft spots with more foundation and fill		SF	Repair	with select borrow				
TS-TPK-FDN-02c	Add or rebuild ditches		LF	Repair	Easy digging	Tough digging			
TS-TPK-FDN-03a	Replace in-kind when > 50% of retainers are deteriorated (includes removal and disposal of existing)		SF	Replace in-kind	Replace				
TS-TPK-FDN-04a	Demolish and dispose		SF	Decom	Let deteriorate, no imminent hazard	Completely Remove			
TS-TPK-FDN-05a	Increase length		SF	Expan	Lengthen				
TS-TPK-FDN-05b	Increase width, reuse retainers		SF	Expan	Widen				
TS-TPK-FDN-07a	Construct new		SF	Install New	New				
TS-PUN	Puncheon	L							
TS-PUN-STD	Standard	L	SF						
TS-PUN-STD-01a	Basic maintenance such as refastening loose componets, replacing minor non-structural componets, etc.		SF	Annual	Basic Maintenance				
TS-PUN-STD-02	Generic repair		SF	Repair	Generic Repair				
TS-PUN-STD-02a	Add or replace running plank (for safety)		SF	Repair	Add running planks				
TS-PUN-STD-02b	Repair or replace curbing		LF	Repair	Repair curbing				
TS-PUN-STD-02c	Repair or replace decking		SF	Repair	Replace decking				
TS-PUN-STD-02d	Replace stringer		LF	Repair	Replace stringer				
TS-PUN-STD-02e	Repair or replace footing		EA	Repair	Simple mud sills	simple pilings, complex spread footings	Driven pile footings		

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-PUN-STD-03a	Replace in-kind when failing (loading capacity is diminished to < 80% or deterioration of components is > 50%; includes removal and disposal of existing)		SF	Replace in-kind	Replace				
TS-PUN-STD-04a	Demolish and dispose		SF	Decom	Remove completely				
TS-PUN-STD-05a	Increase length		SF	Expan	Simple mud sills	simple pilings, complex spread footings	Driven pile footings		
TS-PUN-STD-05b	Increase deck width (no modifications to substructure, assume redeck of entire structure)		SF	Expan	Widen deck				
TS-PUN-STD-05c	Increase structure width (modifications to substructure)		SF	Expan	Simple mud sills	simple pilings, complex spread footings	Driven pile footings		
TS-PUN-STD-07a	Fabricate new		SF	Install New	Simple mud sills	simple pilings, complex spread footings	Driven pile footings		
TS-PUN-NOD	No-Deck	L	SF						
TS-PUN-NOD-01a	Basic maintenance such as refastening loose componets, replacing minor non-structural componets, etc.		SF	Annual	Basic Maintenance				
TS-PUN-NOD-02	Generic Repair		SF	Repair	Generic Repair				
TS-PUN-NOD-02a	Replace stringer		LF	Repair	Replcae stringer				
TS-PUN-NOD-02b	Repair or replace footing		EA	Repair	Simple mud sills	simple pilings, complex spread footings	Driven pile footings		
TS-PUN-NOD-02c	Add running plank for deck preservation or safety		SF	Repair	Add running planks				
TS-PUN-NOD-03a	Replace in-kind when loading capacity is diminished to less than 80% or deterioration of components is greater than 50% (includes removal and disposal of existing)		SF	Replace in-kind	Replace				
TS-PUN-NOD-04a	Demolish and dispose		SF	Decom	Remove completely				
TS-PUN-NOD-05a	Increase length		SF	Expan	Simple mud sills	simple pilings, complex spread footings	Driven pile footings		
TS-PUN-NOD-05b	Increase width		SF	Expan	Simple mud sills	simple pilings, complex spread footings	Driven pile footings		
TS-PUN-NOD-07a	Fabricate new		SF	Install New	Simple mud sills	simple pilings, complex spread footings	Driven pile footings		
TS-BWK	Boardwalk	L							
TS-BWK-STD	Standard	L	SF						

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-BWK-STD-01a	Basic maintenance such as refastening loose componets, replacing minor non-structural components, etc.		SF	Annual	Basic Maintenance				
TS-BWK-STD-01b	Technical Inspection/Assessment (2-person crew)		EA	Annual	Up to 1/2 day	1 day	2 days	3 days	>4 days
TS-BWK-STD-02	Generic repair		SF	Repair	Generic Repair				
TS-BWK-STD-02a	Repair or replace decking		SF	Repair	Replace decking				
TS-BWK-STD-02b	Replace stringer		LF	Repair	Replace stringer				
TS-BWK-STD-02c	Replace post		EA	Repair	Replace post				
TS-BWK-STD-02d	Repair or replace footing		EA	Repair	Simple mud sills	simple pilings, complex spread footings	Driven pile footings		
TS-BWK-STD-02e	Repair or replace curbing		LF	Repair	Repair curbing				
TS-BWK-STD-02f	Repair or replace handrail		LF	Repair	Repair handrail				
TS-BWK-STD-02g	Increase handrail height to standard		LF	Repair	Increase 6-in	Increase 12-in	Increase 18-in	Increase 24-in	
TS-BWK-STD-02h	Reduce handrail openings to standard		LF	Repair	Decrease 3-in	Decrease 6-in	Decrease 9-in	From wide open	
TS-BWK-STD-02i	Add or replace running plank (for safety)		SF	Repair	Add running planks				
TS-BWK-STD-03a	Replace in kind without handrails (includes removal and disposal of existing)		SF	Replace	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
TS-BWK-STD-03b	Replace in kind with handrails (includes removal and disposal of existing)		SF	Replace	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
TS-BWK-STD-04a	Demolish and dispose		SF	Decom	Remove completely				
TS-BWK-STD-05a	Increase length without handrails		SF	Expan	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
TS-BWK-STD-05b	Increase length with handrails		SF	Expan	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
TS-BWK-STD-05c	Increase structure width (no modifications to substructure, assume redeck of entire structure)		SF	Expan	Widen deck				
TS-BWK-STD-05d	Increase structure width (modifications to substructure)		SF	Expan	Simple mud sills	simple pilings, complex spread footings	Driven pile or screw footings		
TS-BWK-STD-07a	Fabricate new without handrails		SF	Install New	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
TS-BWK-STD-07b	Fabricate new with handrails		SF	Install New	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
TS-BWK-SNR	Step and Run	L	SF						

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-BWK-SNR-01a	Basic maintenance such as refastening loose componets, replacing minor non-structural componets, etc.		SF	Annual	Basic Maintenance				
TS-BWK-SNR-02	Generic repair		SF	Repair	Generic Repair				
TS-BWK-SNR-02a	Repair or replace netting		SF	Repair	Replace netting				
TS-BWK-SNR-02b	Repair or replace running planks		SF	Repair	Replace running planks				
TS-BWK-SNR-02c	Repair or replace mud sills or steps		EA	Repair	Replace mudsill				
TS-BWK-SNR-03a	Replace in-kind without netting (includes removal and disposal of existing)		SF	Replace in-kind	less than 5% grade	5-10% grade	Over 10% grade		
TS-BWK-SNR-03b	Replace in-kind with netting (includes removal and disposal of existing)		SF	Replace in-kind	less than 5% grade	5-10% grade	Over 10% grade		
TS-BWK-SNR-04a	Demolish and dispose		SF	Decom	Ride and rot	Remove completely			
TS-BWK-SNR-05a	Increase width without netting		SF	Expan	less than 5% grade	5-10% grade	Over 10% grade		
TS-BWK-SNR-05b	Increase width with netting		SF	Expan	less than 5% grade	5-10% grade	Over 10% grade		
TS-BWK-SNR-07a	Construct new without netting		SF	New	less than 5% grade	5-10% grade	Over 10% grade		
TS-BWK-SNR-07b	Construct new with netting		SF	New	less than 5% grade	5-10% grade	Over 10% grade		
TS-CDY	Corduroy	L							
TS-CDY-STD	Standard	L	SF						
TS-CDY-STD-01a	Basic maintenance		SF	Annual	Basic Maintenance				
TS-CDY-STD-02	Generic repair		SF	Repair	Generic Repair				
TS-CDY-STD-02a	Replace deteriorated logs or add logs		SF	Repair	Replace logs				
TS-CDY-STD-03a	Replace in-kind (includes removal and disposal of existing)		SF	Replace in-kind	Replace entire structure				
TS-CDY-STD-04a	Demolish and dispose		SF	Decom	Leave in-place for building over	Remove completely			
TS-CDY-STD-05a	Increase length		SF	Expan	Lengthen				
TS-CDY-STD-07a	Install new		SF	Install New	New				
TS-TUN	Tunnel	L							
TS-TUN-STD	Standard	L	CF						
TS-TUN-STD-01a	Basic maintenance		EA	Annual	Custom				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-TUN-STD-01b	Technical Inspection/Assessment		EA	Annual	Annual Safety Assessment	Technical Structural Inspection			
TS-TUN-STD-02	Generic repair		EA	Repair	Generic Repair				
TS-TUN-STD-02a	Repair		EA	Repair	Custom				
TS-TUN-STD-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Custom				
TS-TUN-STD-04a	Decommission		EA	Decom	Custom				
TS-TUN-STD-05a	Expand		EA	Expan	Custom				
TS-TUN-STD-07a	Install new		EA	Install New	Custom				
TS-SHD	Snow Shed	L							
TS-SHD-STD	Standard	L	CF						
TS-SHD-STD-01a	Basic maintenance		EA	Annual	Custom				
TS-SHD-STD-01b	Technical Inspection/Assessment		EA	Annual	Annual Safety Assessment	Technical Structural Inspection			
TS-SHD-STD-02	Generic repair		EA	Repair	Generic Repair				
TS-SHD-STD-02a	Repair		EA	Repair	Custom				
TS-SHD-STD-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Custom				
TS-SHD-STD-04a	Decommission		EA	Decom	Custom				
TS-SHD-STD-05a	Expand		EA	Expan	Custom				
TS-SHD-STD-07a	Install new		EA	Install New	Custom				
TS-OVL	Overlook	P							
TS-OVL-GRD	On-Grade	P	SF						
TS-OVL-GRD-01a	Basic maintenance such as refastening loose components, replacing minor non-structural components, etc.		LF	Annual	Basic Maintenance				
TS-OVL-GRD-02	Generic repair		SF	Repair	Generic Repair				
TS-OVL-GRD-02a	Minor repair or replacement of structural or non-structural components		SF	Repair	Minor repair				
TS-OVL-GRD-02b	Replace broken or deteriorated handrail		LF	Repair	Repair handrail				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-OVL-GRD-03a	Replace in-kind when loading capacity is diminished to < 80% or deterioration of components is > 50% (includes removal and disposal of existing)		SF	Replace in-kind	Replace entire structure				
TS-OVL-GRD-04a	Demolish and dispose		SF	Decom	Remove completely				
TS-OVL-GRD-05a	Increase length and/or width		SF	Expan	Increase size				
TS-OVL-GRD-07a	Fabricate new		SF	Install New	New				
TS-OVL-ELV	Elevated	P	SF						
TS-OVL-ELV-01a	Basic Maintenance such as refastening loose componets, replacing minor non-structural componets, etc.		SF	Annual	Basic Maintenance				
TS-OVL-ELV-01b	Technical Inspection/Assessment (2-person crew)		EA	Annual	Up to 1/2 day	1/2 to 1 day	2 days	3 days	Custom Entry
TS-OVL-ELV-02	Generic Repair		SF	Repair	Generic Repair				
TS-OVL-ELV-02a	Repair or replace decking		SF	Repair	Replace decking				
TS-OVL-ELV-02b	Replace stringer		LF	Repair	Replcae stringer				
TS-OVL-ELV-02c	Replace post		EA	Repair	Replace post				
TS-OVL-ELV-02d	Repair or replace footing		EA	Repair	Simple mud sills	simple pilings, complex spread footings	Driven pile footings		
TS-OVL-ELV-02e	Repair or replace curbing		LF	Repair	Replace curbing				
TS-OVL-ELV-02f	Repair or replace handrail		LF	Repair	Replace handrail				
TS-OVL-ELV-02g	Increase handrail height to standard		LF	Repair	Increase 6-in	Increase 12-in	Increase 18-in	Increase 24-in	
TS-OVL-ELV-02h	Reduce handrail openings to standard		LF	Repair	Decrease 3-in	Decrease 6-in	Decrease 9-in	From wide open	
TS-OVL-ELV-02i	Add or replace running plank (for safety)		SF	Repair	Add running planks				
TS-OVL-ELV-03a	Replace in-kind without handrails (includes removal and disposal of existing)		SF	Replace	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
TS-OVL-ELV-03b	Replace in-kind with handrails (includes removal and disposal of existing)		SF	Replace	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
TS-OVL-ELV-04a	Demolish and dispose		SF	Decom	Remove completely				
TS-OVL-ELV-05a	Increase size without handrails		SF	Expan	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
TS-OVL-ELV-05b	Increase size with handrails		SF	Expan	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-OVL-ELV-07a	Fabricate new without handrails		SF	Install New	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
TS-OVL-ELV-07b	Fabricate new with handrails		SF	Install New	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
TS-CUS	Custom	L / P							
TS-CUS-TS1	Type 1 (by each)	P	EA						
TS-CUS-TS1-01a	Basic maintenance		EA	Annual	Custom				
TS-CUS-TS1-02a	Repair		EA	Repair	Custom				
TS-CUS-TS1-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Custom				
TS-CUS-TS1-04a	Decommission		EA	Decom	Custom				
TS-CUS-TS1-05a	Expand		EA	Expan	Custom				
TS-CUS-TS1-06a	Alter		EA	Alter Function	Custom				
TS-CUS-TS1-07a	Install New		EA	Install New	Custom				
TS-CUS-TS2	Type 2 (by linear foot)	L	LF						
TS-CUS-TS2-01a	Basic maintenance		LF	Annual	Custom				
TS-CUS-TS2-02a	Repair		LF	Repair	Custom				
TS-CUS-TS2-03a	Replace in-kind (includes removal and disposal of existing)		LF	Replace in-kind	Custom				
TS-CUS-TS2-04a	Decommission		LF	Decom	Custom				
TS-CUS-TS2-05a	Expand		LF	Expan	Custom				
TS-CUS-TS2-06a	Alter		LF	Alter Function	Custom				
TS-CUS-TS2-07a	Install New		LF	Install New	Custom				
TS-CUS-TS3	Type 3 (by square foot)	L	SF						
TS-CUS-TS3-01a	Basic maintenance		SF	Annual	Custom				
TS-CUS-TS3-02a	Repair		SF	Repair	Custom				
TS-CUS-TS3-03a	Replace in-kind (includes removal and disposal of existing)		SF	Replace in-kind	Custom				
TS-CUS-TS3-04a	Decommission		SF	Decom	Custom				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-CUS-TS3-05a	Expand		SF	Expan	Custom				
TS-CUS-TS3-06a	Alter		SF	Alter Function	Custom				
TS-CUS-TS3-07a	Install New		SF	Install New	Custom				
TRAIL BRIDGES									
TB	TRAIL BRIDGE	L							
TB-SUS	Cable Suspension	L	SF						
	Bridge Technical Inspection/Assessment		EA	Annual	One Day of 2 Inspectors				Custom Entry
TB-CDK	Cable Deck	L	SF						
	Bridge Technical Inspection/Assessment		EA	Annual	One Day of 2 Inspectors				Custom Entry
TB-CST	Cable Stayed	L	SF						
	Bridge Technical Inspection/Assessment		EA	Annual	One Day of 2 Inspectors				Custom Entry
TB-DGR	Deck Girder	L	SF						
	Bridge Technical Inspection/Assessment		EA	Annual	One Day of 2 Inspectors				Custom Entry
TB-DTR	Deck Truss	L	SF						
	Bridge Technical Inspection/Assessment		EA	Annual	One Day of 2 Inspectors				Custom Entry
TB-SGR	Side Girder	L	SF						
	Bridge Technical Inspection/Assessment		EA	Annual	One Day of 2 Inspectors				Custom Entry
TB-STR	Side Truss	L	SF						
	Bridge Technical Inspection/Assessment		EA	Annual	One Day of 2 Inspectors				Custom Entry
TB-DAR	Deck Arch	L	SF						
	Bridge Technical Inspection/Assessment		EA	Annual	One Day of 2 Inspectors				Custom Entry
TB-SAR	Suspended Arch	L	SF						
	Bridge Technical Inspection/Assessment		EA	Annual	One Day of 2 Inspectors				Custom Entry
TB-SUB	Single Unit	L	SF						
	Bridge Technical Inspection/Assessment		EA	Annual	One Day of 2 Inspectors				Custom Entry
DRAINAGE STRUCTURES									

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TD-DIP	Drain Dip	P							
TD-DIP-STD	Standard	P	EA						
TD-DIP-STD-01a	Basic maintenance		EA	Annual	Basic Maintenance				
TD-DIP-STD-02	Generic repair		EA	Repair	Generic Repair				
TD-DIP-STD-02a	Reestablish original lines and grades		EA	Repair	Native soil				
TD-DIP-STD-03a	Install on existing tread to meet standard		EA	Replace in-kind	Native soil	armored with aggregate	armored with rock flagstones		
			LF	Replace in-kind	Every 500 LF	Every 300 LF	Every 200 LF	Every 100 LF	Every 50 LF
TD-DIP-STD-04a	Obliterate		EA	Decom	Recontour				
TD-DIP-STD-07a	Install during new tread construction		EA	Install New	Native soil	armored with aggregate	armored with rock flagstones		
			LF	Install New	Every 500 LF	Every 300 LF	Every 200 LF	Every 100 LF	Every 50 LF
TD-WBR	Waterbar	P							
TD-WBR-RCK	Rock	P	EA						
TD-WBR-RCK-01a	Basic maintenance		EA	Annual	Basic Maintenance				
TD-WBR-RCK-02	Generic repair		EA	Repair	Generic Repair				
TD-WBR-RCK-02a	Normal repairs such as resetting or replacing rocks, minor extentions, etc.		EA	Repair	Common soil	Rocky soil			
TD-WBR-RCK-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Common soil	Rocky soil			
			LF	Replace in-kind	Every 500 LF	Every 300 LF	Every 200 LF	Every 100 LF	Every 50 LF
TD-WBR-RCK-03b	Install on existing tread to meet standard		EA	Replace in-kind	Common soil	Rocky soil			
			LF	Replace in-kind	Every 500 LF	Every 300 LF	Every 200 LF	Every 100 LF	Every 50 LF
TD-WBR-RCK-04a	Demolish and dispose		EA	Decom	Recontour				
TD-WBR-RCK-07a	Install during new tread construction		EA	Install New	Common soil	Rocky soil			
			LF	Install New	Every 500 LF	Every 300 LF	Every 200 LF	Every 100 LF	Every 50 LF
TD-WBR-LOG	Log	P	EA						
TD-WBR-LOG-01a	Basic maintenance		EA	Annual	Basic Maintenance				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TD-WBR-LOG-02	Generic repair		EA	Repair	Generic Repair				
TD-WBR-LOG-02a	Normal repairs such as resetting or repinning bar, etc		EA	Repair	Common soil	Rocky soil			
TD-WBR-LOG-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Common soil	Rocky soil			
			LF	Replace in-kind	Every 500 LF	Every 300 LF	Every 200 LF	Every 100 LF	Every 50 LF
TD-WBR-LOG-03b	Install on existing tread to meet standard		EA	Replace in-kind	Common soil	Rocky soil			
			LF	Replace in-kind	Every 500 LF	Every 300 LF	Every 200 LF	Every 100 LF	Every 50 LF
TD-WBR-LOG-04a	Demolish and dispose		EA	Decom	Recontour				
TD-WBR-LOG-07a	Install during new tread construction		EA	Install New	Common soil	Rocky soil			
			LF	Install New	Every 500 LF	Every 300 LF	Every 200 LF	Every 100 LF	Every 50 LF
TD-WBR-BLT	Belted	P	EA						
TD-WBR-BLT-01a	Basic maintenance		EA	Annual	Basic Maintenance				
TD-WBR-BLT-02	Generic repair		EA	Repair	Generic Repair				
TD-WBR-BLT-02a	Normal repairs such as resetting bar, replacing belting, etc		EA	Repair	Common soil	Rocky soil			
TD-WBR-BLT-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Common soil	Rocky soil			
			LF	Replace in-kind	Every 500 LF	Every 300 LF	Every 200 LF	Every 100 LF	Every 50 LF
TD-WBR-BLT-03b	Install on existing tread to meet standard		EA	Replace in-kind	Common soil	Rocky soil			
			LF	Replace in-kind	Every 500 LF	Every 300 LF	Every 200 LF	Every 100 LF	Every 50 LF
TD-WBR-BLT-04a	Demolish and dispose		EA	Decom	Recontour				
TD-WBR-BLT-07a	Install during new tread construction		EA	Install New	Common soil	Rocky soil			
			LF	Install New	Every 500 LF	Every 300 LF	Every 200 LF	Every 100 LF	Every 50 LF
TD-CVT	Culvert	P							
TD-CVT-STD	Standard	P	EA						
TD-CVT-STD-01a	Basic maintenance		EA	Annual	Basic Maintenance				
TD-CVT-STD-02	Generic repair		EA	Repair	Generic Repair				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TD-CVT-STD-02a	Normal repairs including inlet/outlet apurtences		EA	Repair	24-in diameter or smaller	30-in diameter or greater			
TD-CVT-STD-03a	Replace in-kind (includes removal and disposal of existing)		LF	Replace in-kind	Less than 15-in diameter	18-in diameter	24-30-in diameter	36-48-in diameter	Custom
TD-CVT-STD-04a	Demolish and dispose including fills		LF	Decom	Remove completely				
TD-CVT-STD-05a	Increase length		LF	Expan	Less than 15-in diameter	18-in diameter	24-30-in diameter	36-48-in diameter	Custom
TD-CVT-STD-07a	Install new		LF	Install New	15-in diameter or less	18-in diameter	24-30-in diameter	36-48-in diameter	Custom
TD-CVT-HDW	Standard w/ Headwalls	P	EA						
TD-CVT-HDW-01a	Basic maintenance		EA	Annual	Basic Maintenance				
TD-CVT-HDW-02	Generic repair		EA	Repair	Generic Repair				
TD-CVT-HDW-02a	Normal repairs including rebuilding headwalls		EA	Repair	24-in diameter or smaller	30-in diameter or greater			
TD-CVT-HDW-03a	Replace in-kind (includes removal and disposal of existing)		LF	Replace in-kind	Less than 15-in diameter	18-in diameter	24-30-in diameter	36-48-in diameter	Custom
TD-CVT-HDW-04a	Demolish and dispose including fills		LF	Decom	Remove completely				
TD-CVT-HDW-05a	Increase length, reuse headwall stones		LF	Expan	Less than 15-in diameter	18-in diameter	24-30-in diameter	36-48-in diameter	Custom
TD-CVT-HDW-07a	Install new		LF	Install New	15-in diameter or less	18-in diameter	24-30-in diameter	36-48-in diameter	Custom
TD-CVT-RCK	Rock	P	EA						
TD-CVT-RCK-01a	Basic maintenance		EA	Annual	Basic Maintenance				
TD-CVT-RCK-02	Generic repair		EA	Repair	Generic Repair				
TD-CVT-RCK-02a	Normal repairs		EA	Repair	Reset stones, level approaches	Replace cap or foundation stones			
TD-CVT-RCK-03a	Replace in-kind (includes removal and disposal of existing)		LF	Replace in-kind	Less than 15-in diameter	18-in diameter	24-in diameter	Custom	
TD-CVT-RCK-04a	Demolish and dispose including fills		LF	Decom	Remove completely				
TD-CVT-RCK-05a	Increase Length		LF	Expan	Less than 15-in diameter	18-in diameter	24-in diameter	Custom	
TD-CVT-RCK-07a	Install New		LF	Install New	Less than 15-in diameter	18-in diameter	24-in diameter	Custom	
TD-CVT-BOX	Box	P	EA						
TD-CVT-BOX-01a	Basic maintenance		EA	Annual	Basic Maintenance				
TD-CVT-BOX-02	Generic repair		EA	Repair	Generic Repair				
TD-CVT-BOX-02a	Normal repairs		EA	Repair	Remove and reset at new depth or skew	Repair or replace broken member, reset structure			

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TD-CVT-BOX-03a	Replace in-kind (includes removal and disposal of existing)		LF	Replace in-kind	End area less than 1-SF	End area between 1-SF and 3-SF	End area between 3-SF and 6-SF	End area over 6-SF	Custom
TD-CVT-BOX-04a	Demolish and dispose including fills		LF	Decom	Remove completely				
TD-CVT-BOX-05a	Increase length		LF	Expan	End area less than 1-SF	End area between 1-SF and 3-SF	End area between 3-SF and 6-SF	End area over 6-SF	Custom
TD-CVT-BOX-07a	Install new		LF	Install New	End area less than 1-SF	End area between 1-SF and 3-SF	End area between 3-SF and 6-SF	End area over 6-SF	Custom
TD-CVT-ACH	Bottomless Arch	P	EA						
TD-CVT-ACH-01a	Basic maintenance		EA	Annual	Basic Maintenance				
TD-CVT-ACH-02	Generic repair		EA	Repair	Generic Repair				
TD-CVT-ACH-02a	Normal repairs		EA	Repair	Replace/compact scoured fill materials	Armor scoured footings			
TD-CVT-ACH-03a	Replace in-kind (includes removal and disposal of existing)		LF	Replace in-kind	30-48-in dia. with footings	48-72-in dia. with footings	Over 72-in diameter with footings	Custom	
TD-CVT-ACH-04a	Demolish and dispose		LF	Decom	Remove completely				
TD-CVT-ACH-05a	Increase length		LF	Expan	30-48-in dia. with footings	48-72-in dia. with footings	Over 72-in diameter with footings	Custom	
TD-CVT-ACH-07a	Install new		LF	Install New	30-48-in dia. with footings	48-72-in dia. with footings	Over 72-in diameter with footings	Custom	
TD-CVT-OPT	Open-Top Drain	P	EA						
TD-CVT-OPT-01a	Basic maintenance		EA	Annual	Basic Maintenance				
TD-CVT-OPT-02	Generic repair		EA	Repair	Generic Repair				
TD-CVT-OPT-02a	Normal repairs		EA	Repair	Reset structure, level approaches	Replace components, reset, level approaches			
TD-CVT-OPT-03a	Replace in-kind (includes removal and disposal of existing)		LF	Replace in-kind	Less than 12-in opening	12-18-in opening			
TD-CVT-OPT-04a	Demolish and dispose		LF	Decom	Remove completely				
TD-CVT-OPT-05a	Increase length		LF	Expan	Less than 12-in opening	12-18-in opening			
TD-CVT-OPT-07a	Install new		LF	Install New	Less than 12-in opening	12-18-in opening			
TD-SPY	Spillway	P							
TD-SPY-RCK	Rock	P	SF						
TD-SPY-RCK-01a	Basic maintenance		SF	Annual	Basic Maintenance				
TD-SPY-RCK-02	Generic repair		SF	Repair	Generic Repair				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TD-SPY-RCK-02a	Normal repairs		SF	Repair	Reset and stabilize sections	Replace scoured sections with new materials			
TD-SPY-RCK-03a	Replace in-kind (includes removal and disposal of existing)		SF	Replace in-kind	Low hydraulic energy site	High hydraulic energy site			
TD-SPY-RCK-04a	Remove and dispose		SF	Decom	Remove completely				
TD-SPY-RCK-05a	Expansion		SF	Expan	Low hydraulic energy site	High hydraulic energy site			
TD-SPY-RCK-07a	Install new		SF	Install New	Low hydraulic energy site	High hydraulic energy site			
TD-DAM	Check Dam	P							
TD-DAM-STD	Standard	P	EA						
TD-DAM-STD-01a	Basic maintenance		EA	Annual	Basic Maintenance				
TD-DAM-STD-02	Generic repair		EA	Repair	Generic Repair				
TD-DAM-STD-02a	Normal repairs		EA	Repair	Minor repairs				
TD-DAM-STD-03a	Replace in-kind with common borrow		EA	Replace in-kind	< 24 inch tread width	24-36 inch tread width	36-48 inch tread width	48-72 inch tread width	Custom
TD-DAM-STD-03b	Replace in-kind with select borrow (includes removal and disposal of existing)		EA	Replace in-kind	< 24 inch tread width	24-36 inch tread width	36-48 inch tread width	48-72 inch tread width	Custom
TD-DAM-STD-03c	Install new on existing tread to reduce excessive erosion with common borrow		EA	Replace in-kind	< 24 inch tread width	24-36 inch tread width	36-48 inch tread width	48-72 inch tread width	Custom
TD-DAM-STD-03d	Install new on existing tread to reduce excessive erosion with select borrow		EA	Replace in-kind	< 24 inch tread width	24-36 inch tread width	36-48 inch tread width	48-72 inch tread width	Custom
TD-DAM-STD-04a	Demolish and dispose		EA	Decom	Let deteriorate	Remove completely			
TD-DAM-STD-05a	Lengthen		EA	Expan	Lengthen				
TD-DAM-STD-07a	Install new with common borrow		EA	Install New	< 24 inch tread width	24-36 inch tread width	36-48 inch tread width	48-72 inch tread width	Custom
TD-DAM-STD-07b	Install new with select borrow		EA	Install New	< 24 inch tread width	24-36 inch tread width	36-48 inch tread width	48-72 inch tread width	Custom
TD-DIT	Ditch	L							
TD-DIT-SID	Side	L	LF						
TD-DIT-SID-01a	Basic maintenance		LF	Annual	Basic maintenance				
TD-DIT-SID-02	Generic repair		LF	Repair	Generic repair				
TD-DIT-SID-02a	Normal repairs		LF	Repair	Reexcavate to remove heavy sod/vegetation				
TD-DIT-SID-02b	Armor with rock		LF	Repair	Low hydraulic energy site	High hydraulic energy site			

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TD-DIT-SID-03a	Replace in-kind		LF	Replace in-kind	Easy digging	Tough digging			
TD-DIT-SID-04a	Remove and dispose		LF	Decom	Remove competely				
TD-DIT-SID-05a	Increase capacity by depth or width		LF	Expan	Easy digging	Tough digging	Extreme digging		
TD-DIT-SID-07a	Excavate new		LF	Install New	Easy digging	Tough digging	Extreme digging		
TD-DIT-SID-07b	Excavate new with rock armoring		LF	Install New	Easy digging	Tough digging			
TD-DIT-LED	Leadoff	L	LF						
TD-DIT-LED-01a	Basic maintenance		LF	Annual	Basic Maintenance				
TD-DIT-LED-02	Generic repair		LF	Repair	Generic Repair				
TD-DIT-LED-02a	Normal repairs		LF	Repair	Reexcavate to remove heavy sod/vegetation				
TD-DIT-LED-02b	Armor with rock		LF	Repair	Low hydraulic energy site	High hydraulic energy site			
TD-DIT-LED-03a	Replace in-kind		LF	Replace in-kind	Easy digging	Tough digging			
TD-DIT-LED-04a	Remove and dispose		LF	Decom	Remove competely				
TD-DIT-LED-05a	Increase capacity by depth or width		LF	Expan	Easy digging	Tough digging	Extreme digging		
TD-DIT-LED-07a	Excavate new		LF	Install New	Easy digging	Tough digging	Extreme digging		
TD-DIT-LED-07b	Excavate new with rock armoring		LF	Install New	Easy digging	Tough digging			
TD-BRM	Berm	L							
TD-BRM-STD	Standard Earth	L	LF						
TD-BRM-STD-01a	Basic maintenance		LF	Annual	Basic Maintenance				
TD-BRM-STD-02	Generic repair		LF	Repair	Generic Repair				
TD-BRM-STD-02a	Normal repairs		LF	Repair	Repair damaged sections				
TD-BRM-STD-03a	Replace in-kind		LF	Replace in-kind	Fine/organic soil	Common soil	Talus		
TD-BRM-STD-04a	Remove and dispose		LF	Decom	Fine/organic soil	Common soil	Talus	Solid Rock	
TD-BRM-STD-05a	Expansion		CY	Expan	Fine/organic soil	Common soil	Talus		
TD-BRM-STD-07a	Install new		LF	Install New	Fine/organic soil	Common soil	Talus		
			CY	Install New	Fine/organic soil	Common soil	Talus		
TD-UDN	Underdrain (aka French Drain)	L							

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TD-UDN-RCK	Rock	L	SF						
TD-UDN-RCK-01a	Basic maintenance		SF	Annual	Basic Maintenance				
TD-UDN-RCK-02	Generic repair		SF	Repair	Generic repair				
TD-UDN-RCK-02a	Normal repairs		SF	Repair	Repair/cap exposed section				
TD-UDN-RCK-03a	Replace in-kind in same location (includes removal and disposal of existing)		SF	Replace in-kind	Replace				
TD-UDN-RCK-04a	Remove and dispose		SF	Decom	Remove completely				
TD-UDN-RCK-05a	Lengthen		SF	Expan	Fine/organic soil	Common soil	Common soil with larger rock		
TD-UDN-RCK-07a	Install new		SF	Install New	Fine/organic soil	Common soil	Common soil with larger rock		
			CY	Install New	Fine/organic soil	Common soil	Common soil with larger rock		
TD-UDN-GEO	Geotextile	L	SF						
TD-UDN-GEO-01a	Basic maintenance		SF	Annual	Basic Maintenance				
TD-UDN-GEO-02	Generic repair		SF	Repair	Generic repair				
TD-UDN-GEO-02a	Normal repairs		SF	Repair	Repair/cap exposed section				
TD-UDN-GEO-03a	Replace in-kind in same location (includes removal and disposal of existing)		SF	Replace in-kind	Replace				
TD-UDN-GEO-04a	Remove and dispose		SF	Decom	Remove completely				
TD-UDN-GEO-05a	Expansion		SF	Expan	Fine/organic soil	Common soil	Common soil with larger rock		
TD-UDN-GEO-07a	Install new		SF	Install New	Fine/organic soil	Common soil	Common soil with larger rock		
TD-CUS	Custom	L / P							
TD-CUS-DS1	Type 1 (by each)	P	EA						
TD-CUS-DS1-01a	Basic maintenance		EA	Annual	Custom				
TD-CUS-DS1-02a	Repair		EA	Repair	Custom				
TD-CUS-DS1-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Custom				
TD-CUS-DS1-04a	Decommission		EA	Decom	Custom				
TD-CUS-DS1-05a	Expand		EA	Expan	Custom				
TD-CUS-DS1-06a	Alter		EA	Alter Function	Custom				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TD-CUS-DS1-07a	Install new		EA	Install New	Custom				
TD-CUS-DS2	Type 2 (by linear foot)	L	LF						
TD-CUS-DS2-01a	Basic maintenance		LF	Annual	Custom				
TD-CUS-DS2-02a	Repair		LF	Repair	Custom				
TD-CUS-DS2-03a	Replace in-kind (includes removal and disposal of existing)		LF	Replace in-kind	Custom				
TD-CUS-DS2-04a	Decommission		LF	Decom	Custom				
TD-CUS-DS2-05a	Expand		LF	Expan	Custom				
TD-CUS-DS2-06a	Alter		LF	Alter Function	Custom				
TD-CUS-DS2-07a	Install new		LF	Install New	Custom				
TD-CUS-DS3	Type 3 (by square foot)	L	SF						
TD-CUS-DS3-01a	Basic maintenance		SF	Annual	Custom				
TD-CUS-DS3-02a	Repair		SF	Repair	Custom				
TD-CUS-DS3-03a	Replace in-kind (includes removal and disposal of existing)		SF	Replace in-kind	Custom				
TD-CUS-DS3-04a	Decommission		SF	Decom	Custom				
TD-CUS-DS3-05a	Expand		SF	Expan	Custom				
TD-CUS-DS3-06a	Alter		SF	Alter Function	Custom				
TD-CUS-DS3-07a	Install new		SF	Install New	Custom				
TRAILSIDE STRUCTURES									
SS-CNT	Traffic Counter	P							
SS-CNT-BRD	Buried	P	EA						
SS-CNT-BRD-01a	Basic maintenance		EA	Annual	Basic maintenance				
SS-CNT-BRD-02	Generic repair		EA	Repair	Generic repair				
SS-CNT-BRD-02a	Scheduled repairs		EA	Repair	Normal repairs				
SS-CNT-BRD-04a	Remove counter site		EA	Decom	Remove site				
SS-CNT-BRD-07a	Install owned counter		EA	Install New	Install counter site				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
SS-CNT-BRD-07b	Purchase counter		EA	Install New	Type1	Type 2	Type 3		
SS-CNT-TRE	Tree-Mounted	P	EA						
SS-CNT-TRE-01a	Basic maintenance		EA	Annual	Basic maintenance				
SS-CNT-TRE-02	Generic repair		EA	Repair	Generic repair				
SS-CNT-TRE-02a	Scheduled repairs		EA	Repair	Normal repairs				
SS-CNT-TRE-04a	Remove counter site		EA	Decom	Remove site				
SS-CNT-TRE-07a	Install owned counter		EA	Install New	Install counter site				
SS-CNT-TRE-07b	Purchase counter		EA	Install New	Type1	Type 2	Type 3		
SS-RBX	Registration Box	P							
SS-RBX-RBG	Ground-Mounted	P	EA						
SS-RBX-RBG-01a	Basic maintenance		EA	Annual	Basic maintenance				
SS-RBX-RBG-02	Generic repair		EA	Repair	Generic repair				
SS-RBX-RBG-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Type1	Type 2	Type 3		
SS-RBX-RBG-04a	Remove and dispose		EA	Decom	Remove site				
SS-RBX-RBG-07a	Install new		EA	Install New	Type1	Type 2	Type 3		
SS-RBX-RBE	Post-Mounted	P	EA						
SS-RBX-RBE-01a	Basic maintenance		EA	Annual	Basic maintenance				
SS-RBX-RBE-02	Generic repair		EA	Repair	Generic repair				
SS-RBX-RBE-02a	Normal repairs		EA	Repair	Normal repairs				
SS-RBX-RBE-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Type1	Type 2	Type 3		
SS-RBX-RBE-04a	Remove and dispose		EA	Decom	Remove site				
SS-RBX-RBE-07a	Install new		EA	Install New	Type1	Type 2	Type 3		
SS-DOK	Dock	P							
SS-DOK-STA	Stationary	P	SF						
SS-DOK-STA-01a	Basic maintenance		SF	Annual	Basic Maintenance				
SS-DOK-STA-01b	Technical inspection/assessment		EA	Annual	One Day for 2 Inspectors				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
SS-DOK-STA-02	Generic repair		SF	Repair	Generic Repair				
SS-DOK-STA-02a	Repair or replace decking and hardware		SF	Repair	Decking				
SS-DOK-STA-02b	Replace frame components		EA	Repair	One adjacent group of components				
SS-DOK-STA-02c	Repair or replace foundation components		EA	Repair	Simple mud sills	simple pilings, complex spread footings	Driven pile footings		
SS-DOK-STA-02d	Repair or replace curbing		LF	Repair	Repair curbing				
SS-DOK-STA-02e	Repair or replace handrail		LF	Repair	Repair handrails				
SS-DOK-STA-03a	Replace in-kind without handrails (includes removal and disposal of existing)		SF	Replace	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
SS-DOK-STA-03b	Replace in-kind with handrails (includes removal and disposal of existing)		SF	Replace	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
SS-DOK-STA-04a	Demolish and dispose		SF	Decom	Remove completely				
SS-DOK-STA-05a	Increase length - without handrails		SF	Expan	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
SS-DOK-STA-05b	Increase length - with handrails		SF	Expan	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
SS-DOK-STA-07a	Fabricate new without handrails		SF	Install New	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
SS-DOK-STA-07b	Fabricate new with handrails		SF	Install New	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
SS-DOK-FLT	Floating (Simple)	P	SF						
SS-DOK-FLT-01a	Basic maintenance		SF	Annual	Basic Maintnence				
SS-DOK-FLT-02	Generic repair		SF	Repair	Generic Repair				
SS-DOK-FLT-02a	Repair or replace decking and hardware		SF	Repair	Decking				
SS-DOK-FLT-02b	Replace stringer		LF	Repair	Single stringer				
SS-DOK-FLT-02c	Replace floats		SF	Repair	Type 1 - 55-gal drums	Type 2 - foam floatation	Type 3 - Air-bladder flotation		
SS-DOK-FLT-02d	Repair or replace shore anchorage		EA	Repair	One anchor				
SS-DOK-FLT-02e	Repair or replace curbing		LF	Repair	Curbing				
SS-DOK-FLT-03a	Replace in kind (includes removal and disposal of existing)		SF	Replace	Type 1 - 55-gal drums	Type 2 - foam floatation	Type 3 - Air-bladder flotation		
SS-DOK-FLT-04a	Demolish and dispose		SF	Decom	Remove completely				
SS-DOK-FLT-05a	Increase length		SF	Expan	Type 1 - 55-gal drums	Type 2 - foam floatation	Type 3 - Air-bladder flotation		

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
SS-DOK-FLT-07a	Fabricate new without handrails		SF	Install New	Type 1 - 55-gal drums	Type 2 - foam floatation	Type 3 - Air-bladder flotation		
SS-BNH	Bench	P							
SS-BNH-PRM	Primitive	P	EA						
SS-BNH-PRM-01a	Basic maintenance		EA	Annual	Basic Maintenance				
SS-BNH-PRM-02	Generic repair		EA	Repair	Generic Repair				
SS-BNH-PRM-02a	Normal repairs		EA	Repair	Minor repairs				
SS-BNH-PRM-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Style 1	Style 2	Style 3		
SS-BNH-PRM-04a	Remove and dispose		EA	Decom	Remove competely				
SS-BNH-PRM-07a	Install new		EA	Install New	Style 1	Style 2	Style 3		
SS-BNH-MNF	Manufactured	P	EA						
SS-BNH-MNF-01a	Basic maintenance		EA	Annual	Basic Maintenance				
SS-BNH-MNF-02	Generic repair		EA	Repair	Generic Repair				
SS-BNH-MNF-02a	Normal repairs		EA	Repair	Minor repairs				
SS-BNH-MNF-03a	Replace in kind (permanently installed - includes removal and disposal of existing)		EA	Replace in-kind	Style 1	Style 2	Style 3		
SS-BNH-MNF-03b	Replace in kind (moveable - includes removal and disposal of existing)		EA	Replace in-kind	Style 1	Style 2	Style 3		
SS-BNH-MNF-04a	Remove and dispose		EA	Decom	Remove competely				
SS-BNH-MNF-07a	Install new (permanently installed)		EA	Install New	Style 1	Style 2	Style 3		
SS-BNH-MNF-07b	Install new (moveable)		EA	Install New	Style 1	Style 2	Style 3		
SS-INF	Information	P							
SS-INF-PAN	Flat-Panel	P	SF						
SS-INF-PAN-01a	Basic maintenance (reset, paint,tighten)		EA	Annual	Small (<32 sq ft)	Medium (33-64 sq ft)	Large (>64 sq ft)		
SS-INF-PAN-02	Generic repair		EA	Repair	Generic Repair				
SS-INF-PAN-02a	Replace post		EA	Repair	One post				
SS-INF-PAN-02b	Replace panel		EA	Repair	One panel				
SS-INF-PAN-02c	Replace frame		EA	Repair	Entire frame				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
SS-INF-PAN-02d	Replace panel cap		EA	Repair	One cap				
SS-INF-PAN-02e	Replace site identification nameplate		EA	Repair	One nameplate				
SS-INF-PAN-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Small (<32 sq ft)	Medium (33-64 sq ft)	Large (>64 sq ft)		
SS-INF-PAN-04a	Remove and dispose		EA	Decom	Remove completely				
SS-INF-PAN-05a	Expand with new panel		EA	Expan	Small (<32 sq ft)	Medium (33-64 sq ft)	Large (>64 sq ft)		
SS-INF-PAN-07a	Install new		EA	Install New	Small (<32 sq ft)	Medium (33-64 sq ft)	Large (>64 sq ft)		
SS-INF-KSK	Kiosk	P	SF						
SS-INF-KSK-01a	Basic maintenance (reset, paint,tighten)		EA	Annual	Basic Maintenance				
SS-INF-KSK-02	Generic repair		EA	Repair	Generic Repair				
SS-INF-KSK-02a	Replace post		EA	Repair	One post				
SS-INF-KSK-02b	Replace panel or frame		EA	Repair	One panel				
SS-INF-KSK-02c	Replace roofing		SF	Repair	One SF of roof				
SS-INF-KSK-02d	Repair or replace walking pad		SF	Repair	One SF of sidewalk				
SS-INF-KSK-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Style 1	Style 2	Style 3		
SS-INF-KSK-04a	Remove and dispose		EA	Decom	Remove completely				
SS-INF-KSK-07a	Install new		EA	Install New	Style 1	Style 2	Style 3		
SS-GAR	Garbage Container								
SS-GAR-CAN	Residential-Style Can	P	EA						
SS-GAR-CAN-01a	Basic maintenance		EA	Annual	Basic Maintenance				
SS-GAR-CAN-02	Generic repair		EA	Repair	Generic repair				
SS-GAR-CAN-02a	Repair		EA	Repair	Minor repairs to the mounting structure				
SS-GAR-CAN-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Replace can and mounting post	Anchored to complex assembly and foundation			
SS-GAR-CAN-04a	Decommission		EA	Decom	Remove completely	Completely remove			
SS-GAR-CAN-07a	Install new		EA	Install New	Anchored to simple post	Anchored to complex assembly and foundation			
SS-GAR-BIN	Commercial Bin	P	EA						

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
SS-GAR-BIN-01a	Basic maintenance		EA	Annual	Basic Maintenance				
SS-GAR-BIN-02	Generic repair		EA	Repair	Generic repair				
SS-GAR-BIN-02a	Repair		EA	Repair	Minor repairs such as latch replacement, new foundation, or due to vandalism				
SS-GAR-BIN-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Replace in same Hole	Replace in same Hole			
SS-GAR-BIN-04a	Decommission		EA	Decom	Remove completely				
SS-GAR-BIN-07a	Install new		EA	Install New	Non-Bear Proof bin on concrete foundation	Bear Proof bin on concrete foundation			
SS-CUS	CUSTOM	L / P							
SS-CUS-SS1	Type 1 (by each)	P	EA						
SS-CUS-SS1-01a	Basic maintenance		EA	Annual	Custom				
SS-CUS-SS1-02a	Repair		EA	Repair	Custom				
SS-CUS-SS1-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Custom				
SS-CUS-SS1-04a	Decommission		EA	Decom	Custom				
SS-CUS-SS1-05a	Expand		EA	Expan	Custom				
SS-CUS-SS1-06a	Alter		EA	Alter Function	Custom				
SS-CUS-SS1-07a	Install new		EA	Install New	Custom				
SS-CUS-SS2	Type 2 (by linear foot)	L	LF						
SS-CUS-SS2-01a	Basic maintenance		LF	Annual	Custom				
SS-CUS-SS2-02a	Repair		LF	Repair	Custom				
SS-CUS-SS2-03a	Replace in-kind (includes removal and disposal of existing)		LF	Replace in-kind	Custom				
SS-CUS-SS2-04a	Decommission		LF	Decom	Custom				
SS-CUS-SS2-05a	Expand		LF	Expan	Custom				
SS-CUS-SS2-06a	Alter		LF	Alter Function	Custom				
SS-CUS-SS2-07a	Install new		LF	Install New	Custom				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
RESTRICTION DEVICES									
RD-BCD	Barricade	P							
RD-BCD-BDR	Boulder	P	EA						
RD-BCD-BDR-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RD-BCD-BDR-02	Generic repair		EA	Repair	Generic Repair				
RD-BCD-BDR-02a	Normal scheduled repairs		EA	Repair	Reset displaced boulder				
RD-BCD-BDR-04a	Remove and dispose		EA	Decom	Remove competely				
RD-BCD-BDR-05a	Expansion		EA	Expan	Add one boulder				
RD-BCD-BDR-07a	Install new		EA	Install New	Add one boulder				
RD-BCD-BOL	Single Post Bollard	P	EA						
RD-BCD-BOL-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RD-BCD-BOL-02	Generic repair		EA	Repair	Generic Repair				
RD-BCD-BOL-02a	Repair		EA	Repair	Minor repairs				
RD-BCD-BOL-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Replace in same Hole				
RD-BCD-BOL-04a	Remove and dispose		EA	Decom	Remove competely				
RD-BCD-BOL-07a	Install New		EA	Install New	Common soil	Rocky soil			
RD-BCD-MNF	Manufactured	P	EA						
RD-BCD-MNF-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RD-BCD-MNF-02	Generic repair		EA	Repair	Generic Repair				
RD-BCD-MNF-02a	Normal scheduled repairs		EA	Repair	Reset post	Replace rail	Replace post		
RD-BCD-MNF-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Type 1	Type 2	Type 3		
RD-BCD-MNF-04a	Remove and dispose		EA	Decom	Remove competely				
RD-BCD-MNF-07a	Install new		EA	Install New	Type 1	Type 2	Type 3		
RD-STL	Stile	P							
RD-STL-STD	Standard	P	EA						
RD-STL-STD-01a	Basic maintenance		EA	Annual	Basic Maintenance				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
RD-STL-STD-02	Generic repair		EA	Repair	Generic Repair				
RD-STL-STD-02a	Normal scheduled repairs		EA	Repair	Common damage				
RD-STL-STD-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Common soil	Rocky soil			
RD-STL-STD-04a	Remove and dispose		EA	Decom	Remove competely				
RD-STL-STD-07a	Install new		EA	Install New	Common soil	Rocky soil			
RD-FNC	Fence	L							
RD-FNC-WIR	Post and Wire	L	LF						
RD-FNC-WIR-01a	Basic maintenance		LF	Annual	Basic Maintenance				
RD-STL-STD-02	Generic repair		SF	Repair	Generic Repair				
RD-FNC-WIR-02a	Normal scheduled repairs		LF	Repair	Common damage				
RD-FNC-WIR-03a	Replace in-kind (includes removal and disposal of existing)		LF	Replace in-kind	Common soil	Rocky soil			
RD-FNC-WIR-04a	Remove and dispose		LF	Decom	Remove competely				
RD-FNC-WIR-05a	Lengthen		LF	Expan	Common soil	Rocky soil			
RD-FNC-WIR-07a	Install new		LF	Install New	Common soil	Rocky soil			
RD-FNC-RAL	Post and Rail	L	LF						
RD-FNC-RAL-01a	Basic Maintenance		LF	Annual	Basic Maintenance				
RD-FNC-RAL-02	Generic Repair		SF	Repair	Generic Repair				
RD-FNC-RAL-02a	Normal scheduled repairs		LF	Repair	Common damage				
RD-FNC-RAL-03a	Replace in-kind (includes removal and disposal of existing)		LF	Replace in-kind	Common soil	Rocky soil			
RD-FNC-RAL-04a	Remove and dispose		LF	Decom	Remove competely				
RD-FNC-RAL-05a	Lengthen		LF	Expan	Common soil	Rocky soil			
RD-FNC-RAL-07a	Install new		LF	Install New	Common soil	Rocky soil			
RD-FNC-WOV	Woven Wire	L	LF						
RD-FNC-WOV-01a	Basic maintenance		LF	Annual	Basic Maintenance				
RD-FNC-WOV-02	Generic repair		LF	Repair	Generic Repair				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
RD-FNC-WOV-02a	Normal scheduled repairs		LF	Repair	Common damage				
RD-FNC-WOV-03a	Replace in-kind (includes removal and disposal of existing)		LF	Replace in-kind	Common soil	Rocky soil			
RD-FNC-WOV-04a	Remove and dispose		LF	Decom	Remove competely				
RD-FNC-WOV-05a	Expansion		LF	Expan	Common soil	Rocky soil			
RD-FNC-WOV-07a	Install new		LF	Install New	Common soil	Rocky soil			
RD-FNC-JAC	Jackleg	L	LF						
RD-FNC-JAC-01a	Basic maintenance		LF	Annual	Basic Maintenance				
RD-FNC-JAC-02	Generic repair		LF	Repair	Generic Repair				
RD-FNC-JAC-02a	Normal scheduled repairs		LF	Repair	Common damage				
RD-FNC-JAC-03a	Replace in-kind (includes removal and disposal of existing)		LF	Replace in-kind	Replace				
RD-FNC-JAC-04a	Remove and dispose		LF	Decom	Remove competely				
RD-FNC-JAC-05a	Expansion		LF	Expan	Lengthen				
RD-FNC-JAC-07a	Install new		LF	Install New	New				
RD-FNC-STK	Stacked Rail (Worm)	L	LF						
RD-FNC-STK-01a	Basic maintenance		LF	Annual	Basic Maintenance				
RD-FNC-STK-02	Generic repair		LF	Repair	Generic Repair				
RD-FNC-STK-02a	Normal scheduled repairs		LF	Repair	Common damage				
RD-FNC-STK-03a	Replace in-kind (includes removal and disposal of existing)		LF	Replace in-kind	Replace				
RD-FNC-STK-04a	Remove and dispose		LF	Decom	Remove competely				
RD-FNC-STK-05a	Expansion		LF	Expan	Lengthen				
RD-FNC-STK-07a	Install new		LF	Install New	New				
RD-GAT	Gate	P							
RD-GAT-WIR	Wire	P	EA						
RD-GAT-WIR-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RD-GAT-WIR-02	Generic repair		EA	Repair	Generic Repair				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
RD-GAT-WIR-02a	Normal Scheduled Repairs		EA	Repair	Typical Repairs				
RD-GAT-WIR-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Common soil	Rocky soil			
RD-GAT-WIR-04a	Demolish and dispose		EA	Decom	Remove completely				
RD-GAT-WIR-07a	Install new		EA	Install New	Common soil	Rocky soil			
RD-GAT-SWG	Swinging	P	EA						
RD-GAT-SWG-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RD-GAT-SWG-02	Generic repair		EA	Repair	Generic Repair				
RD-GAT-SWG-02a	Normal Scheduled Repairs		EA	Repair	Typical Repairs				
RD-GAT-SWG-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Common soil	Rocky soil			
RD-GAT-SWG-04a	Demolish and dispose		EA	Decom	Remove completely				
RD-GAT-SWG-07a	Install new		EA	Install New	Common soil	Rocky soil			
RD-GAT-RAL	Loose Rail	P	EA						
RD-GAT-RAL-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RD-GAT-RAL-02	Generic repair		EA	Repair	Generic Repair				
RD-GAT-RAL-02a	Normal Scheduled Repairs		EA	Repair	Typical Repairs				
RD-GAT-RAL-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Common soil	Rocky soil			
RD-GAT-RAL-04a	Demolish and dispose		EA	Decom	Remove completely				
RD-GAT-RAL-07a	Install new		EA	Install New	Common soil	Rocky soil			
RD-CUS	CUSTOM	L / P							
RD-CUS-RD1	Type 1 (by linear each)	P	EA						
RD-CUS-RD1-01a	Basic maintenance		EA	Annual	Custom				
RD-CUS-RD1-02a	Repair		EA	Repair	Custom				
RD-CUS-RD1-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Custom				
RD-CUS-RD1-04a	Decommission		EA	Decom	Custom				
RD-CUS-RD1-05a	Expand		EA	Expan	Custom				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
RD-CUS-RD1-06a	Alter		EA	Alter Function	Custom				
RD-CUS-RD1-07a	Install new		EA	Install New	Custom				
RD-CUS-RD2	Type 2 (by linear foot)	L	LF						
RD-CUS-RD2-01a	Basic maintenance		LF	Annual	Custom				
RD-CUS-RD2-02a	Repair		LF	Repair	Custom				
RD-CUS-RD2-03a	Replace in-kind (includes removal and disposal of existing)		LF	Replace in-kind	Custom				
RD-CUS-RD2-04a	Decommission		LF	Decom	Custom				
RD-CUS-RD2-05a	Expand		LF	Expan	Custom				
RD-CUS-RD2-06a	Alter		LF	Alter Function	Custom				
RD-CUS-RD2-07a	Install new		LF	Install New	Custom				
ROUTE MARKERS & SIGNS									
RM-CRN	Cairn	P							
RM-CRN-SMP	Simple Rock	P	EA						
RM-CRN-SMP-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RM-CRN-SMP-02	Generic repair		EA	Repair	Generic Repair				
RM-CRN-SMP-02a	Restack major collapse		EA	Repair	Restack				
RM-CRN-SMP-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Replace				
RM-CRN-SMP-04a	Demolish and dispose		EA	Decom	Remove completely				
RM-CRN-SMP-07a	Install new		EA	Install New	New				
			LF	Install New	Spacing up to 300 ft	Spacing between 300-1000ft	Spacing over 1000 ft		
			MI	Install New	Up to 5 per mile	5-10 per mile	10-20 per mile	Over 20 per mile	
RM-CRN-RCK	Rock	P	EA						
RM-CRN-RCK-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RM-CRN-RCK-02	Generic repair		EA	Repair	Generic Repair				
RM-CRN-RCK-02a	Restack major collapse		EA	Repair	Restack				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
RM-CRN-RCK-03a	Replace in-kind		EA	Replace in-kind	Replace				
RM-CRN-RCK-04a	Demolish and dispose		EA	Decom	Remove completely				
RM-CRN-RCK-07a	Install New		EA	Install New	New				
			LF	Install New	Spacing up to 300 ft	Spacing between 300-1000ft	Spacing over 1000 ft		
			MI	Install New	Up to 5 per mile	5-10 per mile	10-20 per mile	Over 20 per mile	
RM-CRN-SHP	Shepherders	P	EA						
RM-CRN-SHP-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RM-CRN-SHP-02	Generic repair		EA	Repair	Generic Repair				
RM-CRN-SHP-02a	Restack major collapse		EA	Repair	Restack				
RM-CRN-SHP-04a	Demolish and dispose		EA	Decom	Remove completely				
RM-CRN-SHP-07a	Install new		EA	Install New	New				
RM-PST	Post	P							
RM-PST-STD	Standard	P	EA						
RM-PST-STD-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RM-PST-STD-02	Generic repair		EA	Repair	Generic Repair				
RM-PST-STD-02a	Reset loose post		EA	Repair	Minor repairs				
RM-PST-STD-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Replace				
RM-PST-STD-04a	Demolish and dispose		EA	Decom	Remove completely				
RM-PST-STD-07a	Install new		EA	Install New	Common soil	Rocky soil	Above ground install		
RM-BLZ	Tree Blaze	P							
RM-BLZ-NFS	Standard FS	P	EA						
RM-BLZ-NFS-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RM-BLZ-NFS-07a	Install new		EA	Install New	New				
			Mi	Install New	New				
RM-BZR	Route Blazer	P							
RM-BZR-MNF	Manufactured	P	EA						

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
RM-BZR-MNF-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RM-BZR-MNF-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Replace				
RM-BZR-MNF-04a	Demolish and dispose		EA	Decom	Remove completely				
			Mi	Decom	Remove completely				
RM-BZR-MNF-07a	Install new		EA	Install New	New				
			Mi	Install New	New				
RM-BOY	Buoy	P							
RM-BOY-REG	Regulatory	P	EA						
RM-BOY-REG-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RM-BOY-REG-02a	Normal repairs		EA	Repair	Normal Repair				
RM-BOY-REG-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Replace				
			Mi	Replace in-kind	Replace				
RM-BOY-REG-04a	Demolish and dispose		EA	Decom	Remove completely				
RM-BOY-REG-07a	Install new		EA	Install New	New				
			Mi	Install New	per mile New				
RM-BOY-ANC	Anchor	P	EA						
RM-BOY-ANC-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RM-BOY-ANC-02a	Normal repairs		EA	Repair	Normal Repair				
RM-BOY-ANC-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Replace				
RM-BOY-ANC-04a	Demolish and dispose		EA	Decom	Remove completely				
RM-BOY-ANC-07a	Install new		EA	Install New	New				
RM-MMK	Mileage Marker	P							
RM-MMK-STD	Tree-Mounted	P	EA						
RM-MMK-STD-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RM-MMK-STD-02a	Normal repairs		EA	Repair	Normal Repair				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
RM-MMK-STD-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Replace				
RM-MMK-STD-04a	Demolish and dispose		EA	Decom	Remove completely				
RM-MMK-STD-07a	Install new		EA	Install New	New				
RM-MMK-PST	Post-Mounted	P	EA						
RM-MMK-PST-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RM-MMK-PST-02a	Minor repairs such as reset, etc		EA	Repair	Minor repairs				
RM-MMK-PST-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Replace				
RM-MMK-PST-04a	Demolish and dispose		EA	Decom	Remove completely				
RM-MMK-PST-07a	Install new		EA	Install New	Common soil	Rocky soil	Above ground install		
RM-MMK-SCR	Scribed	P	EA						
RM-MMK-SCR-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RM-MMK-SCR-07a	Install new		EA	Install New	New				
			Mi	Install New	New				
RM-SGN	Sign	P							
RM-SGN-GUI	Guide or Destination	P	EA						
RM-SGN-GUI-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RM-SGN-GUI-02a	Minor repairs such as reset, replace panel, etc		EA	Repair	Minor repairs				
RM-SGN-GUI-03a	Replace in-kind - same hole (includes removal and disposal of existing)		EA	Replace in-kind	Replace				
RM-SGN-GUI-04a	Demolish and dispose		EA	Decom	Remove completely				
RM-SGN-GUI-07a	Install new		EA	Install New	Common soil	Rocky soil	Above ground install		
RM-SGN-BDY	Boundary	P	EA						
RM-SGN-BDY-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RM-SGN-BDY-02a	Minor repairs such as reset, replace panel, etc		EA	Repair	Minor repairs				
RM-SGN-BDY-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Replace				
RM-SGN-BDY-04a	Demolish and dispose		EA	Decom	Remove completely				

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
RM-SGN-BDY-07a	Install new		EA	Install New	Common soil	Rocky soil	Above ground install		
RM-SGN-WRN	Warning	P	EA						
RM-SGN-WRN-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RM-SGN-WRN-02a	Minor repairs such as reset, replace panel, etc		EA	Repair	Minor repairs				
RM-SGN-WRN-03a	Replace in-kind		EA	Replace in-kind	Replace				
RM-SGN-WRN-04a	Demolish and dispose		EA	Decom	Remove completely				
RM-SGN-WRN-07a	Install new		EA	Install New	Common soil	Rocky soil	Above ground install		
RM-SGN-REG	Regulatory	P	EA						
RM-SGN-REG-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RM-SGN-REG-02a	Minor repairs such as reset, replace panel, etc		EA	Repair	Minor repairs				
RM-SGN-REG-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Replace				
RM-SGN-REG-04a	Demolish and dispose		EA	Decom	Remove completely				
RM-SGN-REG-07a	Install new		EA	Install New	Common soil	Rocky soil	Above ground install		
RM-SGN-INF	Informational	P	EA						
RM-SGN-INF-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RM-SGN-INF-02a	Minor repairs such as reset, replace panel, etc		EA	Repair	Minor repairs				
RM-SGN-INF-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Replace				
RM-SGN-INF-04a	Demolish and dispose		EA	Decom	Remove completely				
RM-SGN-INF-07a	Install new		EA	Install New	Common soil	Rocky soil	Above ground install		
RM-SGN-INT	Interpretive	P	EA						
RM-SGN-INT-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RM-SGN-INT-02a	Minor repairs such as reset, replace panel, etc		EA	Repair	Minor repairs				
RM-SGN-INT-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Replace				
RM-SGN-INT-04a	Demolish and dispose		EA	Decom	Remove completely				
RM-SGN-INT-07a	Install new		EA	Install New	Common soil	Rocky soil	Above ground install		

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
RM-SGN-OTH	Other	P	EA						
RM-SGN-OTH-01a	Basic maintenance		EA	Annual	Basic Maintenance				
RM-SGN-OTH-02a	Minor repairs such as reset, replace panel, etc		EA	Repair	Minor repairs				
RM-SGN-OTH-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Replace				
RM-SGN-OTH-04a	Demolish and dispose		EA	Decom	Remove completely				
RM-SGN-OTH-07a	Install new		EA	Install New	Common soil	Rocky soil	Above ground install		
RM-CUS	Custom	P / L							
RM-CUS-RM1	Type 1 (by each)	P	EA						
RM-CUS-RM1-01a	Basic maintenance		EA	Annual	Custom				
RM-CUS-RM1-02a	Repair		EA	Repair	Custom				
RM-CUS-RM1-03a	Replace in-kind (includes removal and disposal of existing)		EA	Replace in-kind	Custom				
RM-CUS-RM1-04a	Decommission		EA	Decom	Custom				
RM-CUS-RM1-05a	Expand		EA	Expan	Custom				
RM-CUS-RM1-06a	Alter		EA	Alter Function	Custom				
RM-CUS-RM1-07a	Install new		EA	Install New	Custom				
RM-CUS-RM2	Type 2 (by linear foot)	L	LF						
RM-CUS-RM2-01a	Basic maintenance		LF	Annual	Custom				
RM-CUS-RM2-02a	Repair		LF	Repair	Custom				
RM-CUS-RM2-03a	Replace in-kind (includes removal and disposal of existing)		LF	Replace in-kind	Custom				
RM-CUS-RM2-04a	Decommission		LF	Decom	Custom				
RM-CUS-RM2-05a	Expand		LF	Expan	Custom				
RM-CUS-RM2-06a	Alter		LF	Alter Function	Custom				
RM-CUS-RM2-07a	Install new		LF	Install New	Custom				
ADJACENT REFERENCE POINTS ²									

Trails Data Dictionary: Tasks (updated 4/27/2011)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature ¹ / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
RP-CON	CONSTRUCTED ADJACENT REFERENCE POINT								
RP-CON-TJT	Trail Junction	P							
RP-CON-RJT	Road Junction	P							
RP-CON-NJT	Non-System Route Junction	P							
RP-CON-BLG	Building	P							
RP-CON-THD	Trailhead	P							
RP-CON-CUA	Concentrated Use Area (CUA)	P							
RP-CON-UTO	Overhead Utility	L							
RP-CON-UTB	Buried Utility	L							
RP-CON-RRX	Railroad Crossing	P							
RP-ADM	ADMINISTRATIVE ADJACENT REFERENCE POINT	P							
RP-ADM-BRY	Administrative Boundary	P							
RP-ADM-MON	Monument (legal corners, etc.)	P							
RP-ADM-LLS	Large Diameter Log Source	P							
RP-ADM-RCK	Structural Rock Source	P							
RP-ADM-SEL	Select Borrow Source	P							
RP-NAT	NATURAL ADJACENT REFERENCE POINT	P							
RP-NAT-STM	Stream Crossing Name	P							
RP-NAT-PSS	Mountain Pass	P							
RP-NAT-SMT	Mountain Summit	P							
RP-NAT-VPT	Viewpoint	P							
RP-NAT-CHT	Avalanche Chute	P							

Trail Data Dictionary: Tasks (updated 4/27/2011)

Footnotes:

- Note¹ These features, with the exception of Adjacent Reference Points, define the basic trail structure. When they exist or are needed to meet standard, inventory these features to meet minimum protocol standards.
- Note² Adjacent Reference Points (ARP) are a TRACS survey item, and intended only to create mile-posted trail logs. If recording ARPs in Infra, the BPM and EMP must be recorded. ARP data fields cannot be used for recording required inventory or cost data for Trails.

Required / Optional Indicators:

- (auto) = Automatically populated, unless created by user.
- R = Measurement required to calculate feature unit of measure for inventory.
- R = Required for feature inventory & costing
- R¹ = Record as individual feature (entry defaults to 1)
- R+ = May be recorded as multiple features, grouped by quantity between segment BMP & EMP.
(Refer to CASM for guidance on grouping by feature type and Trail Class.)
- R^{length} = EMP may be used to determine feature length, instead of calculating length during field surveys.
- O = Measurement is optional.
- O^{RP} = If recording an Adjacent Reference Point, the BMP must be recorded. (see Note² above.)

TRACS Surveys



TRACS Surveys: What, How, Who, and When

What?

The TRACS Survey Form facilitates the systematic collection of data that is useful, organized and complete. There is a direct correlation between terminology and data fields used in TRACS, Infra Trails, and national maintenance reporting requirements. The TRACS Survey Form helps ensure that field data collection efforts are efficient, effective, and on-track. *Collect the right information the first time...*

The TRACS Survey Form

The TRACS Form is not a “brand new” approach— there are similarities between this form and the numerous other forms for trail condition surveys. The TRACS form, however, attempts to combine the best aspects of many approaches, while providing a one-to-one relationship with the Infra Trails.

How?

There are several methods for completing surveys using the TRACS Survey Form. You can use a wheel and tape recorder, GPS (see discussion on GPS in *CASM* section), field data recorder (see *eTRACS* section), pull tape, pace, pencil and paper, or any combination of these. The critical thing is to use a system that works well for you, is systematic, efficient, and results in the basic information required for a TRACS survey.

Who?

The TRACS System has identified recommended qualifications for individuals conducting trail condition surveys (see *TRACS Qualification Process*). These qualifications provide sound guidelines for determining the skills needed for conducting efficient and effective trail condition surveys. At a minimum, individuals completing this trail condition survey form must have a working knowledge of trail maintenance techniques and trail maintenance and/or construction experience. They must also be proficient in using trail measuring tools such as the compass, wheel, and clinometer. Condition surveys require an investment of time and money. For those reasons alone, it is important to make sure it is time and money well-spent. Obviously, you do not want to send out first-year trail workers to attempt a TRACS Survey on their own. That is why the “Tracker” qualification system, described in the introductory chapter of this User Guide, is recommended to assure that individuals completing these forms have sufficient knowledge to provide accurate and appropriate information.

When?

A TRACS Survey, based on a TMO and CASM, should be completed for every National Forest System trail. When done well, by qualified personnel, this data will have many uses at all levels of the agency for years to come. Once the initial TRACS survey is complete, the trail should be re-surveyed periodically to verify and update inventory, feature condition, and task data. After the first full rotation of TRACS surveys is complete, subsequent TRACS validation surveys reviews involve only the verification and update of changed field conditions, and therefore usually require significantly less time to complete. A recurring rotation of TRACS validation surveys ensures accurate inventory, needs and cost data , while incorporating a sustained approach to annual survey workloads, and retaining local TRACS expertise and knowledge

Nationally assigned survey frequencies have varied, ranging from a required 5-year survey cycle for all National Forest System trails, to a random sample approach. While nationally required survey frequencies change periodically and tend to be focused on collecting the data needed for annual upward reporting at the national level, TRACS is a highly efficient and effective tool designed primarily to meet local trail management needs. Units are encouraged to expand beyond national minimum survey requirements, if applicable and as needed to meet regional, forest, and local trail planning, management, and information needs. Refer to agency protocols for current direction on survey frequencies and requirements

TRACS Survey Form

TRACS Survey Form (version 4.0)

Trail Name:				Trail No.:				Survey Date:					
Termini this Survey:		BMP	Description:		Description:		Surveyors:						
		EMP	Description:		Description:								
Overall Trail Condition Comments:													
Unit of Measure:		English	Metric	Measure Method:		Wheel	Tape	Trail Use Comments					
Trail Management Objectives (TMO):		Established		Attached		Not established							
TMO Comments:													
Other Attachments:		Productivity Factors Form		Photo Log Form(s)		Photo Record Form		Sign Inventory Form(s)		Trail Bridge Form(s)			
BMP	Feature			Condition			Task			Critical	Non-Crit		
EMP	Code	Comments		Code	Comments		Code	Comments		Freq	Sevty		
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=					
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=					
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=					
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=					
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=					

TRACS Survey (continuation sheet)

Trail Name:							Trail No:				Survey Date:		
Beg Station	Feature				Condition			Task			Critical	Non-Crit	
End Station	Code	Comments			Code	Comments		Code	Comments		Freq	Sevty	
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=					
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=					
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=					
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=					
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=					
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=					
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=					

TRACS Survey Form Instructions

The instructions below explain how to complete each field on the TRACS Survey Form. Refer to the attached blank TRACS Survey Form and completed example form to better understand how the form should be used. Additional guidance on methods and scope definitions and standards can also be found in FSH 2309.18, on the Trails section of the IBS website, and in the TRACS References section of this *User Guide*.

Shared System Routes

When completing a TRACS survey on a shared system or concurrent route that is coincident with another trail or road (e.g. a Snow Trail that overlaps a Standard/Terra Trail or a NF System Road):

1. Note the name and number of the other concurrent route on the trail or road condition survey form, and identify the overlap via the Route-to-Route screen in Infra;
2. Don't duplicate features, tasks or task accomplishments between routes;
3. Record the features, tasks and task accomplishments on the route that is the primary cause for or beneficiary of the constructed feature or task. If the constructed feature or task benefits both coincident routes (as is often the case), choose the most logical one to assign the features and tasks to.

This might include assigning certain features and tasks to one route, while assigning others to the route. For example, most features and tasks might be assigned to a Standard/Terra Trail (or a NF System Road), while only the snow poles, snow trail blazers, and periodic grooming might be assigned to a concurrent Snow Trail.

Overall Trail Information

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

Trail Beginning & Ending Termini and Stations this Survey: Record the beginning and ending mileposts or measure point for this survey. Surveys don't always begin and end on the inventory termini. For efficiency reasons, surveys are often done in segments or in reverse direction. It is important to identify the correct termini and stations for this survey. This will help put the individual surveys together in the right order later.

Survey Date and Surveyors: Record the date of the field survey and the names of the surveyors.

Unit of Measure: Identify the units used in this survey (feet, meters, or miles).

Overall Trail Condition Comments: This is a space for the surveyor's comments and observations that may be useful for future trail management, project preparation, etc.

TMOs: Check appropriate Trail Management Objective boxes and add any additional comments that could significantly influence the execution of this survey.

Trail Use Comments: While completing the field survey, add comments regarding trail usage, including such things as:

- ✓ Numbers and types of users seen during the survey
- ✓ Apparent type of usage, such as ATV, etc.

Other Attachments: Check the appropriate boxes and attach the identified forms.

Stationing

The preferred method for stationing trails is by using a cyclometer. The cyclometer is low tech, reliable, and easy to master. It allows the surveyor to have real-time stationing and is easily retraceable in the future.

Beginning Measure Point (BMP): This is the beginning station, measure point or milepost of each point feature and each line feature.

Ending Measure Point (EMP): This is the ending station, measure point or milepost of each line feature. Leave blank for point features.

Inventory and Condition Survey

This entire section is dedicated for capturing any thoughts, observations, descriptions, conditions, and solutions necessary to bring the trail to standard based on the Trail Management Objectives (TMOs). Use multiple lines if necessary. ***Consider that your written word will be the only information gathered at the site for many years to come.*** When done well, trail managers have benefited greatly for decades from keen and well-organized field observations. You have not been only directed, but more importantly, have been given the grand opportunity to do the part of the job we all have appreciated from our predecessors. Let's give them the same gesture. Use these important reminders when you survey:

1. If you survey in reverse, **always** describe left and right as looking “up” the trail. This applies to any words that give direction, up, down, ahead, back, etc. These always need to be in the context of the true direction. We will be reducing the information to the correct mile-posted direction later. Surveys should always be reduced back the direction of Beginning Termini to Ending Termini. If doing the survey in reverse, get in the habit of stopping and looking “up-trail”. This will be very important when compiling all of the trail condition survey data in the Infra Trails Module.

2. Don't forget material sources. You should always be on the lookout for sources of things like turnpike retainer logs, gravels, rocks, bridge stringers, etc. Note material type, quantity and location.
3. Use active wording to describe items. Use words like Clean, Reset, Trim, Remove, Replace, etc. Be specific and expand if necessary for clarity. Don't assume that someone reading this four years from now will understand your innuendo.
4. Remember to reference! Identify the location of that scenic overlook, water source, unusual rock outcrop, stream crossing, etc. You're a long way from the office and that information might come in handy later.

Trail Features: These are any constructed features or components on or associated with the trail. Refer to the TRACS Data Dictionary for the master listing.

- ✓ Use either the feature code or name.
- ✓ Comment on the feature as necessary to further describe. With Turnpike for instance, describe things like tread width, retainer log size, presence of side ditches, quality of material, etc.

A Word about Feature Codes

This TRACS Data Dictionary is based on a national compilation of constructed trail features. The intent is to represent the majority of constructed trail features encountered nationwide, while not listing every possible variation. The national list of features will be expanded and updated as needed. Use the standardized features and codes as much as possible (i.e. if it's a 'close fit,' record the feature under an existing code and make any needed references on local lingo for the feature, or any how it differs from the norm). If, however, a feature is clearly distinct and not included in the Data Dictionary, it can be recorded as a custom feature. If you think its prevalence indicates it should be added as a code in the national TRACS Data Dictionary, forward the recommendation.

Condition: For each Characteristic, describe the condition.

- ✓ Use the TRACS Data Dictionary Condition Code and/or describe.
- ✓ Enter any additional comments needed on the condition (i.e. Retainer logs loose and rotting, but functional. Tread starting to wear but not ready for re-grading. Side ditch plugged.).

Task: Identify a solution or prescription for the condition.

- ✓ Use the Task Code and/or describe.
- ✓ Enter any additional comments needed on the task (i.e. Reset left retainer log. Clean both side ditches.).

Priority: For each task, identify the priority for the work to be accomplished using the following criteria:

Critical: 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.

Non-Critical: A requirement that addresses potential risk to the 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.

Task Frequency and Severity: Assign the frequency (times per year) that the task should be accomplished to meet standard, and record the appropriate Task Severity Factor. For a broader discussion on maintenance intervals, refer to the TRACS section on Trail Management Objectives (TMOs).

Target Frequency: For the routine trail tasks listed, the target task frequency should be taken directly from the approved TMO. If there is not an approved TMO for the trail, or if this is not a routine task, record the recommended task interval needed for that trail segment to meet standard.

While target task frequencies for recurring trail tasks can range from several times per year to once every several years, most deferred maintenance and capital improvement tasks have a frequency of 1.

On a completed survey, a task frequency of 1 time per year is assumed if this survey field is left blank. For any target frequencies that are not 1 time per year, record the applicable target frequency.

Example Task Frequencies:

- ✓ Routine Task: Brushing Frequency = 2 (two times per year)
- ✓ Routine Task: Brushing Frequency = 0.1 years (once every 10 years)

Task Severity: Severity Factors provide a means for identifying tasks based on cost variables of degree, quantity or methodology. Based on the TRACS Data Dictionary, identify the Task Severity Factor that best reflects the trail-specific need.

Inventory Measurements: Record Feature dimensions and identify Task quantities where appropriate. Refer to the TRACS Data Dictionary for identification of the required versus optional Feature dimensions, and Task Units of Measure by trail feature.

Always Open: Tread and Prism, and Clearing Limits

Two basic aspects of most trails and trail maintenance are the trail tread and prism, and clearing limits:

Tread & Prism: Tread and Prism identifies the existing width and length of the trail or trail segment. Once these basic dimensions are identified, tasks can then be prescribed to maintain, expand, or decrease the existing tread width by specific amounts.

Clearing Limits: Clearing Limits identify the existing cleared height and width for the trail, or the area to be kept free of brush and other vegetation. Unless the trail setting is absolutely void of vegetation, identification of Clearing Limits is recommended. Once these basic dimensions are identified, tasks can then be prescribed to maintain, expand, or decrease the clearing height or width by specific amounts.

When doing a TRACS survey, it is recommended that you always have a mileposted record “open” to track Tread and Prism, and another to track Clearing Limits. For each of these, record the beginning milepost (BMP), existing dimensions, condition, and tasks needed to meet standard. Then continue the TRACS survey along the trail, recording other feature and task information as applicable. When basic dimensions, conditions, or prescribed tasks change for either Tread and Prism, or Clearing Limits, return to the previous part of the survey and “close” that record by recording the milepost for your current location under end milepost (EMP). Then return to the current section of your survey documentation and “open” a new record for that item by recording the BMP of your current location, along with the corresponding dimension, condition and task information (see the *TRACS Survey Example*).

This approach ensures that basic inventory and prescription data for both Tread and Prism, and Clearing Limits, is obtained for the entire trail length. Highlighting or otherwise indicating these two records wherever they occur throughout your survey helps you to quickly find them to close and open them as conditions change, and subsequently to readily identify the total quantity and task prescriptions for these basic trail elements.

Continuation Sheet

Use only one TRACS Survey Header page per survey. Use sequentially numbered continuation pages for the remainder of the survey.

TRACS Survey Example 1 (Handwritten Field Survey)

TRACS Survey

Example

Trail Name: Sweetgrass Trail 122		Trail No: 122		Survey Date: 17-Sep-03				
Termin this Survey:	BMP 0.000 EMP 10.700	Description: West Boulder Trailhead	Surveyors: Jackie Daniels & Joanie Walker					
Overall Trail Condition Comments:	Overall, trail is in OK shape except many of the structures and some of the sections are under sized & don't meet TMO.							
Unit of Measure:	FT <input checked="" type="checkbox"/> English	Metric	Measure Method: <input checked="" type="checkbox"/> Wheel	Tape	Trail Use Comments: Two days on the trail we saw 25 people - 5 hikers/20 backpackers in seven groups			
Trail Management Objectives (TMO):	Established	Attached	Not established					
TMO Comments:	Class 4, 48" Tread, 6' @ SB, sustained 10% grades, 8'x8' Clearings							
Other Attachments:	<input checked="" type="checkbox"/> Productivity Factors Form	<input checked="" type="checkbox"/> Photo Log Form(s)	<input checked="" type="checkbox"/> Photo Record Form	<input checked="" type="checkbox"/> Sign Inventory Form(s)	<input checked="" type="checkbox"/> Trail Bridge Form(s)			
BMP EMP	Code	Feature Comments	Code	Condition Comments	Code	Task Comments	Critical Freq	Non-Crit Sevty
	BOS	Begin survey @ edge of parking lot		Approach to parking lot ok. BB & guide sign obvious/visible		Info on BB should be refreshed.		
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=
0	1850	Tread Segment		Within TMO cycles except where noted as DM Tasks		-		
Qty=	Lgth=	Wdth= 48	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=
0	10,500	Clearing Segment		Within TMO cycle except where noted as DM Tasks		-		
Qty=	Lgth=	Wdth= 8	Dpth=	Hgth= 10	Rad=	Dia=	DistToMtl=	Mtl=
20	-	Bulletin Board		OK		Routine Mtee		
				SS-INF-PAN-01a		Codes - added @ office	1	1
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=
28	-	Guide Sign (see attached Sign Form for Dimensions)		OK		Does a Travel Poster need to go here?		
				RM-SGN-GUI-01a				1
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=
1200	1260	Tread		Deferred Mtee (DM) - narrow, rocky, broken down		Retread entire segment, no additional clearings required.	1	3
				TW-TRD-02a				
Qty=	Lgth=	Wdth= 30"	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=

TRACS Survey (continuation sheet)

Trail Name: Sweetgrass Trail		Trail No: 122		Survey Date: 17-Sep-03						
Bag Station	Feature	Condition		Task		Critical	Non-Crit			
End Station	Code Comments	Code	Comments	Code	Comments	Frac	Sevty			
1230 -	Drain Dip		new		Install in rocky ground.		✓			
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=	1	2
1850 20,000	Tread Segment		On old road bed, generally meets TMO		generally self draining - except where added					
Qnty=	Lgth=	Wdth= 60"	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=		
2610 -	Stream X-ing, Natural ford		OK							✓
Qnty=	Lgth= 16'	Wdth= 10'	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=	1	
8904 8905	Clearing		Avalanche chute - heavy accumulation of brush + slash = DM							✓
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=	1	5
10,480 -	Switchback		existing radius to small							✓
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad= 4'	Dia=	DistToMtl=	Mtl=	1	
10,485 10,496	Retaining Wall - Dry stack rock		New - retain new switchback cut slope after widening							✓
Qnty= calc	Lgth= calc	Wdth=	Dpth= 3'	Hgth= 5'	Rad=	Dia=	DistToMtl= 300'	Mtl= Rock	1	
10,500 32,620	Clearing Segment		generally within TMO except where noted							
Qnty=	Lgth=	Wdth= 12	Dpth=	Hgth= 12'	Rad=	Dia=	DistToMtl=	Mtl=		
12,923 -	Switchback - same		as sta 10,480							
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=		

TRACS Survey (continuation sheet)

Trail Name: Sweetgrass Trail		Trail No: 122		Survey Date: 17-Sep-03				
Beg Station	Feature	Condition		Task		Critical	Non-Crit	
End Station	Code Comments	Code	Comments	Code	Comments	Freq	Sevty	
13,236 13,248	Tread/Prism - rock outcrop		outcrop within prism limits - bad pack bumper		Heavy blasting	✓		
Qty=	Lgth= 12'	Width=	Dpth= 3'	Hgth= 4'	Rad=	Dia=	DistToMtl=	Mtl=
14,275	Drainage Dip		New		Construct new	✓		
Qty= 1	Lgth= 8'	Width= 5'	Dpth= 6"	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=
18,493 20,136	Drainage Dips		steep eroding segment with no drainage		Construct every 75' +/-	✓		
Qty= 22	Lgth= 8'	Width= 4'	Dpth= 6"	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=
20,000 49,263	Tread Segment		meet TMO, retreaded in 2002		self draining w/ outslope + natural grade breaks	✓		
Qty=	Lgth=	Width=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=
23,120	Cross Twin Lake Divide Information Sign - elevation + Divide Name		New - see sign sheet for dimensions + wording		use treated post		✓	
Qty= 1	Lgth=	Width=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl= TH	Mtl=
28,960 29,105	Side Ditch		water seeping from bank + saturating trailbed		Install Ditch on Right side		✓	
Qty= 145'	Lgth=	Width= 18"	Dpth= 12"	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=
29,105	culvert - Round w/ Headwalls		drains new ditch		Install new PE. - ~15° skew		✓	
Qty=	Lgth= 8'	Width=	Dpth=	Hgth=	Rad=	Dia= 15"	DistToMtl= 100'	Mtl= Rock for headwall
30,268 30,690	clearing		extra heavy brush - out of cycle - stock breaking down shoulder		Brush uphill side 6' from centerline	✓		
Qty=	Lgth=	Width= 6'	Dpth=	Hgth= 8'	Rad=	Dia=	DistToMtl=	Mtl=

TRACS Survey (continuation sheet)

Trail Name: Sweetgrass Trail		Trail No: 122		Survey Date: 17-Sep-03				
Reg Station	Feature	Condition		Task		Critical	Non-Crit	
End Station	Code	Comments	Code	Comments	Code	Comments	Freq	Sevty
32,620 61,251	<u>Clearing segment</u>	meets TMO						
Qnty=	Lgth=	Width=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=
41,260 42,290	Turnpike - Type I Standard	severely eroded by stock use, fabric showing but ok, DM		Add 4" fill on entire length, good material available locally				✓
Qnty=	Lgth= 60'	Width= 48"	Dpth= 6"	Hgth=	Rad=	Dia=	DistToMtl= 800'	Mtl= borrow
49,263 80,290	<u>Tread Segment</u>	barely meets TMO - but ok for now.		@ end of cycle - will need retread soon				
Qnty=	Lgth=	Width=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=
60,160 60,220	Bridge across Sweetgrass Crk.	See assessment form - no visible problems		Verify Engineers have current Routine Inspection for complete info				
Qnty=	Lgth= 60'	Width= 7'	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=
61,028 -	Water bar - Rock	Water running onto bridge		Install new, drain left				✓
Qnty=	Lgth= 5'	Width= 48"	Dpth= 6"	Hgth=	Rad=	Dia=	DistToMtl= 30'	Mtl= Rock
	etc.							
Qnty=	Lgth=	Width=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=
Qnty=	Lgth=	Width=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=
Qnty=	Lgth=	Width=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=

TRACS Survey Example 2 (Typed Copy of Field Survey)

TRACS Survey

Trail Name & Number: Heney Ridge Trail #221				Survey Date: 9/12-13/06						
Termini this Survey:		Beg Station: 0		Description:		Surveyors: sherman, truex				
		End Station: 21,777		Description: N 60 28' 36.0" W145 48' 19.8"						
Unit of Measure: <input checked="" type="checkbox"/> English <input type="checkbox"/> Metric		Overall Trail Condition Comments: a lot of structures in need of repair, all bridges are solid								
Trail Management Objectives (TMO):				Established/Reviewed		Attached				
				Not Established		Trail Use Comments: 5 hikers seen on trail on second day				
TMO Comments:										
Other Attachments:		Photo Log Form(s)	Photo Record Form(s)	Sign Inventory Form(s)	Trail Bridge Form(s)	Productivity Factors Form(s)				
Beg Station	Feature			Condition		Task		Emer	Crit	Nort
End Station	Code	Comments		Code	Comments	Code	Comments	Freq	Sevty	
0,00	RM-S6N-OTH	trail head sign		1	Photo	RM-S6N-OTH-01a	both post and sign is good shape			X
BOS										1
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=		
0,00	TREAD SEGMENT			consistant with TMO unless other stated. class 4 trail						
1,744										
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=		
0,00	CLEARANCE SEGMENT			not consistant with TMO		TW-CLR-01b		needs brushing		
1,338										
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=		
52	SS-INF-PAN			bulliten board		1	SS-INF-PAN-01a	both post and bulliten board in good shape		X
										1
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=		
124	TD-CVT-OPT			open top rock drain		1	TD-CVT-OPT-01a	drain needs cleaned out		X
										1
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=		
157	TS-BAR-RCK			rock barrier along outside edge of trail		1	TS-BAR-RCK-01a			X
1,744										1
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=		
	1587'									

TRACS Survey - continuation

Beg Station	Feature			Condition			Task		Emer	Crit	Notr
End Station	Code	Comments		Code	Comments		Code	Comments	Freq		Sevty
186	TD-CVT-OPT	open top rock drain		2	poor		TD-CVT-OPT-02a	clean drain and			X
	TD-DIT-LDT	lead off ditch					TD-DIT-LED-02a	clean out ditch			1
Qty=	Lgth=	Width=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=			
216	Exposed Geo-webbing buried in trail			4			Remove Geo-web and repair tread				
291											
Qty=	Lgth= 75'	Width= 24"	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=			
291	TD-CVT-OPT	open top rock drain		1			TD-CVT-OPT-01a	clean drain			X
											1
Qty=	Lgth=	Width=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=			
353	TD-CVT-OPT	Open top rock drain		1			TD-CVT-OPT-01a	clean drain			X
											1
Qty=	Lgth=	Width=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=			
353	Exposed Geo-webbing buried in trail			4			Remove Geo-web and repair tread				
534											
Qty=	Lgth= 181'	Width=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=			
371	TD-CVT-OPT	Open top rock drain		1			TD-CVT-OPT-01a	clean drain			X
											1
Qty=	Lgth=	Width=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=			
466	TD-CVT-OPT	Open top rock drain		1			TD-CVT-OPT-01a	clean drain			X
											1
Qty=	Lgth=	Width=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=			
477	TD-CVT-OPT	open top rock drain		1			TD-CVT-OPT-01a	clean drain			X
											1
Qty=	Lgth=	Width=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=			

TRACS Survey - continuation

Beg Station	Feature			Condition			Task		Emer	Crit	Not
	End Station	Code	Comments	Code	Comments	Code	Comments	Freq	Sevty		
652		TD-CVT-OPT	open top rock drain	1		TD-CVT-OPT-01a	drain needs cleaned out				X
											1
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=			
673			water on trail			TD-DIT-SID-07a	constrict side ditch.				X
721						TD-CVT-OPT-07a	construct open top drain				1
Qnty=	Lgth=	48'	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=		
766		TD-CVT-OPT	open top rock drain	1		TD-CVT-OPT-01a	drain needs cleaned out				X
											1
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=			
834		TD-CVT-OPT	open top rock drain	1	Currently dry	TD-CVT-OPT-01a	drain needs cleaned out				X
											1
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=			
889		TD-CVT-OPT	open top rock drain	1		TD-CVT-OPT-01a	drain needs cleaned out				X
											1
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=			
1,032		TD-CVT-OPT	open top rock drain	2	collapsing sides	TD-CVT-OPT-01a	drain needs cleaned out and sides repaired				X
											1
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=			
1,115			needs drain installed	7		TD-CVT-OPT-07a	install new open top rock drain				X
											1
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=			
1,283			needs drain installed	7		TD-CVT-OPT-07a	install new open top rock drain				X
											1
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=			

TRACS Survey - continuation

Beg Station	Feature			Condition			Task			Emer	Crit	Not
End Station	Code	Comments		Code	Comments		Code	Comments		Freq	Sevty	
1,283	water on trail						TD-DIT-SID-07a	construct new side ditch				X
1,338											1	
Qty=	Lgth= 55'	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=				
1,338	TD-CVT-OPT	open top rock drain		1			TD-CVT-OPT-01a	drain needs cleaned out				X
1,348	TD-CVT-OPT	open top rock drain		1			TD-CVT-OPT-01a	drain needs cleaned out				X
1,370	TD-CVT-OPT	open top rock drain		1			TD-CVT-OPT-01a	drain needs cleaned out				X
1,526	TD-CVT-OPT	open top rock drain		1			TD-CVT-OPT-01a	drain needs cleaned out				X
1,744	end of class 4 trail and crushed rock surface											
1,761	TREAD SEGMENT			Not consistant with TMO			numerous roots and rocks, narrow tread.					X
2,123							TW-TRD-07a & TS-BWK-SNR-07b				3	
1,788	TS-CDY-STD	corduroy		4	TS-CDY-STD-04a remove		TS-BWK-SNR-07 Install new step-n-run w/ netting 2" x12" with netting					X
1,796											3	
Qty=	Lgth= 8'	Wdth= 30"	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=				

TRACS Survey Example 2 (Infra Trails Report)



TRACS Survey TRAILTRACSSURVEY

Trail Name : HENEY RIDGE TRAIL (Standard/Terra)				Trail No. : 221				Survey Date : 09/13/2006				
Security ID : 1004 - Chugach National Forest								Surveyor(s) : Sherman/Truex				
Termini :	BMP-ft	0	Description :									
	EMP-ft	21,777	Description :									
Unit of Measure :		FT	Measure Method :									
Overall Trail Condition Comments :												
Trail Management Objectives (TMO) : X Established Attached Not established												
TMO Comments :												
Other Attachments :		Productivity Factors Form	Photo Log Form(s)	Photo Record Form	Sign Inventory Form(s)	Trail Bridge Form(s)	Other					
Trail Comments : EIN 116a G D9. (42349)												
CLEARING LIMIT / TREAD and PRISM ROUTINE TASKS												
BMP-ft	EMP-ft	Feature Code: Description - Comments				Task Code: Description - Comments				Severity	Freq	Critical
0	21,777	TW-CLR: Clearing Limit Size=21777 in ft (ID: 42349-0) Comments: Resized 09/15/2004-GSTPS: old EMP(2.7). Applix 02/19/2004, HROENFAN				TW-CLR-01A: Routine logging out Comments: PF=1.01 assignment DZASTROW 09/22/2004				area	1	1
Qty =		Length (ft) = 21777	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				
0	21,777	TW-CLR: Clearing Limit Size=21777 in ft (ID: 42349-0) Comments: Resized 09/15/2004-GSTPS: old EMP(2.7). Applix 02/19/2004, HROENFAN				TW-CLR-01B: Routine brushing or mowing Comments: PF=1.26 assignment DZASTROW 09/22/2004				area	1	1
Qty =		Length (ft) = 21777	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				
0	21,777	TW-TRD: Tread And Prism Size=21777 in ft (ID: 42349-0) Comments: Resized 09/15/2004-GSTPS: old EMP(2.7). Applix 02/19/2004, HROENFAN				TW-TRD-01A: Routine tread maintenance Comments: PF=1.62 assignment DZASTROW 09/22/2004				area	1	1
Qty =		Length (ft) = 21777	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				
0	21,777	TW-TRD: Tread And Prism Size=21777 in ft (ID: 42349-0) Comments: Resized 09/15/2004-GSTPS: old EMP(2.7). Applix 02/19/2004, HROENFAN				TW-TRD-01B: Routine tread drainage Comments: PF=1.62 assignment DZASTROW 09/22/2004				area	1	1
Qty =		Length (ft) = 21777	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				

Trail Name : HENEY RIDGE TRAIL (Standard/Terra)

Trail No. : 221

Survey Date : 09/13/2006

Security ID : 1004 - Chugach National Forest

TRAIL FEATURES and TRAIL-SPECIFIC TASKS								Severity	Freq	Critical	
BMP-ft	Feature Code: Description - Comments				Task Code: Description - Comments						
0	TD-UDN-GEO: Underdrain, Geotextile (plastic/rubber) Size=6976 sq ft (ID: 221-0) Comments: daz 10/06.				TD-UDN-GEO-01A: Basic maintenance Comments: Default task created 01/05/2007				1	1	
1,744											
Qty = 6976 sq ft	Length (ft) = 1744	Width (in) = 48	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				
0	TS-BAR-RCK: Barrier, Side, Stacked Rock (rock) Size=1744 in ft (ID: 221-0) Comments: daz 10/06.				TS-BAR-RCK-01A: Basic maintenance minor work such as repositioning loose rock work Comments: Default task created 10/19/2006				1	1	
1,744											
Qty = 1743.984 in ft	Length (ft) = 1744	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				
0	TW-SRF-AGG: Surface, Aggregate (aggregate) Size=6976 sq ft (ID: 221-0) Comments: daz 10/06.				TW-SRF-AGG-01A: Basic maintenance Comments: Default task created 10/19/2006				1	1	
1,744											
Qty = 1743.984 in ft	Length (ft) = 1744	Width (in) = 48	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				
0	RM-BZR-MNF: Manufactured Blazer / TB-2-O (plastic) (ID: 221-0) Comments: daz 10/06. 50 blazer per mile. There is no link for this feature in task tab at this time. Check later.										
15,318											
Qty = 145	Length (ft) =	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				
0	RM-SGN-INF: Sign, Informational (wood) (ID: 42349-0) Comments: daz 10/06. Trail Head Sign.				RM-SGN-INF-01A: Basic maintenance Comments: Default task created 10/17/2006				1	1	
1											
Qty = 1 each	Length (ft) =	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) = 1				
52	SS-INF-PAN: Flat-Panel Information Board / BB1 (wood) Size=16 sq ft (ID: 221-.0098) Comments: daz 10/06.				SS-INF-PAN-01A: Basic maintenance (reset, paint, tighten) / Small (< 32 sq ft) Comments: Default task created 10/17/2006				1	1	
1											
Qty = 1 each	Length (ft) =	Width (in) = 48	Depth (in) =	Hgt (in) = 48	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				
124	TD-CVT-OPT: Culvert, Open-Top Drain (rock) Size=3 in ft (ID: 221-.0235) Comments: daz 10/06.				TD-CVT-OPT-01A: Basic maintenance Comments: Default task created 10/17/2006				1	1	
1											
Qty = 1 each	Length (ft) = 3	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				
124	TD-CVT-OPT: Culvert, Open-Top Drain (rock) Size=3 in ft (ID: 221-.0235) Comments: daz 10/06.				TD-CVT-OPT-02A: Normal repairs / Reset structure, level approaches Comments: Default task created 10/17/2006				1	1	
1											
Qty = 1 each	Length (ft) = 3	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				

Trail Name : HENEY RIDGE TRAIL (Standard/Terra)

Trail No. : 221

Survey Date : 09/13/2006

Security ID : 1004 - Chugach National Forest

TRAIL FEATURES and TRAIL-SPECIFIC TASKS								Severity	Freq	Critical	
BMP-ft EMP-ft	Feature Code: Description - Comments				Task Code: Description - Comments						
291	TD-DIT-LED: Ditch, Leadoff (native soil) Size=15 in ft (ID: 221-.0235) Comments: daz 10/06.				TD-DIT-LED-01A: Basic maintenance Comments: Default task created 10/18/2006				1	1	
Qty = 15 in ft	Length (ft) = 15	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				
353	TD-CVT-OPT: Culvert, Open-Top Drain (rock) Size=3 in ft (ID: 221-.0551) Comments: daz 10/06.				TD-CVT-OPT-01A: Basic maintenance Comments: Default task created 10/18/2006				1	1	
Qty = 1 each	Length (ft) = 3	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				
353	TD-DIT-LED: Ditch, Leadoff (native soil) Size=15 in ft (ID: 221-.0235) Comments: daz 10/06.				TD-DIT-LED-01A: Basic maintenance Comments: Default task created 10/18/2006				1	1	
Qty = 15 in ft	Length (ft) = 15	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				
371	TD-CVT-OPT: Culvert, Open-Top Drain (rock) Size=3 in ft (ID: 221-.0551) Comments: daz 10/06.				TD-CVT-OPT-01A: Basic maintenance Comments: Default task created 10/18/2006				1	1	
Qty = 1 each	Length (ft) = 3	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				
371	TD-DIT-LED: Ditch, Leadoff (native soil) Size=15 in ft (ID: 221-.0235) Comments: daz 10/06.				TD-DIT-LED-01A: Basic maintenance Comments: Default task created 10/18/2006				1	1	
Qty = 15 in ft	Length (ft) = 15	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				
466	TD-CVT-OPT: Culvert, Open-Top Drain (rock) Size=3 in ft (ID: 221-.0551) Comments: daz 10/06.				TD-CVT-OPT-01A: Basic maintenance Comments: Default task created 10/18/2006				1	1	
Qty = 1 each	Length (ft) = 3	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				
466	TD-DIT-LED: Ditch, Leadoff (native soil) Size=15 in ft (ID: 221-.0235) Comments: daz 10/06.				TD-DIT-LED-01A: Basic maintenance Comments: Default task created 10/18/2006				1	1	
Qty = 15 in ft	Length (ft) = 15	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				
477	TD-CVT-OPT: Culvert, Open-Top Drain (rock) Size=3 in ft (ID: 221-.0551) Comments: daz 10/06.				TD-CVT-OPT-01A: Basic maintenance Comments: Default task created 10/18/2006				1	1	
Qty = 1 each	Length (ft) = 3	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				

Trail Name : HENEY RIDGE TRAIL (Standard/Terra)

Trail No. : 221

Survey Date : 09/13/2006

Security ID : 1004 - Chugach National Forest

TRAIL FEATURES and TRAIL-SPECIFIC TASKS								Severity	Freq	Critical	
BMP-ft	Feature Code: Description - Comments				Task Code: Description - Comments						
EMP-ft											
124	TD-DIT-LED: Ditch, Leadoff (native soil) Size=15 in ft (ID: 221-.0235) Comments: daz 10/06.				TD-DIT-LED-01A: Basic maintenance Comments: Default task created 10/17/2006				1	1	
Qty = 15 in ft	Length (ft) = 15	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				
124	TD-DIT-LED: Ditch, Leadoff (native soil) Size=15 in ft (ID: 221-.0235) Comments: daz 10/06.				TD-DIT-LED-02A: Normal repairs / Re-excavate to remove heavy sod/vegetation Comments: Default task created 10/17/2006				1	1	
Qty = 15 in ft	Length (ft) = 15	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				
157	TS-BAR-RCK: Barrier, Side, Stacked Rock (rock) Size=1587 in ft (ID: 221-.0297) Comments: daz 10/06.				TS-BAR-RCK-01A: Basic maintenance minor work such as repositioning loose rock work Comments: Default task created 10/17/2006				1	1	
1,744	Qty = 1587.168 in ft	Length (ft) = 1587	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =			
186	TD-CVT-OPT: Culvert, Open-Top Drain (rock) Size=3 in ft (ID: 221-.0352) Comments: daz 10/06.				TD-CVT-OPT-01A: Basic maintenance Comments: Default task created 10/17/2006				1	1	
Qty = 1 each	Length (ft) = 3	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				
186	TD-CVT-OPT: Culvert, Open-Top Drain (rock) Size=3 in ft (ID: 221-.0352) Comments: daz 10/06.				TD-CVT-OPT-02A: Normal repairs / Reset structure, level approaches Comments: Default task created 10/17/2006				1	1	
Qty = 1 each	Length (ft) = 3	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				
186	TD-DIT-LED: Ditch, Leadoff (native soil) Size=15 in ft (ID: 221-.0235) Comments: daz 10/06.				TD-DIT-LED-01A: Basic maintenance Comments: Default task created 10/17/2006				1	1	
Qty = 15 in ft	Length (ft) = 15	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				
186	TD-DIT-LED: Ditch, Leadoff (native soil) Size=15 in ft (ID: 221-.0235) Comments: daz 10/06.				TD-DIT-LED-02A: Normal repairs / Re-excavate to remove heavy sod/vegetation Comments: Default task created 10/17/2006				1	1	
Qty = 15 in ft	Length (ft) = 15	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				
291	TD-CVT-OPT: Culvert, Open-Top Drain (rock) Size=3 in ft (ID: 221-.0551) Comments: daz 10/06.				TD-CVT-OPT-01A: Basic maintenance Comments: Default task created 10/18/2006				1	1	
Qty = 1 each	Length (ft) = 3	Width (in) =	Depth (in) =	Hgt (in) =	Rad (in) =	Dia (in) =	Dist to Matl (ft) =				

Productivity Factors



Collecting Key Site Information

Trail Productivity Factors are the physical factors that have been determined to have a predominant effect on the accomplishment and cost of trail construction, maintenance and/or reconstruction. These factors include:

1. Typical Side Slope
2. Typical Soil Type
3. Typical Trail Grade
4. Typical Vegetation: Brush & Regeneration
5. Typical Vegetation: Timber

Productivity Factors are site-specific, and usually do not change much over time. Once collected, Productivity Factor data provides important information that is used to refine trail cost data in Infra Trails. This site-specific information can also be used by trail managers for other trail planning, management and information purposes. Productivity Factors generally involve a one-time data collection effort. This data remains useful over time, only needing to be updated if there is a significant change in the field conditions affecting an individual Productivity Factor.

Costing Refinements

Trail Productivity Factors are Infra Trails linear events used to refine costing, based on site-specific information that influences the cost and/or rate of on-the-ground task accomplishment. Once Productivity Factor data is collected and entered into the database for a specific trail, corresponding cost coefficients are applied to the tasks identified for the trail, resulting in a more accurate picture of trail-specific costs. If field data has not yet been collected, default values for each Productivity Factor are selected in Infra Trails.

Productivity Factor Surveys

While not required, the collection of Productivity Factor data is highly recommended when conducting TRACS surveys. The TRACS Productivity Factor Form is streamlined and easy to use. Investing a few extra minutes to note these field observations while on-site will help refine trail-specific costs in Infra Trails, and provide helpful information for years to come. Refer to the following Productivity Factor Instructions and also to the Trail Condition Survey Accuracy Matrix (CASM), for recommendations on the appropriate level of accuracy desired when collecting Productivity Factor field data.

Productivity Factor Codes

(Updated 11/14/2006)

Note: For each Productivity Factor, the center-point (default) values are highlighted in **bold** letters below for quick reference.

Factor Code	Factor Value	Definition
Typical Trail Grade		Percent gradient ahead measured along the tread centerline.
TG01	+ 0-5%	
TG02	+ 5-8%	
TG03	+ 8-10%	
TG04	+ 10-12%	
TG05	+ 12-20%	
TG06	+ 20-30%	
TG07	+ 30-40%	
TG08	+ 40-50%	
TG09	> +50%	
TG10	- 0-5%	
TG11	- 5-8%	
TG12	- 8-10%	
TG13	- 10-12%	
TG14	- 12-20%	
TG15	- 20-30%	
TG16	- 30-40%	
TG17	- 40-50%	
TG18	> -50%	
Typical Side Slope		Percent side slope of the surrounding ground measured along the slope fall line.
SS01	0-20%	
SS02	20-40%	
SS03	40-60%	
SS04	60-80%	
SS05	80-100%	
SS06	> 100%	

Factor Code	Factor Value	Definition
Typical Soil Type		Engineering soil composition and texture
ST00	Wetland	Characterized as a wetland or swamp with year-around standing water, wetland-type vegetation, and/or saturated organic soils. (Does not include seasonal wet spots or groundwater seeps.)
ST01	Fine/Organics	Soils with uniform fine texture with little or no rock content. May be dark with high organic content. Demonstrates low carrying capacity, especially when wet. Trenches easily, highly dusty when dry, highly erosive.
ST02	Sand	Material with uniform sand-grain texture with few fines. Refuses to compact when dry. Highly susceptible to erosion.
ST03	Pumice	Broken-up pumice cobbles with few or no fines. Refuses to compact. Highly susceptible to erosion, particularly with ability to float in water.
ST04	Common	Material with a good mixture of fines and small rock. May be loose or highly compacted. Compacts well. Good erosion resistance.
ST05	Common w/ Larger Rock	Material with a good mixture of soil and small rock intermixed with larger cobbles or small boulders. May be loose or highly compacted. Methods for removal of larger rock may include digging out or breaking in-place.
ST06	Talus or Boulders	Material that is mostly rock of uniform or varying sizes containing little or no soil. Removal may include hand, machine, or blasting methods.
ST07	Bedrock	Bedrock or very large boulders (larger than a VW Bug) where blasting is generally the only method of removal.
Typical Vegetation: Brush & Regeneration		All brush and tree regeneration less than 4" diameter within Trail Corridor
BR01	None	No brush or regen within Trail Corridor
BR02	Extra Light	Grasses, light perennials, or other non-woody plants. Capable of being worked with hand sickles, mowers or weed whips.
BR03	Light	Small regen shorter than knee height; slow-growing woody brush that typically grows to knee height. Diameters typically no greater than 1/2". Capable of being worked with a hand sickle or for regen being pulled by hand.
BR04	Medium	Faster growing woody brush or regen with diameters typically between 1/2" and 1" and heights lower than chest high. Typically would be worked with hand nippers, sandiks, machetes or chainsaws.

Factor Code	Factor Value	Definition
BR05	Heavy	Fast-growing brush or regen above head height with typical diameters greater than 1". Typically would be worked with sandiks, machetes or chainsaws.
BR06	Extra Heavy	Very dense and fast-growing brush or regen above head height with typical diameters greater than 1". Typically would be worked with sandiks, machetes, or chainsaws.
Typical Vegetation: Timber		Mature or maturing timber over 4" diameter (all species) within trail corridor
TT01	None	Meadow or opening where no trees could fall within Trail Clear Zone.
TT02	Extra Light	Open scattered timber where some trees may fall into the trail Clear Zone.
TT03	Light	Low density (greater than 10' spacing) small diameter (4-12") trees. Trail relocations would likely avoid most trees. Mostly young stable and maturing live trees.
TT04	Medium	Moderate density (6-10' spacing) small-to-medium diameter (4-18") trees or dense (less than 6' spacing) small diameter trees. Dead component starting to be noticeable. Relocations would likely require a substantial number of small-to-medium diameter tree removals. Typically maturing to mature timber.
TT05	Heavy	Moderately dense large diameter (18-36") trees or dense medium diameter (12-24") trees. Dead component may be substantial or fire-burned small-to-medium diameter. Relocations would likely require removal of many medium to large diameter trees. Typically mature timber.
TT06	Extra Heavy	Dense medium-to-very large diameter (over 24") trees; moderately dense very large diameter (over 36") trees; or Fire-burned areas with dense medium-to-large diameter (18-36") trees. Relocations would require removal of a substantial number of medium-to-large trees. Typically mature to over-mature timber.

Productivity Factor Form

Trail Name:		Trail Number:		Date:	
Beginning Termini:				Beginning Station:	
Ending Termini:				Ending Station:	

Typical Trail Grade		Typical Side Slope		Typical Soil Type			
Station	Factor Value/Code	Station	Factor Value/Code	Station	Factor Value/Code	Station	Factor Value/Code

Typical Veg: Brush		Typical Veg: Timber					
Station	Factor Value/Code	Station	Factor Value/Code	Station	Factor Value/Code	Station	Factor Value/Code

Productivity Factor Survey Form Instructions

The instructions below explain how to complete each field on the TRACS Productivity Factors Form. Refer also to the attached Productivity Factors Form and completed sample form.

Station

The preferred method for stationing trails is by using a cyclometer. The cyclometer is low tech, reliable, and easy to master. It allows the surveyor to have real-time stationing and is easily retraceable in the future.

Station: Record the station where a productivity factor value either begins or ends. Begin a new station whenever the site condition for a given Productivity Factor noticeably changes. The intent is not to capture every little detail, but rather to record significant changes in the on-site condition that would affect maintenance and/or construction rates, and therefore costs. Refer to the Trail Condition Survey Accuracy Matrix (CASM) for additional recommendations on desired level of data accuracy.

Factor Value

Factor Value or Code: Starting at the Beginning Milepost (BMP), list the value or applicable code that applies between the bracketed stations. As the Productivity Factor value or code changes, end that entry and begin a subsequent entry for the new value or code.

The Productivity Factor Form provides space to track five primary productivity factors that have been determined to have a potential effect on trail maintenance, construction and/or reconstruction costs:

1. Typical Trail Grade
2. Typical Side Slope
3. Typical Soil Type
4. Typical Vegetation: Brush & Regeneration
5. Typical Vegetation: Timber

Blank continuation columns are provided on the right side of the form. If one of the Productivity Factors results in more field entries than the others, these columns can be used to continue that data on the same page (be sure to write in the appropriate heading). Additional pages should also be numbered and used as necessary.

TRACS Sign Inventory



Building and Maintaining a Sign Inventory

The TRACS Sign Inventory can be used to document and organize information needed for developing and updating district and forest trail sign plans. This form allows you to record site-specific sign inventory and needs, including sign type and size, content and font sizes, substrate material, post type, maintenance needs, and other relevant information. In addition to creating a reliable sign inventory, this field-based information provides the specifics needed for sign planning and design, placement, maintenance and replacement.

The TRACS Sign Inventory should be used in conjunction with the TRACS Photo Record, to provide organized, visual documentation of current sign conditions and locations.

Sign References

The following references should be reviewed prior to completing the sign inventory form. These references provide key information on signing expectations and requirements, so that existing signs may be evaluated using the TRACS Sign Inventory Form and the desired future signing determined. If unfamiliar with any of these references, contact your Forest Sign Coordinator for assistance and/or check the References section of this *TRACS User Guide*.

- ✓ Forest Service Manual (FSM) 7100-15; EM 7100-15-Sign and Poster Guidelines for the Forest Service, August, 1998; FSM 7103.1
- ✓ Traffic Control Devices Amendment; FSM 7100-96-4 11/7/96, Chapter 7160, Signs and Posters—Amendment 7100-96-12/10/96.
- ✓ Manual on Uniform Traffic Control Devices (MUTCD).
- ✓ For regulatory signing, the warranting process as described in the Northern Region Access and Travel Management Guide, October 1997, should be used.

Who and When?

It is recommended that qualified TRACS surveyors complete the TRACS Sign Inventory at the same time they are doing the trail condition survey. TRACS Sign Inventory Form should be sent to your forest and/or district sign coordinator for review prior to being placed in the individual trail folder.

TRACS Sign Inventory Form

Trail Name: Trail Number: Milepost:

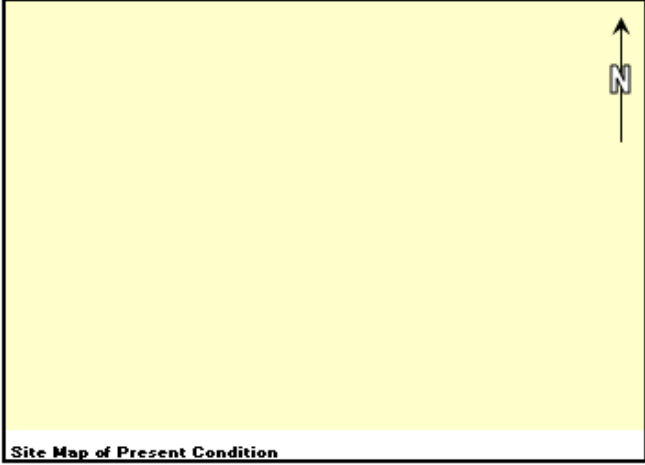
Surveyor:

Date:

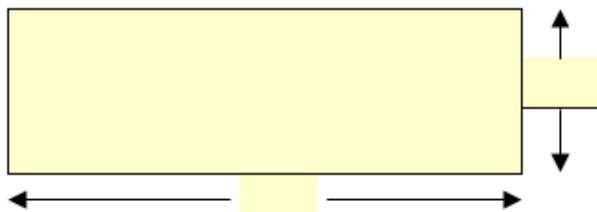
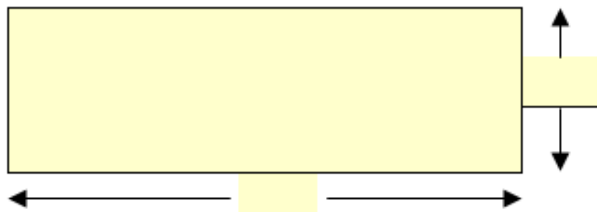
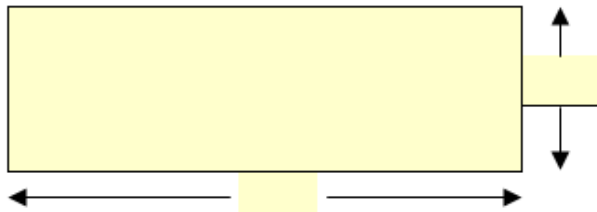
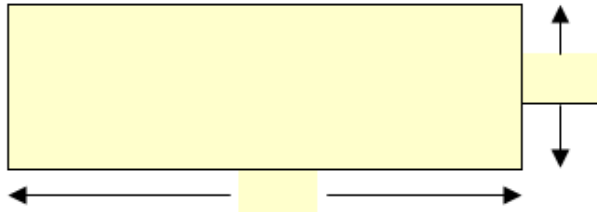
Photo ID:

Installation Comments:


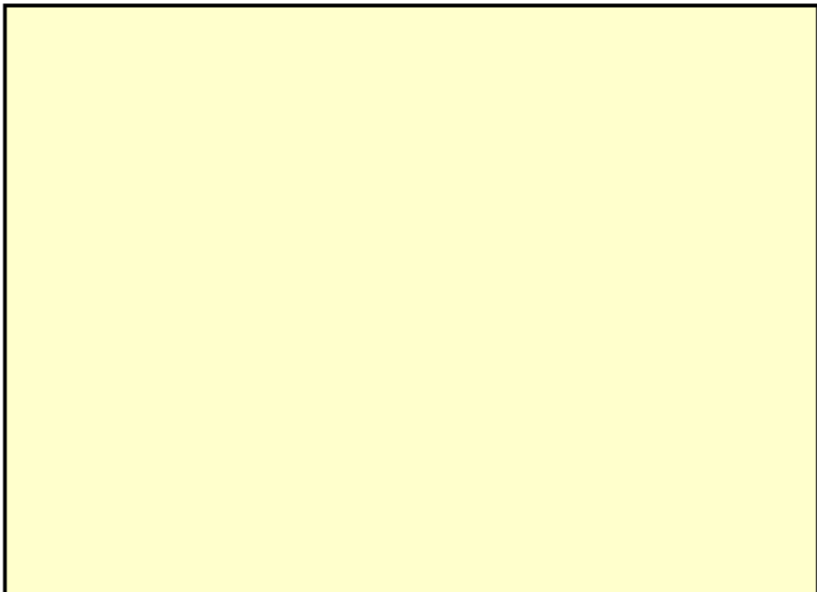
N ↑



Site Map of Present Condition

Sign Panel A		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">Sign Panel</th> <th>Sign Type</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">A</td> <td style="text-align: center;">B</td> <td style="text-align: center;">C</td> <td style="text-align: center;">D</td> <td rowspan="4">Destination/Guide</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td colspan="4"></td> <td>Travel Management</td> </tr> <tr> <td colspan="4"></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>	Sign Panel				Sign Type	A	B	C	D	Destination/Guide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					Travel Management					<input type="checkbox"/>			
Sign Panel				Sign Type																																	
A	B	C	D	Destination/Guide																																	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																		
				Travel Management																																	
				<input type="checkbox"/>																																	
Sign Panel B		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">Sign Panel</th> <th>Panel Substrate</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">A</td> <td style="text-align: center;">B</td> <td style="text-align: center;">C</td> <td style="text-align: center;">D</td> <td>Routed Oak</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td>Plowwood</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td>Plastic</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td>Aluminum</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td>Redwood</td> </tr> <tr> <td colspan="4"></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>	Sign Panel				Panel Substrate	A	B	C	D	Routed Oak	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Plowwood	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Plastic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Aluminum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Redwood					<input type="checkbox"/>
Sign Panel				Panel Substrate																																	
A	B	C	D	Routed Oak																																	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Plowwood																																	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Plastic																																	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Aluminum																																	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Redwood																																	
				<input type="checkbox"/>																																	
Sign Panel c		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">Sign Panel</th> <th>Letter Size</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">A</td> <td style="text-align: center;">B</td> <td style="text-align: center;">C</td> <td style="text-align: center;">D</td> <td>1 Inch</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td>2 Inch</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>	Sign Panel				Letter Size	A	B	C	D	1 Inch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2 Inch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>															
Sign Panel				Letter Size																																	
A	B	C	D	1 Inch																																	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2 Inch																																	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																	
Sign Panel D		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">Sign Panel</th> <th>ReflectORIZED</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">A</td> <td style="text-align: center;">B</td> <td style="text-align: center;">C</td> <td style="text-align: center;">D</td> <td>Non-reflectORIZED</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td>ReflectORIZED</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>	Sign Panel				ReflectORIZED	A	B	C	D	Non-reflectORIZED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ReflectORIZED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>															
Sign Panel				ReflectORIZED																																	
A	B	C	D	Non-reflectORIZED																																	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ReflectORIZED																																	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																	
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">Sign Panel</th> <th>Post Material</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">A</td> <td style="text-align: center;">B</td> <td style="text-align: center;">C</td> <td style="text-align: center;">D</td> <td>Live Tree</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td>Native Post</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td>Treated Post</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td>Fiberglass Marker</td> </tr> <tr> <td colspan="4"></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>	Sign Panel				Post Material	A	B	C	D	Live Tree	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Native Post	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Treated Post	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fiberglass Marker					<input type="checkbox"/>					
Sign Panel				Post Material																																	
A	B	C	D	Live Tree																																	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Native Post																																	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Treated Post																																	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fiberglass Marker																																	
				<input type="checkbox"/>																																	

TRACS Sign Inventory Photo Record

Trail Name:	<input type="text"/>	Trail Number:	<input type="text"/>
			
Milepost:	<input type="text"/>	Description:	<input type="text"/>
			
Milepost:	<input type="text"/>	Description:	<input type="text"/>

TRACS Sign Inventory Form Instructions

The instructions below explain how to complete each field on the TRACS Sign Inventory Form. Refer to the attached blank TRACS Sign Inventory Form and completed example form to better understand how the form can be used.

The TRACS Sign Inventory Form should be used in conjunction with the TRACS Photo Record, to provide organized, visual documentation of sign conditions and locations.

General Information

Trail Name and Number: Record the official Trail Name and Trail Number exactly as they are recorded in Infra Trails.

Milepost: Record the milepost location of the sign, matching the mileposting for the TRACS survey. Also note on the TRACS Survey Form that a TRACS Sign Inventory Form was completed for this milepost.

Surveyor and Date: Record the names of the surveyors and the date of the field survey.

Photo ID: Use this space to reference any photos taken on this survey date of the sign or sign location (TRACS Photo Record).

Installation Comments: Note condition and what is needed for the sign or sign installation to meet standard. Include any site-specific descriptors that will aid in the installation, repair or replacement.

Site Map

Sketch a diagram of the sign installation, referenced to the North. Include at a minimum the following information:

- ✓ All trails and their corresponding trail number.
- ✓ Any critical dimensions from the trail centerline to sign post and panel. (Include sign orientation and location of potential sign posts, especially if trees are used.)
- ✓ Location of the sign installations and the sign panel orientation.
- ✓ The letter of the corresponding sign panels.
- ✓ Any other notes that help identify the features of the installation.

Panel Details

Sign Panel Messages and Dimensions: Sketch the sign panel shape and message exactly as the sign panel occurs on the ground. Each block should correspond to the panel identified on the site map. Note dimensions of sign height and width.

Panel and Post Information: For each sign panel recorded (i.e. Sign Panel A, B, C, etc.), check the boxes that apply:

- ✓ Sign Type
- ✓ Panel Substrate
- ✓ Letter Size
- ✓ Reflectorized
- ✓ Post Material

Page Number and Continuation Sheets: Note page number, referencing any continuation sheets.

TRACS Sign Inventory Example

TRACS Sign Inventory

Trail Name: Hellroaring Creek Trail Number: 91 Milepost: 6.912

Surveyor: Kempff/Tyers
 Date: 9/15/99
 Photo ID:
 Installation Comments: Could be combined into a single installation - do @ replacmt time

Site Map of Present Condition

Sign Panel				Sign Type
A	B	C	D	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Destination/Guide
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Travel Management
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Sign Panel A

← YELLOWSTONE NP
 HELLROARING CABIN →

16"

8"

Sign Panel B

SLOUGH CREEK CABIN →
 ↑ HELLROARING CABIN

16"

4"

Sign Panel C

Sign Panel D

Sign Panel				Panel Substrate
A	B	C	D	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Routed Oak
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Plywood
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Plastic
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Aluminum
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Redwood
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Sign Panel				Letter Size
A	B	C	D	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1 Inch
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2 Inch
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Sign Panel				ReflectORIZED
A	B	C	D	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Non-reflectORIZED
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ReflectORIZED
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Sign Panel				Post Material
A	B	C	D	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Live Tree
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Native Post
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Treated Post
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fiberglass Marker
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

TRACS Photo Record



Creating a Visual Record

The TRACS Photo Record is comprised of two forms: The TRACS Log is used for documenting and summarizing photos as they are taken along a trail. The TRACS Photo Record Form provides a space for attaching and labeling photos in an organized manner after they are printed or developed.

Photos are excellent for tracking changes to trails over time and for documenting trail damage, needed trail repair and trail use. The combined TRACS Photo Record is a valuable tool for keeping track of photos taken at different stations on individual trails. The intent of these forms is to provide a photo record for your trail file and to supplement the TRACS Trail Condition Survey. In addition to recording the condition and maintenance need of trail structures and site conditions, the TRACS Photo Record is designed to be used in conjunction with the TRACS Sign Inventory to document current sign conditions and needs.

Who?

Almost any employee, volunteer or cooperator can complete this form and take photos for your trails file. Photographing a trail to capture what you are specifically attempting to portray can be difficult. It is recommended that persons taking trail photographs and completing the TRACS Photo Record have photography experience, and specific experience taking trail photos. Experience can be obtained by taking trail photos and reviewing them to see if the scale and photo location are appropriate. This practice could be done at a location close to your office prior to traveling to the field.

What?

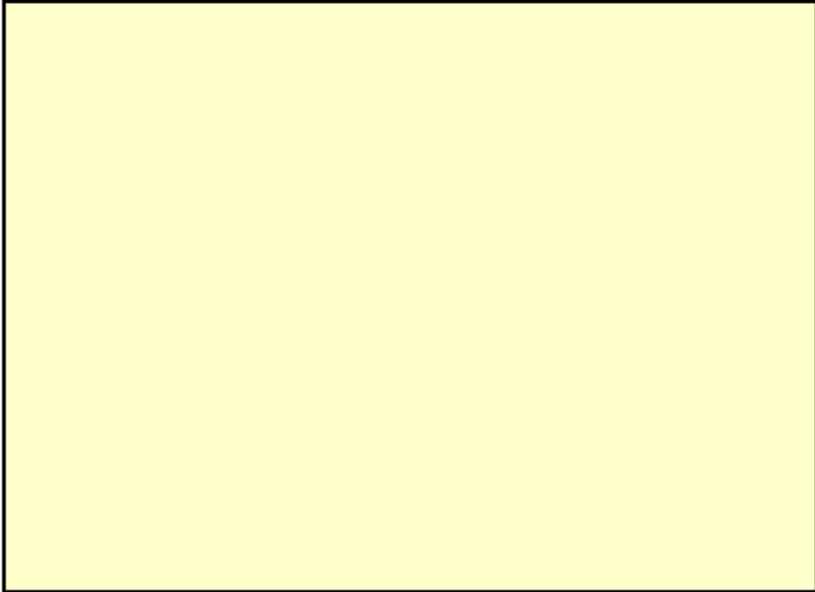
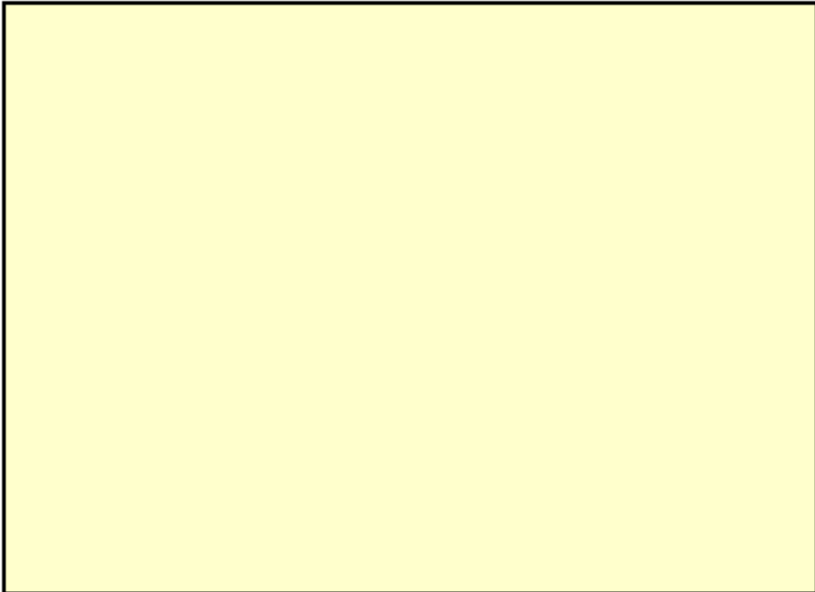
Photos can be taken anywhere along the trail where you wish to document site conditions, damage or needed repairs, or where you wish to document the condition of a trail structure at a specific time. Photos are also valuable for documenting seasonal trail conditions, including periods of high water, snow levels or seasonal rains.

TRACS Photo Log Form

TRACS Photo Log

Trail Name: <input type="text"/>			Trail Number: <input type="text"/>		
Photo File: <input type="text"/>					
Photo #	Date	Location & Description	Photo #	Date	Location & Description
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

TRACS Photo Record Form

Trail Name:	<input type="text"/>	Trail Number:	<input type="text"/>
			
Milepost:	<input type="text"/>	Description:	<input type="text"/>
			
Milepost:	<input type="text"/>	Description:	<input type="text"/>

TRACS Photo Record Instructions

The instructions below explain how to complete the TRACS Photo Log and TRACS Photo Record Forms. Refer to the attached blank copies of these forms when reviewing these instructions.

The TRACS Photo Log and Record should be used to provide supporting photographic documentation for the TRACS Condition Survey and the TRACS Sign Inventory. They also provide an organized approach for documenting and tracking field conditions for other trail planning and management needs.

TRACS Photo Log

The TRACS Photo Log should be completed in the field, at the time that each photo is taken.

Trail Name and Number: Record the Trail Name and Number exactly as they were entered in the Infra Trails Module.

Film Roll Number: Use this space to sequentially identify the digital photo set or the roll of film that the Photo Log corresponds to (i.e. #1, #2, etc.).

Photo Blocks: For each numbered photo block, record the corresponding date, location and description for each photo taken along the trail.

Date: Record the date that the photo was taken.

Location and Description: Note the milepost location and description of the site or object being photographed.

TRACS Photo Record

After digital photos have been downloaded or prints have been developed, sort and organize them. Use the TRACS Photo Record to attach and label the photos to create an organized hard-copy record.

Trail Name and Number: Record the Trail Name and Number exactly as they are recorded in Infra Trails entered in the Infra Trails Module.

Photo Block: Adhere or insert the photo to the space provided.

Milepost: Record the TRACS survey milepost where the photo was taken.

Description: Provide a brief, clear description of the photo and what it's intended to illustrate.

Page Number and Continuation Sheets: Note page number, referencing any continuation sheets used.

TRACS Photo Log Example

TRACS Photo Log

Trail Name: North Fork Bear Basin			Trail Number: 18		
Photo File: TRACS-2010-14B					
Photo #	Date	Location & Description	Photo #	Date	Location & Description
27	8/25/2011	MP 0.000 - Trailhead bulletin board and guide sign			
28	8/25/2011	MP 0.000 - Trailhead bulletin board and guide sign			
29	8/25/2011	MP 1.869 - Rotted out puncheon with user bypass trail being established			
30	8/25/2011	MP 2.582 - Uprooted tree and stump blocking trail, causing user-created bypass trail			
31	8/25/2011	MP 3.016 - Junction with Ridge Trail and sign			
32	8/25/2011	MP 3.259 - Rock retaining wall at switchback left			
33	8/25/2011	MP 4.067 - Obliteration of old trail beyond climbing turn, growing in nicely			

TRACS Photo Record Example

TRACS Photo Record

Trail Name:

North Fork Bear Basin

Trail Number:

18

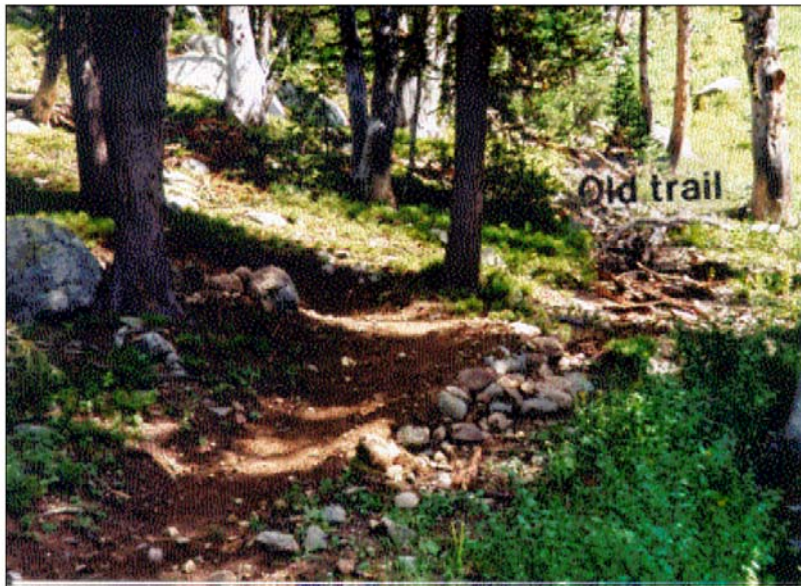


Milepost:

3.259

Description:

Rock Retaining wall at switchback



Milepost:

4.067

Description:

Obliteration of old trail beyond climbing turn

Trail Bridges



Trail Bridge Inventory & Inspection

Trail bridges can range from relatively simple to very complex and expensive structures. Because of their intended purpose, when the condition of a trail bridge is compromised, the results can range from relatively minimal to catastrophic, as in the case of a bridge failure. For these reasons, the Forest Service has placed special emphasis on the inventory and management of trail bridges.

Units should take special care in managing the Trail Bridge program, making sure to stay abreast of current agency direction and protocols. Qualified bridge engineers and inspectors should have the primary responsibility for inspecting, repairing, and maintaining trail bridges. Familiarize yourself with the person or persons on your forest that are qualified and charged with bridge inspection duties, and work with them to schedule and accomplish this important work.

What's a Trail Bridge?

For years, the Forest Service has wrestled with the definition of "What is a trail bridge?" Following this section is the Forest Service Trail Bridge Matrix, developed to help trail managers and engineers work through the process of correctly identifying, inspecting and reporting trail bridges on their unit. This matrix outlines trail bridge definitions and provides guidance on inspector qualifications, inspection forms, inspection frequency and real property inventory requirements.

Qualifications & Forms

If the structure does meet the definition of a trail bridge, a qualified trail bridge inspector should use the appropriate trail bridge inspection or condition survey form referenced on the *Trail Bridge Matrix*. Refer to the matrix for specifics on inspection qualifications and forms.

What if it's not a Trail Bridge?

All structures on trails should be inspected and evaluated for safety, condition and suitability issues per agency protocols and frequencies. The *Trail Bridge Matrix* provides a brief discussion of definitions, and inspector qualifications, forms and intervals for Trail Bridges, Trail Structures and Associated Structures. For further assistance, refer to Forest Service Manual and Handbook direction, current deferred maintenance protocols, and applicable chapters of the *TRACS User Guide*.

Trail Structures that do not meet the definition of a Trail Bridge should be inventoried, inspected, and have their condition and prescription documented on the TRACS Survey Form and TRACS Photo Record. If you are ever in doubt as to the structural integrity of a trail structure, consult your Forest Engineer and/or Trail Coordinator. They will either provide or find the expertise to assist you.

Trail Bridge Matrix

(updated 2/15/2007)

The matrix below provides a summary of the definitions, inspection requirements, and data storage and inventory protocols for Trail Bridges, Trail Structures, and other structures commonly associated with trails.

Structure Categories	Definitions	Inspection			Data Storage
		Inspector Requirements	Inspection Form	Inspection Interval ¹	
<p>Trail Bridge General Definition</p> <p>A trail structure, including supports, erected over a depression or obstruction such as water, roadway, trail or railway that provides a continuous pathway and has a deck for carrying traffic or other loads.</p> <p style="text-align: center;">-----</p> <p>Trail Bridge Classification</p> <p>Trail Bridges are divided into three classifications for inspection purposes:</p> <p>1. Complex Trail Bridges</p> <p>2. Major Trail Bridges</p> <p>3. Minor Trail Bridges</p> <p>Complex Trail Bridges and Major Trail Bridges generally have a clear span greater than 20 feet <u>and</u> a vertical distance greater than 5 feet from the ground or stream channel.²</p> <p>Minor Trail Bridges must have a clear span less than 20 foot <u>or</u> a vertical distance less than 5 feet.</p> <p>Each trail bridge classification is defined in more detail below.</p>					

Structure Categories	Definitions	Inspection			Data Storage
		Inspector Requirements	Inspection Form	Inspection Interval ¹	
1. Complex Trail Bridge	<p>Complex Trail Bridges: All trusses, suspension, multiple-span, and non-timber/log trail bridges with a span greater than 20 feet <u>and</u> a vertical distance greater than 5 feet.²</p> <p>Additionally:</p> <p>Major Trail Bridges which develop significant structural defects and/or load limitations would be moved to the Complex Trail Bridge classification.</p> <p>Minor Trail Bridges, determined to have increased complexity or user safety concerns, could be classified as Complex Trail Bridges. An example of this might be a short concrete bridge (less than 20 feet) located over a deep gorge.</p>	Requires a <u>technical inspection</u> by an engineer or engineering technician certified road bridge inspector [FSM 7736.31].	Complex Trail Bridge Inspection Form ³	5 years ¹	Infra Trail Bridges
Major Trail Bridge	<p>Major Trail Bridges: All single-span timber/log trail bridges with a span greater than 20 feet <u>and</u> a vertical distance greater than 5 feet.²</p> <p>Additionally:</p> <p>Minor Trail Bridges, determined to have increased complexity or user safety concerns, could be classified as Complex Trail Bridges. An example of this might be a short timber bridge (less than 20 feet) located over a deep gorge.</p>	<p>Requires a <u>technical inspection</u> by a person:</p> <ol style="list-style-type: none"> 1. Trained specifically for log and/or timber trail bridge inspections; and 2. Deemed qualified, based on Regional or Forest policy, to perform this task under the general supervision of a certified road bridge inspector. 	Major Trail Bridge Inspection Form ³	5 years ¹	Infra Trail Bridges
3. Minor Trail Bridge	<p>Minor Trail Bridges: All trail bridges that do not meet the definition of a Complex or Major Trail Bridge, and that have a span less than 20 feet <u>or</u> a vertical distance less than 5 feet.²</p> <p>Minor Trail Bridges do not include boardwalks, puncheon, and similar trail structures.</p>	Requires a <u>condition assessment</u> by a person trained and qualified, based on Regional or Forest criteria, to perform condition assessments of Minor Trail Bridges.	Minor Trail Bridge Condition Assessment Form ³	5 years ¹	Infra Trail Bridges

Structure Categories	Definitions	Inspection			Data Storage
		Inspector Requirements	Inspection Form	Inspection Interval ¹	
4. Trail Structures	Trail Structures: Constructed features <u>on</u> a trail such as puncheon, boardwalk, retaining walls, water bars, etc. [Refer to <i>Trail Data Dictionary</i> for further identification of trail structures.]	Requires a <u>technical inspection</u> or <u>condition assessment</u> by appropriately trained personnel (structure dependent).	TRACS Survey Form and/or Trail Structure Inspection Form	Refer to current agency protocols	Infra Trails
5. Other Structures Commonly Associated with Trails	Other Structures: Structures such as fishing docks, viewing platforms, etc. that are frequently located on or adjacent to a trail. These features are often engineered similarly to a bridge, and often involve moderate-to-high risk to users in the event of structural failure. They do not meet the definition of a continuous pathway, however, and are often considered destination points instead.	Requires a <u>technical inspection</u> or <u>condition assessment</u> by appropriately trained personnel (structure dependent).	General Structure Inspection Form and/or Assessment Form	5 years ¹	Infra Trails or Infra RecSites

¹ A more frequent interval may be deemed appropriate due to complexity, age, condition and use of the structure.

² Clear span is measured between abutment faces, along centerline of trail. Vertical distance is measured from the trail surface to the ground or stream channel.

³ For Complex Trail Bridge, refer to Regional Bridge Engineer for appropriate regional form. For Major and Minor Trail Bridges, a national form is underdevelopment (in the interim, however, refer to Regional Bridge Engineer for appropriate regional form).

Is it a Trail Bridge?

Structure Identification Conventions

National Trail Bridge Matrix

The National Trail Bridge Matrix establishes categories, corresponding definitions and inspection protocols for Complex, Major, and Minor Trail Bridges. In an effort to clarify the delineation between Minor Trail Bridges and other related trail structures, the following informal conventions have been developed based on the National Trail Bridge Matrix. Refer to the matrix for official categories and definitions, posted at: <http://fsweb.wo.fs.fed.us/rhwr/ibsc/tr-bridges.shtml>

Minor Trail Bridge: A structure erected over a depression or obstruction such as flowing water or open ditch (gully), with a span less than 20 feet or a vertical distance less than 5 feet, that has not been identified as a Complex or Major Trail Bridge.

To differentiate between a Minor Trail Bridge and related, but minor trail structure (i.e. a puncheon or plank crossing structure), the structure should be considered a Minor Trail Bridge if:

1. It is a single-span structure constructed of wood; and
2. It includes the basic structural elements of a bridge: sills, back wall, stringer, decking (decking usually present, unless stringer serves as decking); and
3. The structure poses a potential safety risk in the event of structural failure.

Minor Trail Bridges require regularly scheduled condition/safety inspection as indicated in the National Trail Bridge Matrix. A non-bridge trail structure erected over an intermittent stream, trickling stream, dip or depression, may be considered a trail structure rather than a minor trail bridge, if it does not meet the definition of a Minor Trail Bridge as defined in the National Trail Bridge Matrix and further clarified above.

Note: When in doubt if a structure is a Minor Trail Bridge or a related trail structure, consult with the forest engineer or their delegate.
--

Standard Boardwalk (“Elevated Boardwalk”): An elevated trail structure erected with multiple pilings or footings that typically includes handrails, per national Trails Data Dictionary.

Puncheon: A wooden walkway commonly used to cross bogs, deep muskegs, small or intermittent streams and drainage dips. The two types of puncheon are:

- **No Deck Puncheon:** A trail structure with below or ground-level sills, topped with two or more longitudinal stringers that serve as the decking (FS Standard Drawing 932-1).
- **Standard Puncheon (“Decked Puncheon”):** A trail structure with below or ground-level sills, topped with two or more longitudinal stringer and decking (FS Standard Drawing 932-2).

Step and Run Boardwalk: A structure typically used to cross boggy or fragile areas, consisting of continuous planking of dimensional lumber or milled logs, with intermittent steps incorporated as needed to address changes in grade. (Note: continuous plank boardwalk without steps

is still identified as step and run. The cost for constructing and maintaining the structure is calculated in Infra relative to the percent grade, which automatically costs in steps as needed depending on grade.)

Examples of Minor Trail Bridges



Structure has all the basic structural elements and is over actively flowing water.



Structure has all the basic structural elements.



Single span trail bridge over actively flowing water.

Examples of Minor Trail Bridges (cont.)



Single span trail bridge. Actively flowing water during heavy rains poses potential safety risk.



Structure has all the basic structural elements. It is 3½ feet above an active channel.

Examples of Minor Trail Bridges (cont.)



Structure has all the basic structural elements (stringers serve as decking) and is over actively flowing water.

Examples of Standard Boardwalk
"Elevated Boardwalk"



Elevated trail structure with multiple pilings and has handrails.



Elevated trail structure with multiple pilings and has handrails.

Examples of No Deck Puncheon (Standard Drawing 932-1)



Structure has below or ground level sills and is topped with 2 or more longitudinal stringers that serve as decking. Structure does not pose a potential safety risk in the event of structural failure.

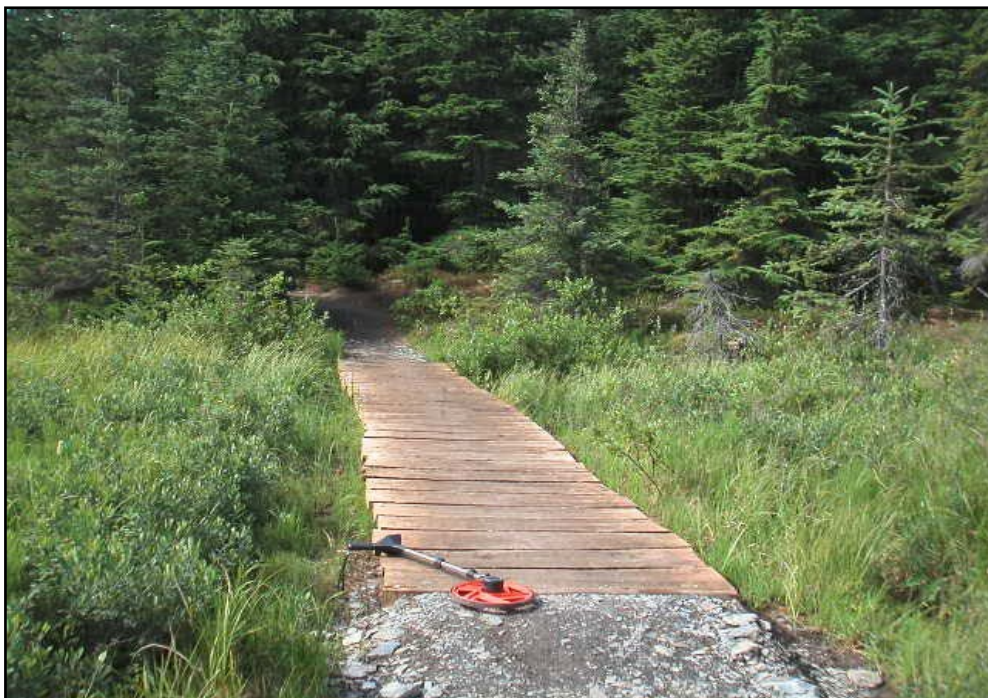


Structure has below or ground level sills and is topped with 2 or more longitudinal stringers that serve as decking. Structure does not pose a potential safety risk in the event of structural failure.

Examples of Decked Puncheon (Standard Drawing 932-2)



Trail structure has below or ground-level sills, topped with two or more longitudinal stringer and decking. Structure does not pose a potential safety risk in the event of structural failure.



Trail structure has below or ground-level sills, topped with two or more longitudinal stringer and decking. Structure does not pose a potential safety risk in the event of structural failure.

Examples of Decked Puncheon (cont.)



Trail structure has below or ground-level sills, topped with two or more longitudinal stringer and decking. Structure does not pose a potential safety risk in the event of structural failure.



Trail structure has below or ground-level sills, topped with two or more longitudinal stringer and decking. Structure does not pose a potential safety risk in the event of structural failure.

Examples of Step and Run Boardwalk



Step and Run (with steps): structure consists of continuous planking of dimensional lumber with intermittent steps incorporated as needed to address changes in grade. Structure does not pose a potential safety risk in the event of structural failure.



Step and Run (without steps): structure consists of continuous planking of milled logs without steps (no substantial change in grade). Structure does not pose a potential safety risk in the event of structural failure.

Regional and Forest Trail Bridge Inspection Protocols & Forms

Placeholder sheet: Insert regional and forest protocols, instructions, forms and examples.

eTRACS



Electronic Field Data Collection

What's eTRACS?

eTRACS is an electronic version of TRACS, which operates on an electronic field data recorder which collects milepost data from a wireless distance measuring instrument (DMI) mounted on a trail wheel. As the surveyor moves along the trail, survey data can be recorded directly onto the eTRACS screen, while the wireless DMI provides milepost information. eTRACS is GPS compatible and provides an all-digital interface with Infra Trails, allowing the surveyor to download existing Infra Trail records into the field data collector, electronically create or update records in the field, and then electronically upload the data back into Infra Trails. eTRACS field data recorders also include a digital camera to assist with documenting specific field conditions and needs.

eTRACS was released as a desktop application in 2007. Development work on the eTRACS field recorder and wireless wheel is currently underway. These products will greatly improve the efficiency of TRACS Surveys and the subsequent entry of updated field data into Infra Trails.

When eTRACS becomes available for national use, this section can be used for eTRACS documentation, instructions and examples.

Federal Trail Data Standards



Which Trails? The FTDS are applicable to all trails managed by the US Forest Service (USFS), National Park Service (NPS), Bureau of Land Management (BLM) and US Fish and Wildlife Service (FWS), including National Scenic Trails (NSTs) and National Historic Trails (NHTs). 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 51 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 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 at the request of the Federal Interagency Council on Trails. 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 were published by the Federal Geographic Data Committee as federal-level data standards in 2010.

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

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

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: www.nps.gov/gis/trails/

Basic Trail Information:

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

Trail Administrative Unit & Location:

Admin Org	Jurisdiction
Managing Org	Municipality
Congressional District	State
County	

Trail Management and Use:

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

Trail Management Considerations:

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

Trail Condition & Cost:

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

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

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

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

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

Appendix B: References

Trail Fundamentals and Related References:

Available via the Internet: (public websites)

USFS Trail Management

The most current versions of the following reference materials can be found on the USFS Trail Management website: www.fs.fed.us/recreation/programs/

From the Special Programs page, click on Trail Management:

- Trail Fundamentals
- Trail Classes
- Design Parameters
- CASM: Condition Survey Accuracy Matrix
- TRACS User Guide

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

The Federal Trail Data Standards and associated reference material can be accessed via: www.fgdc.gov/ or www.nps.gov/gis/trails/

Available via the Intranet: (internal USFS websites)

USFS Recreation & Heritage Resources Integrated Business Systems

The most current versions of the following reference materials can be found on the USFS Recreation, & Heritage Resources Integrated Business Systems internal website:

<http://fswb.wo.fs.fed.us/rhwr/ibsc/index.shtml>

- Trail Fundamentals
- Trail Classes
- Design Parameters
- CASM: Condition Survey Accuracy Matrix
- TRACS User Guide
- Trail Bridge Matrix

USFS Natural Resource Manager (NRM)

The Infra database and related documentation, user support, and training information can be accessed via the NRM internal website: <http://fswb.nrm.fs.fed.us/>

Appendix B

General Trail References:

- **FSM 2350 Trail, River, and Similar Recreation Opportunities** [with Amendments]
Access via: www.fs.fed.us/im/directives/dughtml/fsm2000.html
- **FSH 2309.18 Trails Management Handbook** [with Amendments]
Access via: www.fs.fed.us/im/directives/dughtml/fsh2000.html
- **EM-7720-103 Standard Specifications for Construction and Maintenance of Trails**,
September 1996. Access via: www.fs.fed.us/.ftp/root/pub/acad/dev/trails/trails.htm
- **EM-7720-104 Standard Drawings for Construction and Maintenance of Trails**,
September 1996. Access via: www.fs.fed.us/.ftp/root/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:
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: 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.sdtcd.wo.fs.fed.us>

Appendix C: Glossary

All-Terrain Vehicle (ATV). A type of off-highway vehicle that travels on three or more low-pressure tires; has handle-bar steering; is less than or equal to 50 inches in width; and has a seat designed to be straddled by the operator.

Annual Maintenance. Preventative and/or cyclic maintenance performed in the year it is scheduled (maintenance schedules are identified on TMOs and in Infra).

Bicycle. A pedal-driven, human-powered device with two wheels attached to a frame, one behind the other.

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

Capital Improvement includes trail alteration, expansion or new construction.

NOTE: Capital improvement (CI) does not include deferred maintenance. Do not confuse capital improvement with the Capital Investment Program (CIP), which may include capital improvement and/or deferred maintenance.

- a. 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.
- b. Expansion. Increasing the capacity or size of an existing fixed asset to serve needs different from, or significantly greater than, those originally intended.
- c. New Construction. The erection, construction, installation, or assembly of a new fixed asset.

Clearing Limit. The area over and beside the trail tread that is cleared of trees, limbs, and other obstructions.

- a. Clearing Height. The height of the clearing limit measured vertically from the trail tread.
- b. Clearing Width. The width of the clearing limit measured perpendicular to the trail.

Climbing Turn. A reverse in direction of the trail grade without a level landing that is used to change elevation on a steep slope.

Cross-Country Skiing. Skiing on unmarked routes or marked trails that may be packed and groomed with set tracks.

Cross Slope. The percentage of rise to length when measuring the trail tread from edge to edge perpendicular to the direction of travel.

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.

Deferred maintenance includes repair, replace or decommission.

Appendix C

- a. Repair. Work to restore a damaged, broken, or worn-out fixed asset or component to normal operating condition.
- b. Replace. Substitution or exchange of an existing asset or component with one having essentially the same capacity and purpose.
- c. Decommission. Demolition, dismantling, removal, obliteration and/or disposal of a deteriorated or otherwise unneeded asset or component, including necessary cleanup work.

Design Clearing. The clearing limit determined to be appropriate to accommodate the Managed Uses of a trail.

- a. Design Clearing Height. The minimum clearing height determined to be appropriate to accommodate the Managed Uses of a trail.
- b. Design Clearing Width. The minimum clearing width determined to be appropriate to accommodate the Managed Uses of a trail.
- c. Design Shoulder Clearance. The minimum horizontal and vertical clearance of obstructions (for example, removal of bicycle pedal or motorcycle peg bumpers) immediately adjacent to the trail tread that is determined to be appropriate to accommodate the Managed Uses of a trail.

Design Cross Slope. The cross slope determined to be appropriate to accommodate the Managed Uses of a trail.

- a. Target Cross Slope. The cross slope that is determined to be appropriate over most of a trail to accommodate its Managed Uses.
- b. Maximum Cross Slope. The steepest cross slope that is determined to be appropriate based on the Managed Uses of a trail and that exceeds the target cross slope of the trail.

Design Grade. The trail grade determined to be appropriate to accommodate the Managed Uses of a trail.

- a. Target Grade. The trail grade that is determined to be appropriate over most of a trail to accommodate its Managed Uses.
- b. Short Pitch Maximum. The steepest grade that is determined to be appropriate based on the Managed Uses of a trail, that generally occurs for a distance of no more than 200 feet, and that does not exceed the maximum pitch density.
- c. Maximum Pitch Density. The maximum percentage of a trail with grades that exceed the Target Grade and that are less than or equal to the short pitch maximum, which is determined to be appropriate based on the Managed Uses of the trail.

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

Appendix C

Design Surface. The trail tread surface, defined in terms of surface type, surface protrusions, and surface obstacles, that is determined to be appropriate to accommodate the Managed Uses of a trail.

- a. Surface Type. A characteristic of the design surface expressed in terms of material type, grading, compaction, and roughness of the trail tread.
 - 1) Native. A surface composed of soil, rock or other naturally occurring materials found on or near the trail.
 - 2) Firm. A surface that is not noticeably distorted or compressed during the seasons for which it is managed, under normally occurring weather conditions, by the passage of a device that simulates a trail user in a wheelchair.
 - 3) Stable. A surface that is not permanently affected by normally occurring weather conditions and able to sustain normal wear and tear caused by the uses for which the trail is managed between planned maintenance cycles.
- b. Surface Protrusions. Trail tread imperfections, such as rock, roots, holes, stumps, steps, and structures, that are within the acceptable range of tread roughness and challenge level for the trail and that do not obstruct the Managed Uses of the trail.
- c. Surface Obstacles. Trail tread imperfections, such as rocks, roots, holes, stumps, steps, downed logs, and structures, that are beyond the acceptable range of tread roughness and challenge level for the trail and that obstruct one or more Managed Uses of the trail.

Design Tread Width. The tread width determined to be appropriate to accommodate the Managed Uses of a trail.

Design Turn Radius. The minimum horizontal radius required for a Managed Use to negotiate a curve (for example, a switchback, climbing turn, or horizontal turn) in a single maneuver.

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.

Four-Wheel Drive Vehicle Greater Than 50 Inches in Width. An off-highway vehicle greater than 50 inches in width that operates on four wheels and with a drive train that allows all four wheels to receive power from the engine simultaneously.

Full Bench. A trailbed constructed entirely on undisturbed material.

Infra Trails. US Forest Service corporate database for National Forest System Trail inventory and management information.

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

Motorcycle. A two-wheeled motor vehicle on which the wheels are situated in a line, rather than side by side.

Motor Vehicle. Any vehicle which is self-propelled, other than:

- a. A vehicle operated on rails; and

Appendix C

- b. Any wheelchair or mobility device, including one that is battery-powered, that is designed solely for use by a mobility-impaired person for locomotion, and that is suitable for use in an indoor pedestrian area (36 CFR 212.1).

National Quality Standards for Trails. 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.

Off-Highway Vehicle (OHV). Any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain (36 CFR 212.1).

Pack Clearance. The area on either side of the center line of a trail, measured 30 inches above the trail tread, that is cleared of trees, limbs, and other obstructions that would interfere with passage by a loaded pack animal.

Side Slope. The natural slope of the ground, usually expressed as a percentage.

Snowmobile. An over-snow vehicle that operates on a track, uses one or more skis for steering, and has handle-bar steering and a seat designed to be straddled by the operator.

Switchback. A reverse in direction of the trail grade with a level landing that is used to change elevation on a steep slope and that usually involves special treatment of approaches, barriers, and drainages.

Trail – US Forest Service Definitions: (36 CFR 212.1)

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

Trail – Federal Trail Data Standard Definition: Defined by the Federal Trail Data Standards, 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 off-highway vehicle (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.

Appendix C

Trail Assessment and Condition Surveys (TRACS). The US Forest Service's approach for the field collection of trail inventory and condition assessment information, and the documentation of tasks needed to meet standard.

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

Trail Fundamentals. The five concepts that are the cornerstones of Forest Service trail management, including Trail Type, Trail Class, Managed Use, Designed Use, and Design Parameters.

Trail Grade. The ascent or descent of a trail segment expressed as a percentage of its length.

Trail Management Objective (TMO). Documentation of the intended purpose and management of a National Forest System trail based on management direction, including access objectives.

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

- a. 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.
- b. 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.
- c. 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.

Trailhead. The transfer point between a trail and a road, water body, or airfield, which may have developments that facilitate transfer from one mode of transportation to another.

For purposes of the FSTAG (FSM 2353.27), a trailhead is a site designed and developed to provide staging for trail use and does not include:

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

Trailway. The portion of a trail within the limits of the excavation and embankment.

- a. Trailbed. The surface on which the base course or surfacing may be constructed and which for trails without surfacing serves as the trail tread.
- b. Trail Tread. The portion of a trail upon which traffic moves.

Wheelchair or Mobility Device. A device, including one that is battery-powered, that is designed solely for use by a mobility-impaired person for locomotion; that is suitable for use in an indoor pedestrian area; and that may be used by a person whose disability requires its use anywhere that foot travel is permitted (Title V, sec. 507c, of the Americans With Disabilities Act and 36 CFR 212.1).

Appendix D: National Trail Drawings



National Trail Drawings

The Forest Service National Trail Drawings are used agency-wide by program managers, trail engineers and technicians, construction and maintenance crews, contractors, other agencies, and partners. They are referenced by Drawing Number in the TRACS Data Dictionary, and serve as a key reference for the completion of trail inventories, condition assessments and prescriptions, design, construction, and maintenance.

The National Trail Drawings are available via the internet at the website listed below, in both PDF and AutoCAD formats. Copies of the drawings are provided in this Appendix for general reference, listed in numeric order.

National Trail Drawings: www.fs.fed.us/ftpoot/pub/acad/dev/trails/trails.htm

The drawings are currently being updated and expanded to reflect the full set of constructed features in the TRACS Data Dictionary. This includes the addition, modification and replacement of various drawings, and the revision of drawing titles to match those listed in the TRACS Data Dictionary and Infra Trails database. Revisions will also be incorporated in the *Forest Service Standard Specifications for Construction and Maintenance of Trails*, which are also posted at the above website. When complete, the updated drawings and specifications will be available via the website above. In the meantime, the current drawings and specifications continue to serve as a key reference for TRACS.

List of Drawings

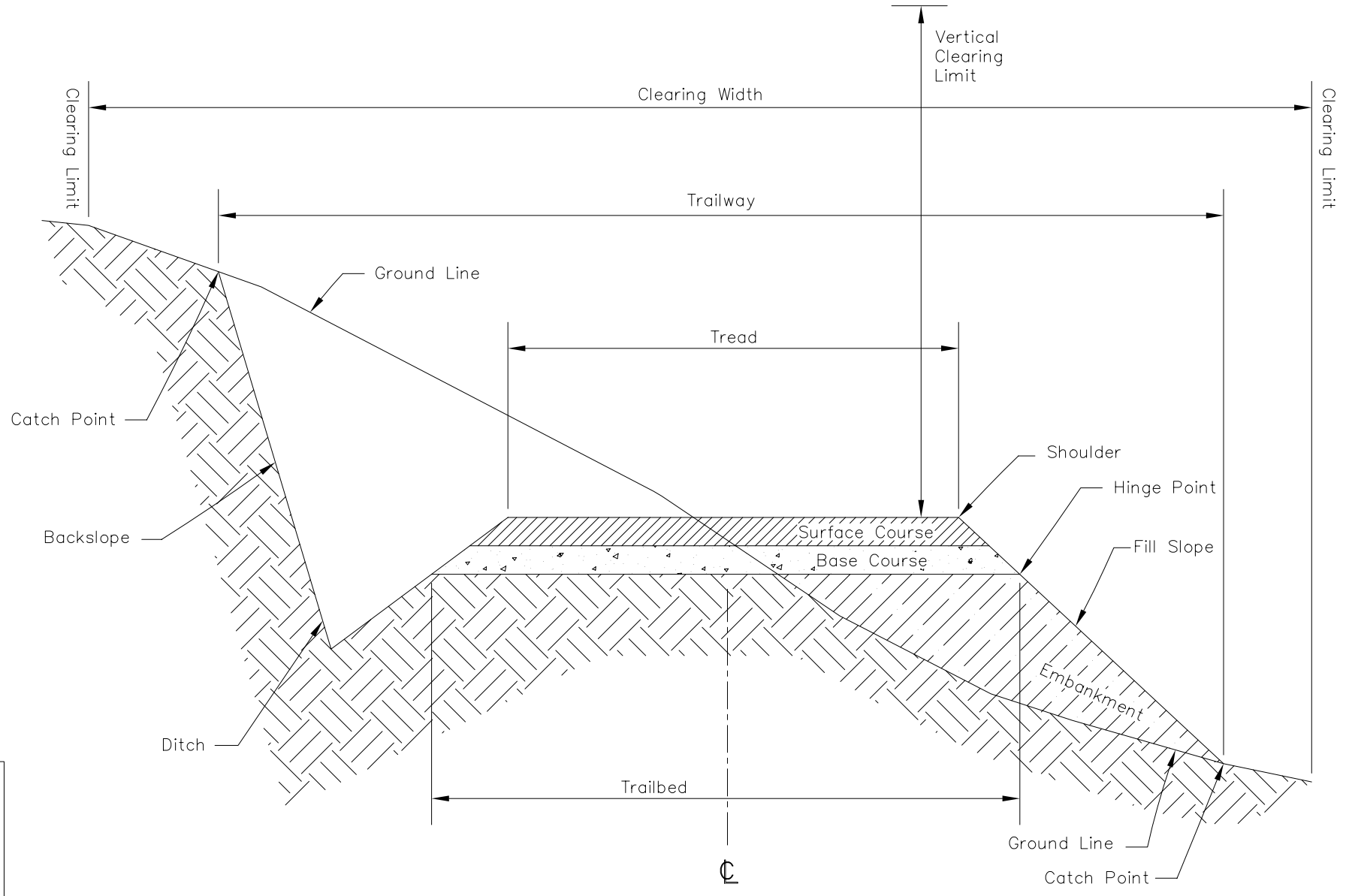
Number	Drawing
Figure-1	Illustration of Trail Structure Terms
911-1	Clearing Limits
912-1	Typical Trail Cross Section
912-10	Outsloped Climbing Turn
912-2	Trailbed and Slope Finish
912-3	Talus and Rubble Rock Section
912-4	Grade Dip
912-5	Rolling Dip
912-6	Turnout and Passing Sections
912-7	Shallow Stream Ford and Gully Crossing Rock Structure
912-8	Shallow Stream Ford or Gully Crossing Log Structure
912-9	Insloped Climbing Turn
913-1	Turnpike – Type I
913-2	Turnpike – Type II
914-1	Switchback – Type I

Appendix D

Number	Drawing
914-2	Switchback – Type II
914-3	Switchback – Type III
915-1	Existing Trail Restoration
915-2	Check Dams
921-1	Culvert with Headwalls
921-2	Culvert without Headwalls
921-3	Rock Culvert
921-4a	Treated Timber Box Culvert
921-4b	Treated Timber Box Culvert Details
922-1	Rock Waterbar
922-2	Log or Treated Timber Waterbar
922-3	Rubber Belting Waterbar
923-1	Rock Spillway
924-1	Underdrain
931-1a	Foot Log Trail Bridge with 2 Handrails (side view)
931-1b	Foot Log Trail Bridge with 2 Handrails (end view)
931-1c	Optional Deck and Handrails
932-1	Puncheon without Decking
932-2	Puncheon with Decking
933-1	Plank Stairway
933-2	Crib Ladder Stairway
933-3	Rock Stairway
933-4	Pinned Stairway
933-5	Log and Treated Timber Riser Stairway
934-1	Log Retaining Wall
935-1	Rock Retaining Wall
941-1	Aggregate Surfacing
942-1	Bituminous Surfacing
944-1	Grid Pavement Units
952-1	Sign and Post Installation
952-2	Rock Cairn Construction
953-1	Log Barrier
953-2	Log Barrier on Posts
953-3	Treated Timber Barrier
953-4	Treated Timber Barrier on Posts
953-5	Rock Barrier
954-1	Trail Obliteration
955-1	Seeding and Fertilizing

ILLUSTRATION OF TRAIL STRUCTURE TERMS

NOT TO SCALE



3/97

SECTION

CLEARING LIMITS

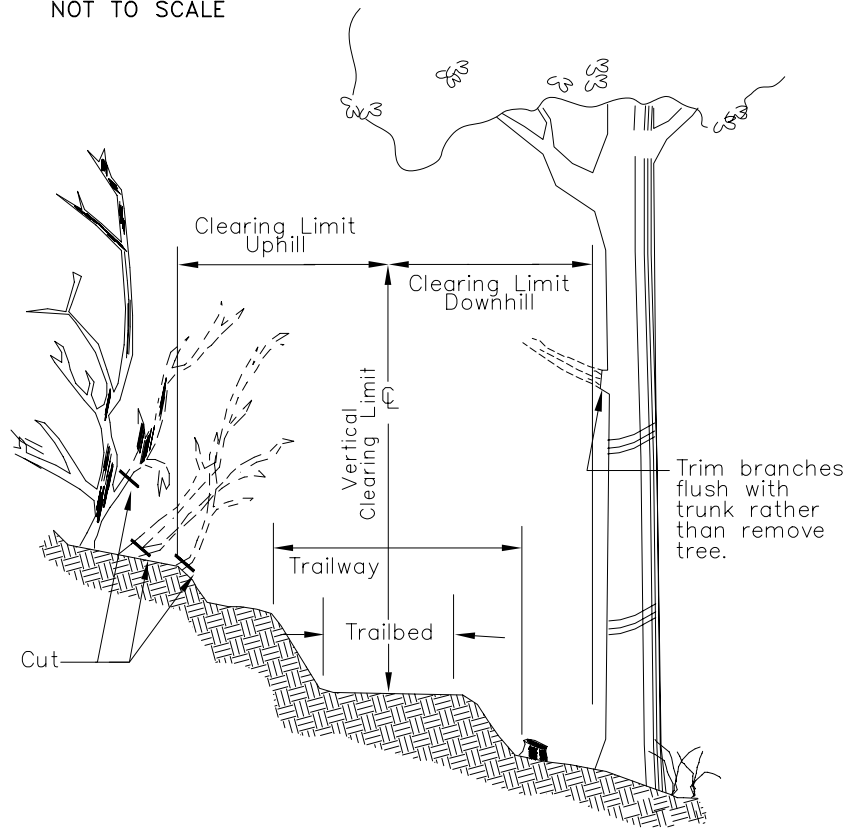
NOT TO SCALE

Clearing Limits (mm)

Location	Uphill	Downhill	Height

Do not remove trees over _____ mm diameter if they are over _____ m from the centerline (both sides).

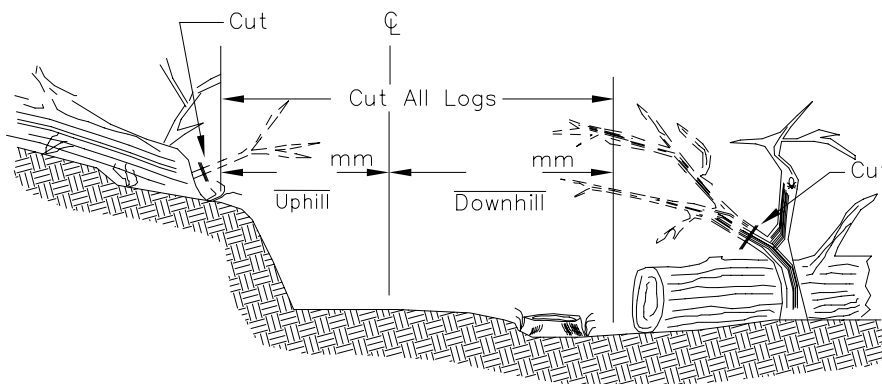
Remove all trees _____ mm or less in diameter if they are within _____ m of centerline (both sides).



Stump Height Requirements* (mm)

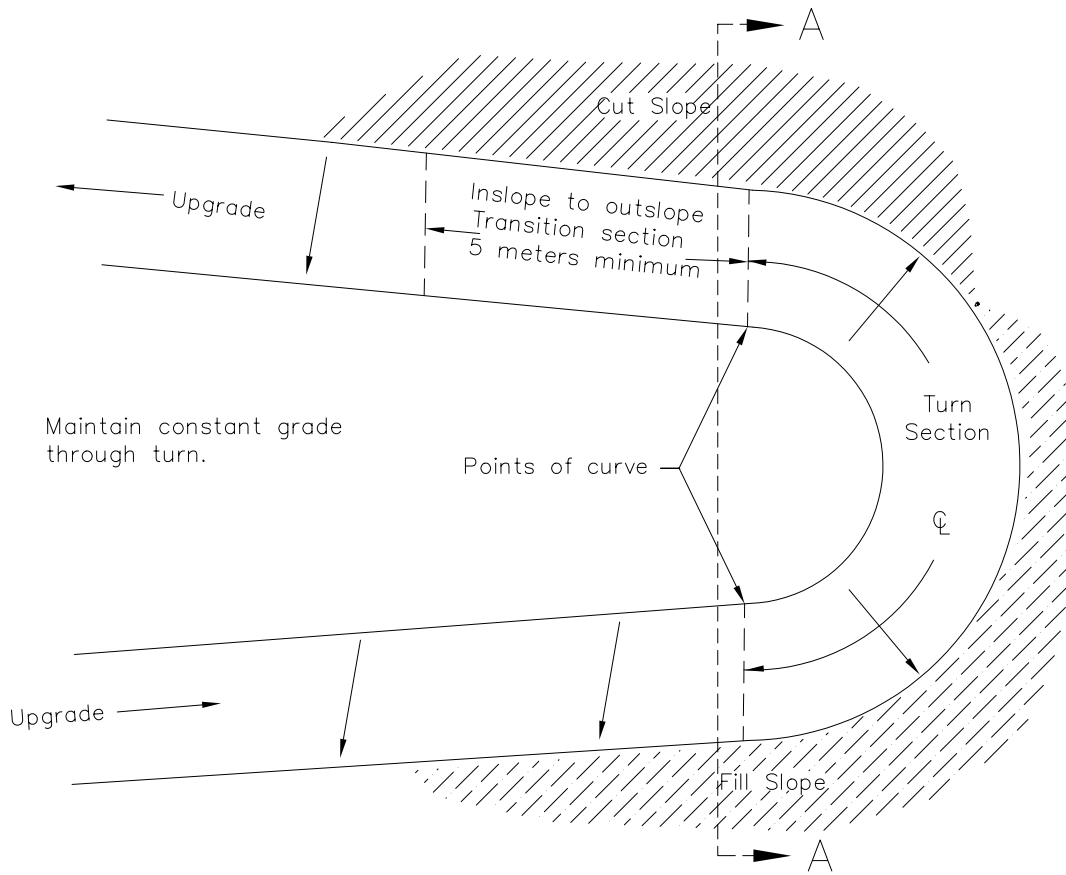
Stump Position	Side Slope	Uphill	Downhill
Stumps between the trailway and clearing limits.	Side slope less than or = to 10%		
	Side slope over 10%		
Stumps outside the clearing limits	Side slope less than or = to 10%		
	Side slope over 10%		

*All heights measured on uphill side of stumps.



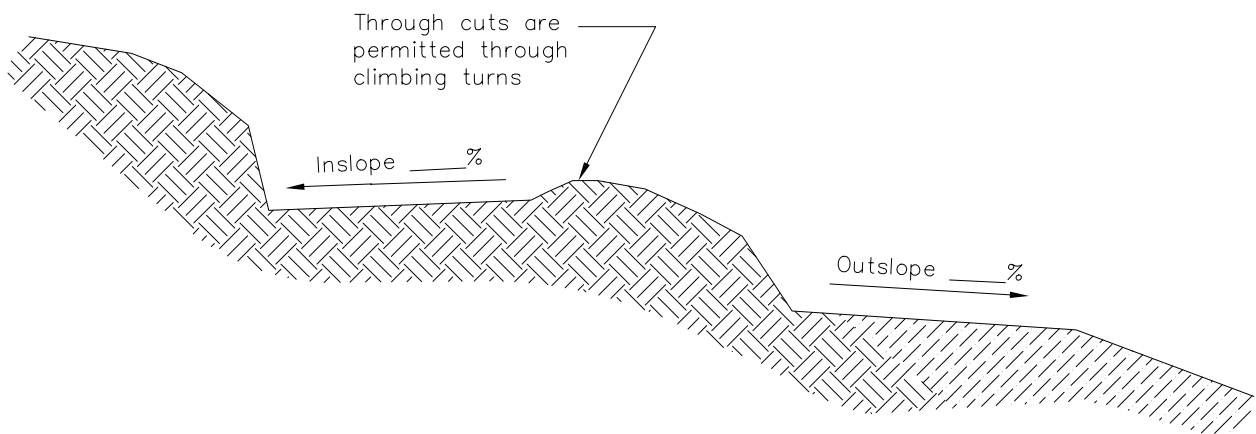
OUTSLOPED CLIMBING TURN

NOT TO SCALE



Centerline of climbing turn will be FLAGGED or STAKED ON THE GROUND.

PLAN VIEW



SECTION A-A

TRAILBED AND SLOPE FINISH

NOT TO SCALE

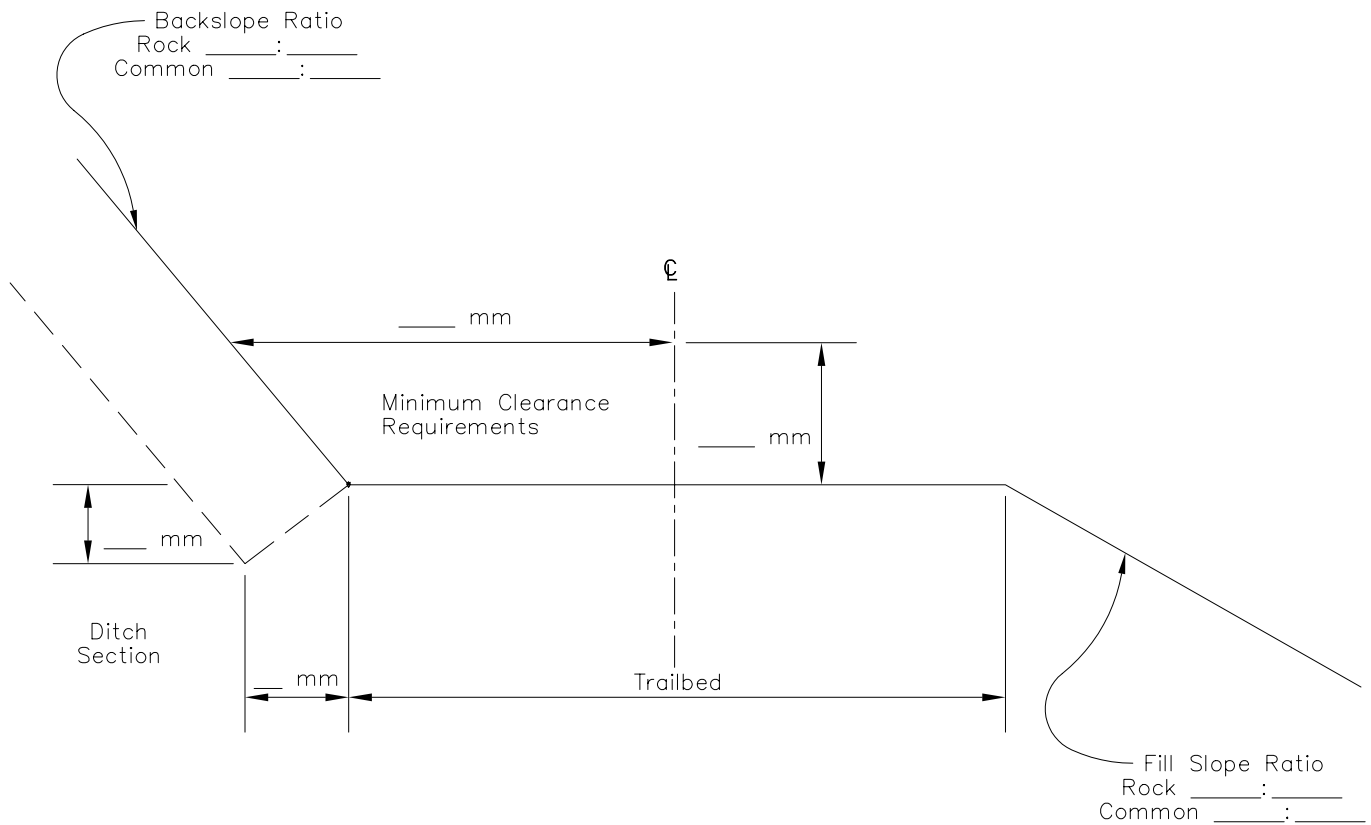
Slope Finish

Remove roots over ____ mm in diameter that protrude from the backslope.

Trailbed Finish

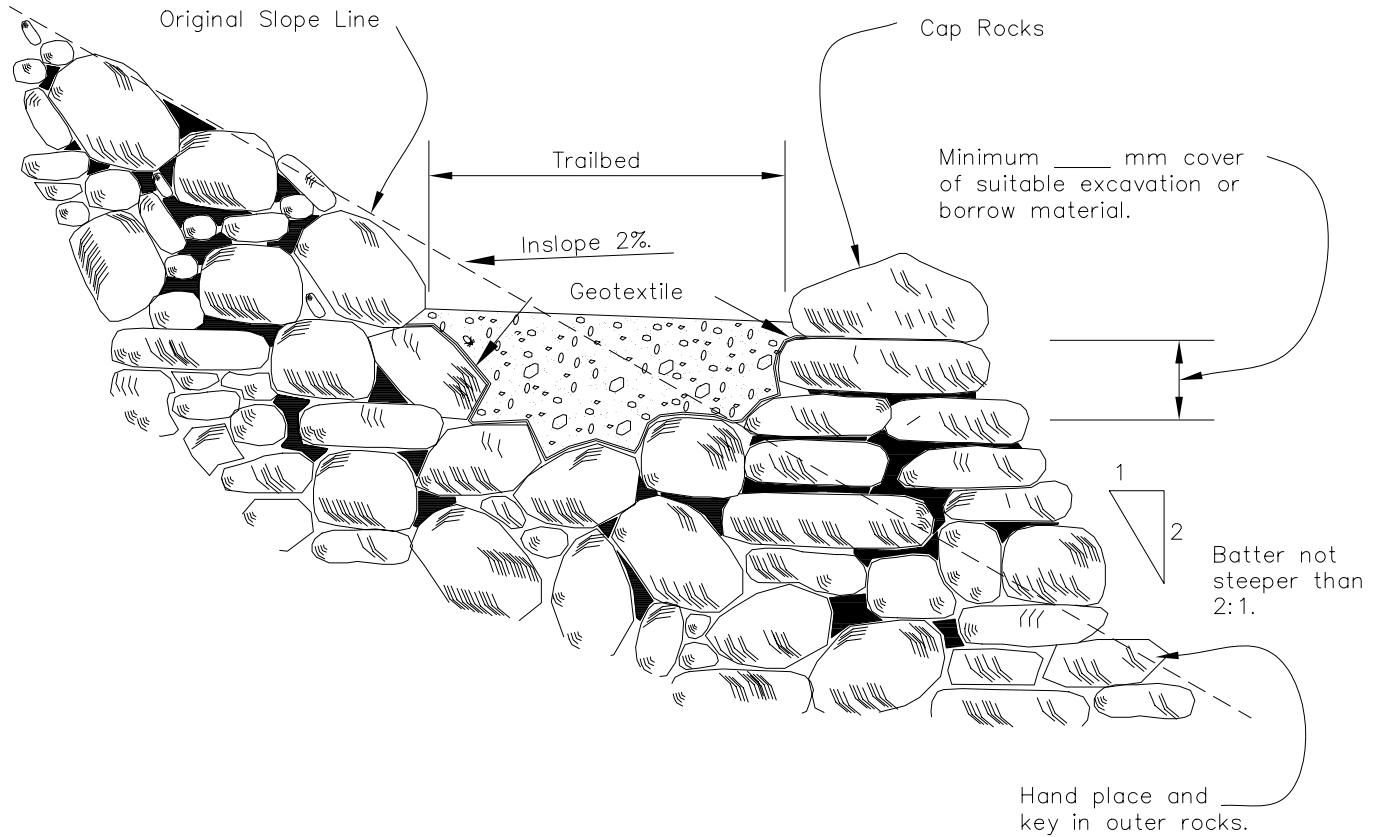
Remove loose rock on the trailbed surface over ____ mm in the smallest dimension.

Remove or reduce embedded rock that protrudes more than ____ mm above the trailbed.



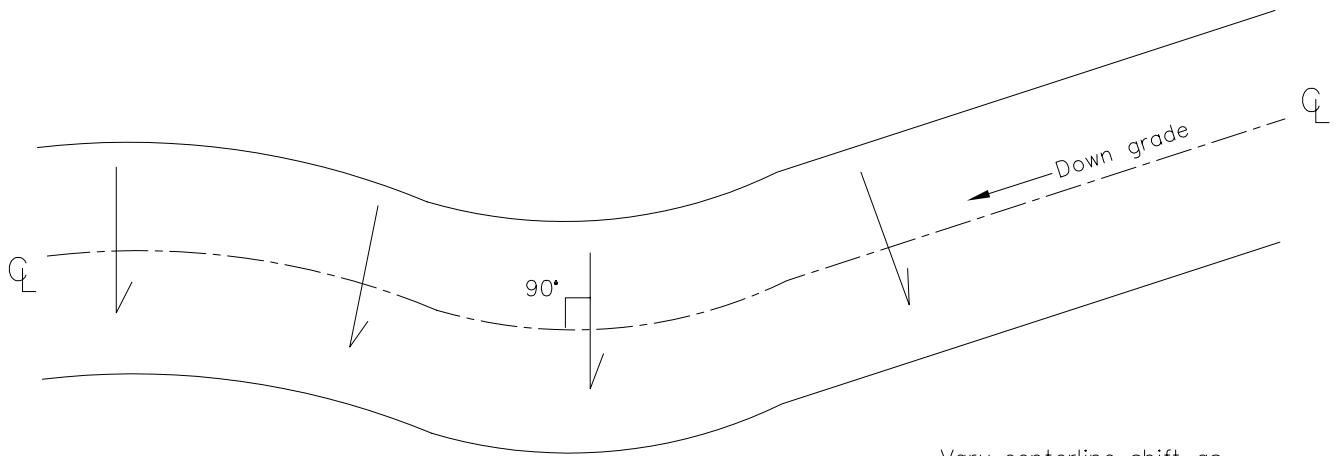
TALUS AND RUBBLE ROCK SECTION

NOT TO SCALE



GRADE DIP

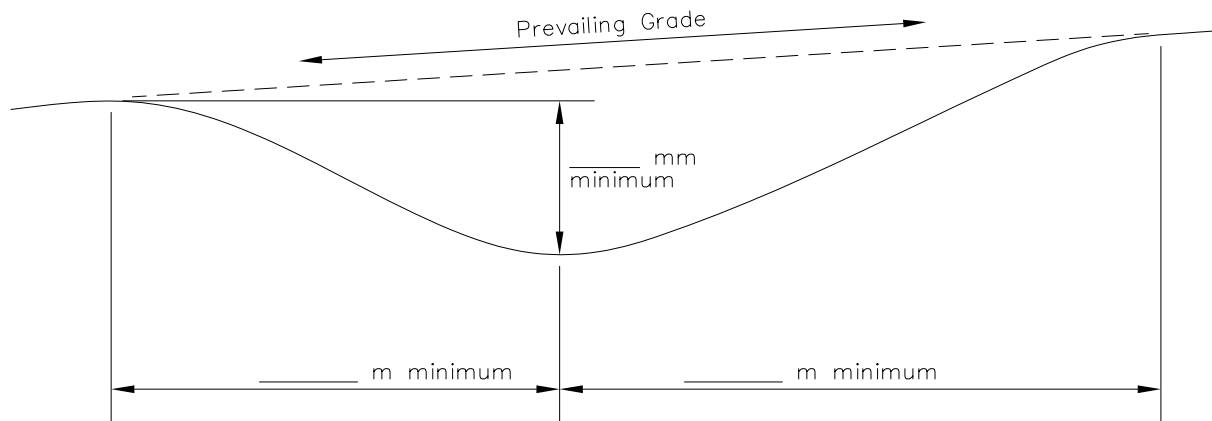
NOT TO SCALE



Maintain outslope and trailbed width.

Vary centerline shift as necessary to daylight spillway.

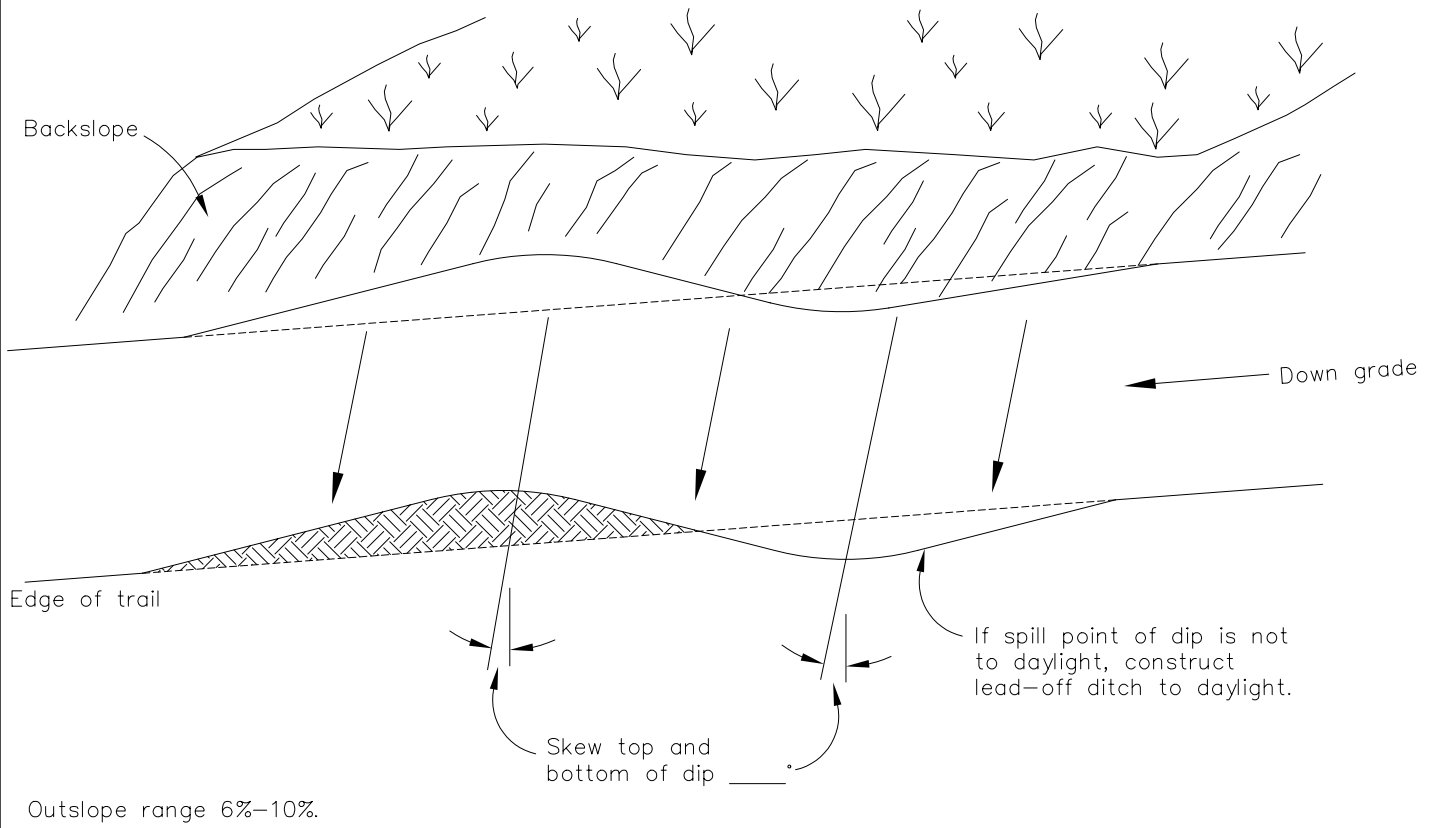
PLAN VIEW



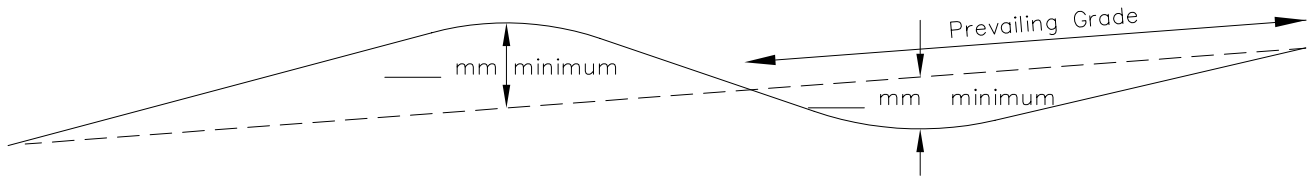
PROFILE

ROLLING DIP

NOT TO SCALE



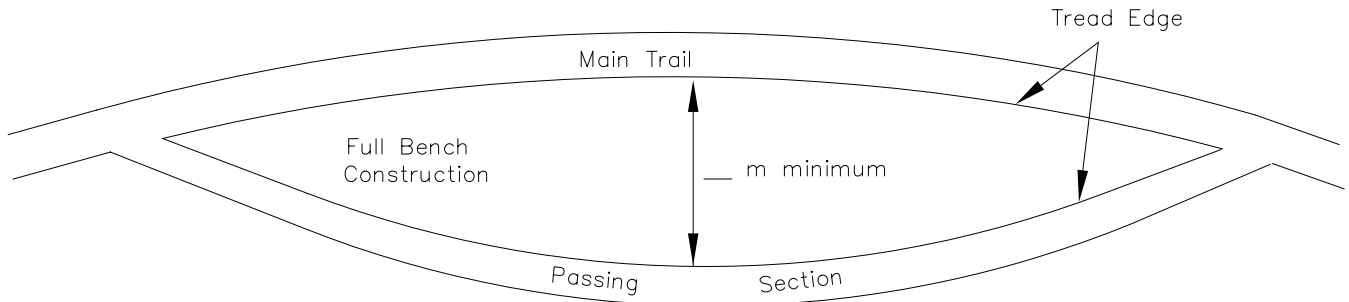
PLAN VIEW



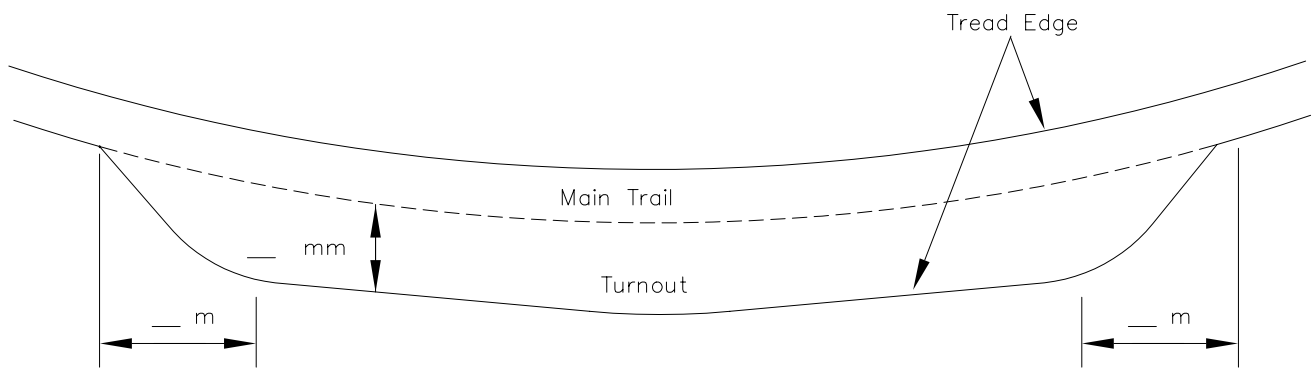
PROFILE

TURNOUT AND PASSING SECTIONS

NOT TO SCALE



PASSING SECTION

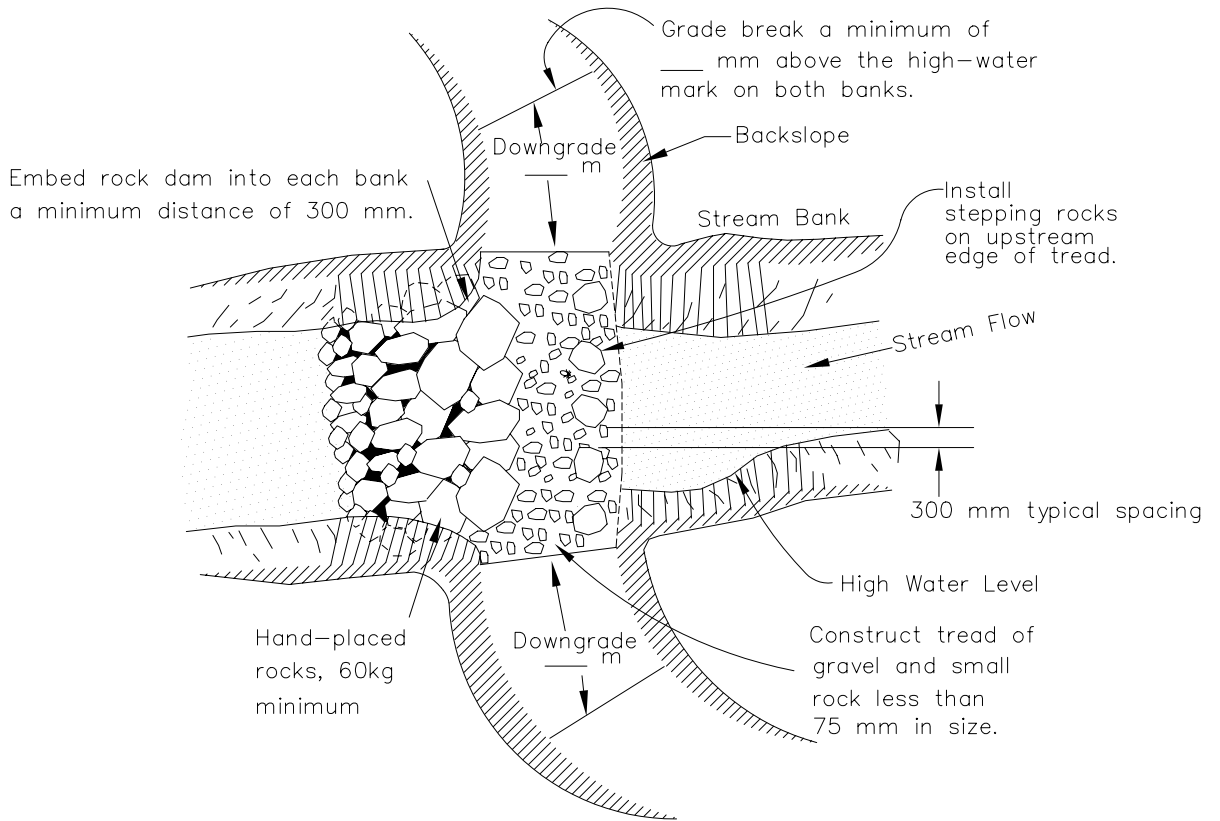


TURNOUT SECTION

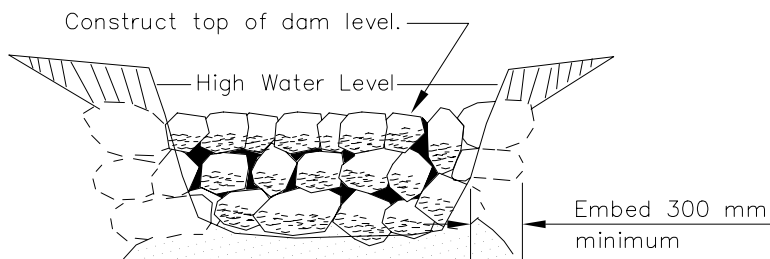
Passing Section Location	Turnout Section Location
to	to
to	to
to	to
to	to

SHALLOW STREAM FORD AND GULLY CROSSING ROCK STRUCTURE

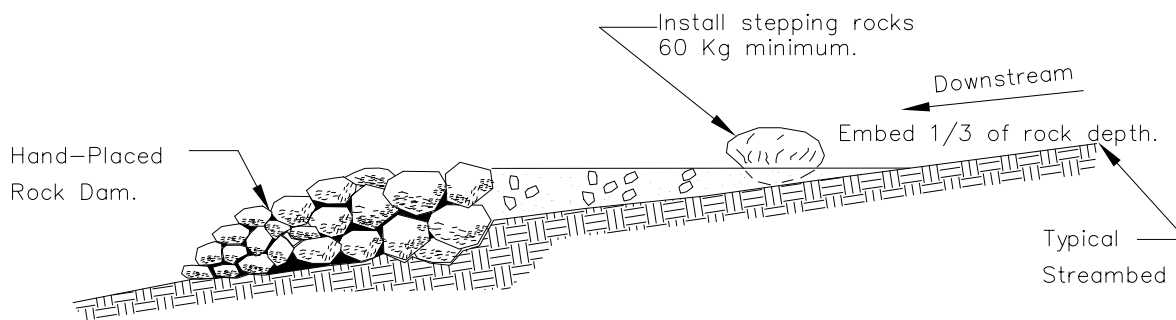
NOT TO SCALE



PLAN VIEW



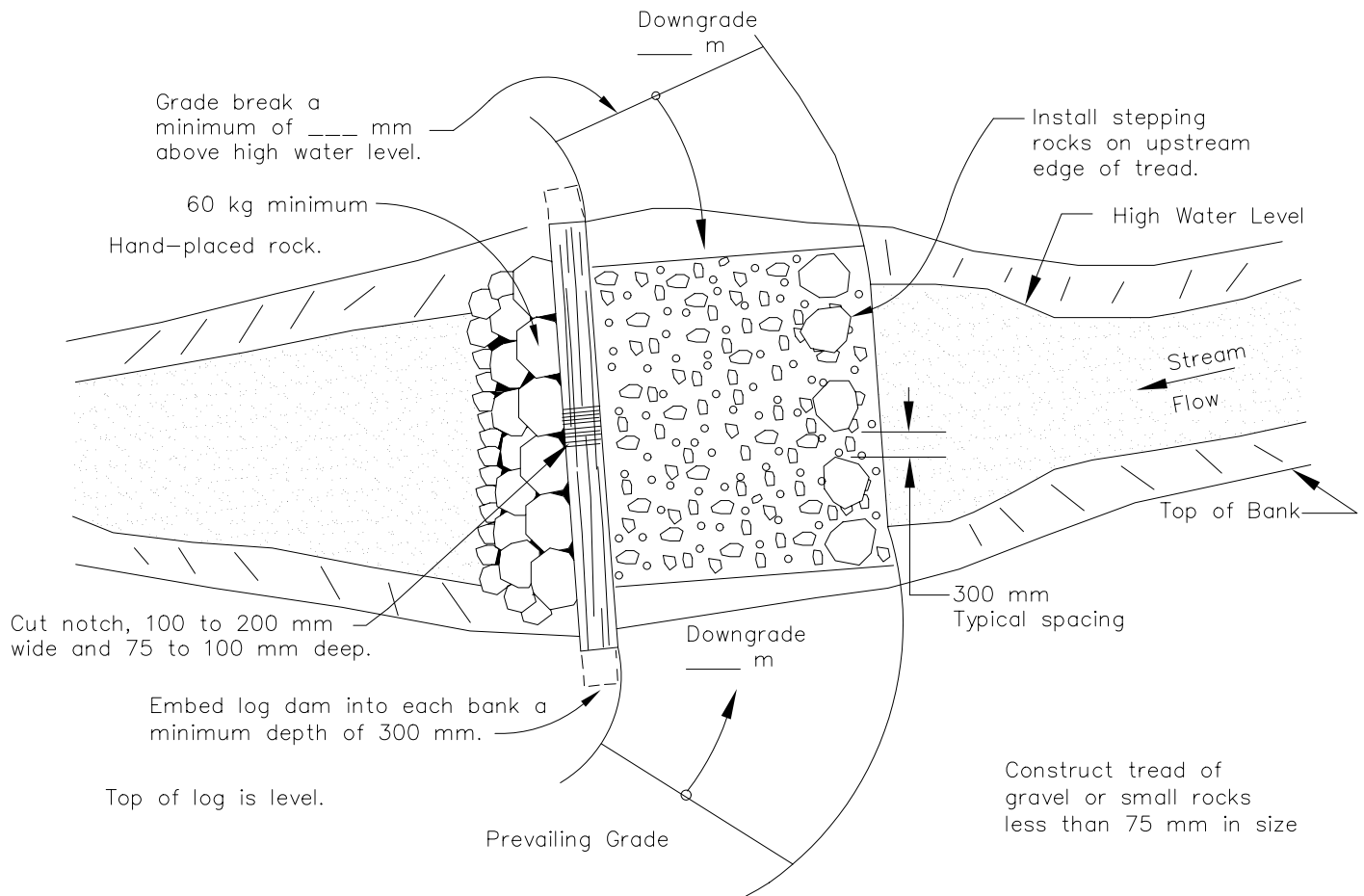
PROFILE - ROCK DAM



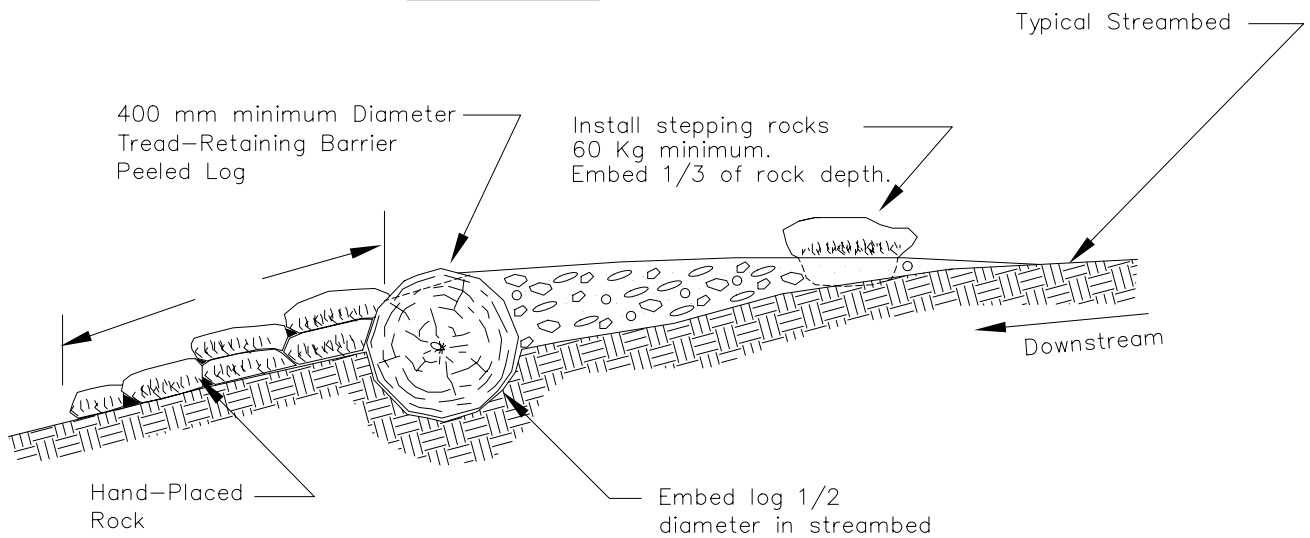
CROSS SECTION

SHALLOW STREAM FORD OR GULLY CROSSING LOG STRUCTURE

NOT TO SCALE



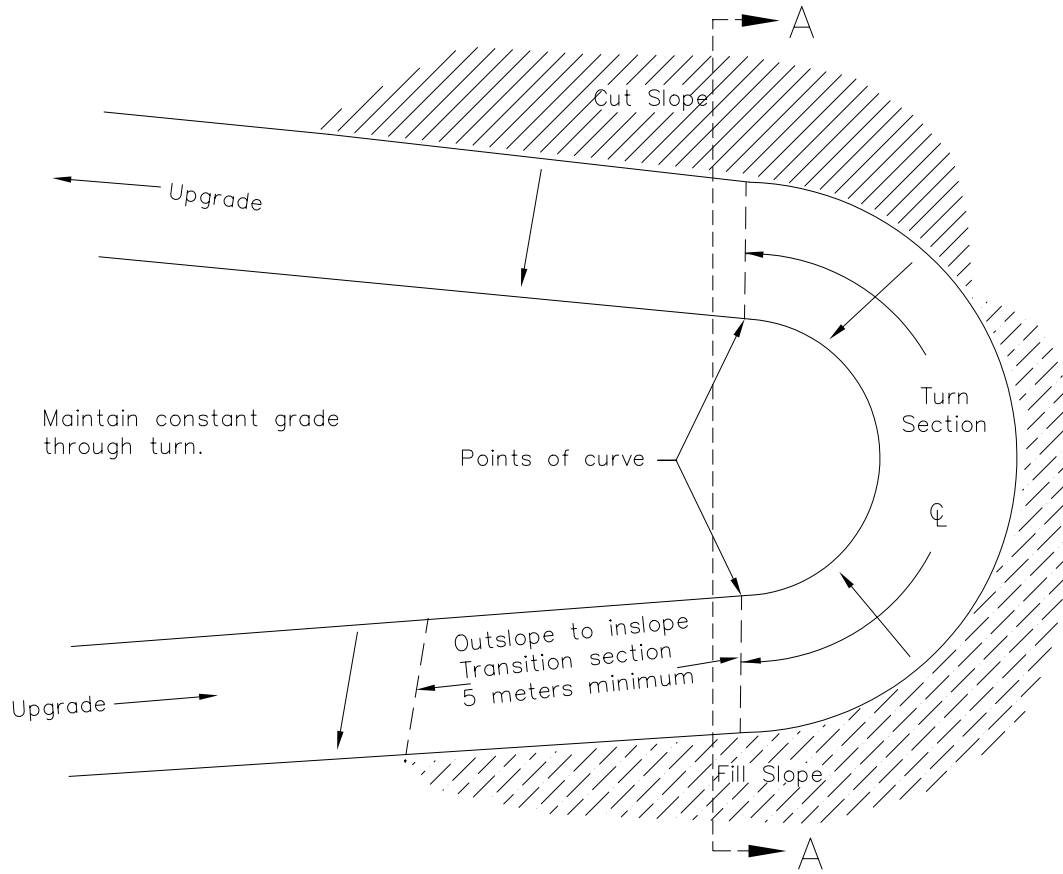
PLAN VIEW



CROSS SECTION

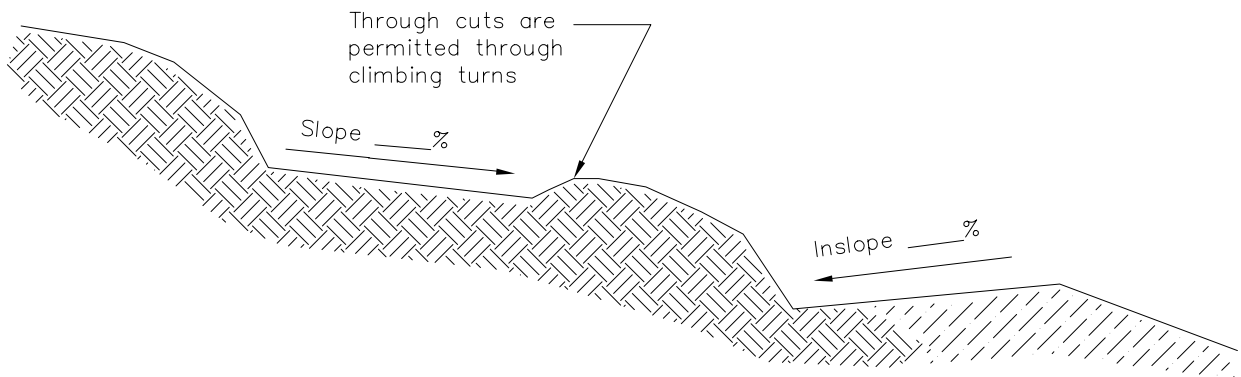
INSLOPED CLIMBING TURN

NOT TO SCALE



Centerline of climbing turn will be FLAGGED or STAKED ON THE GROUND.

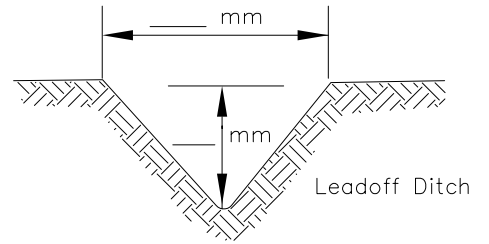
PLAN VIEW



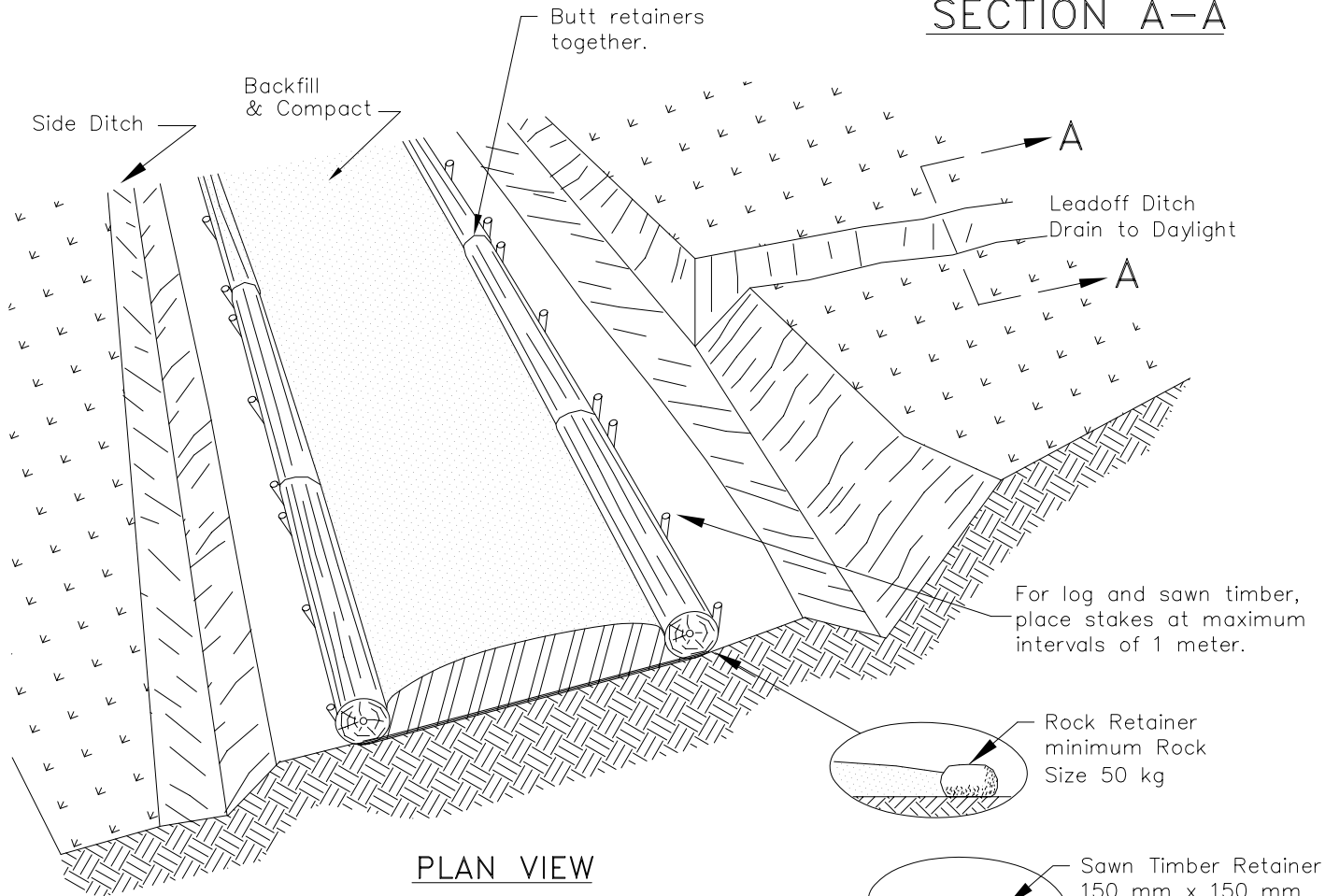
SECTION A-A

TURNPIKE -TYPE I

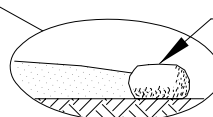
NOT TO SCALE



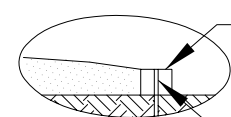
SECTION A-A



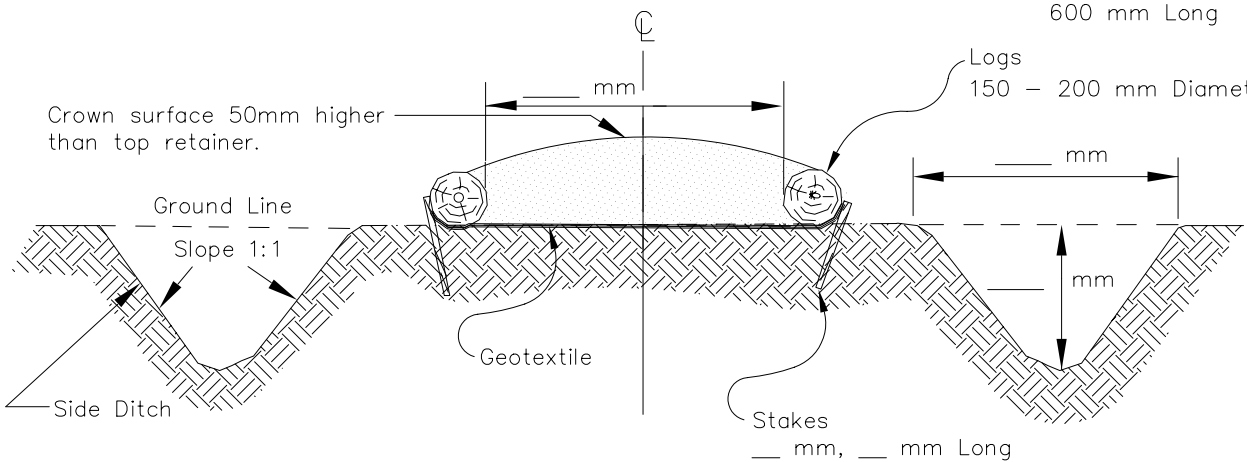
PLAN VIEW



Rock Retainer
minimum Rock
Size 50 kg



Sawn Timber Retainer
150 mm x 150 mm
No. 13 Rebar
600 mm Long

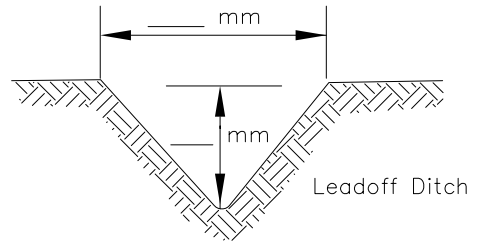


CROSS SECTION

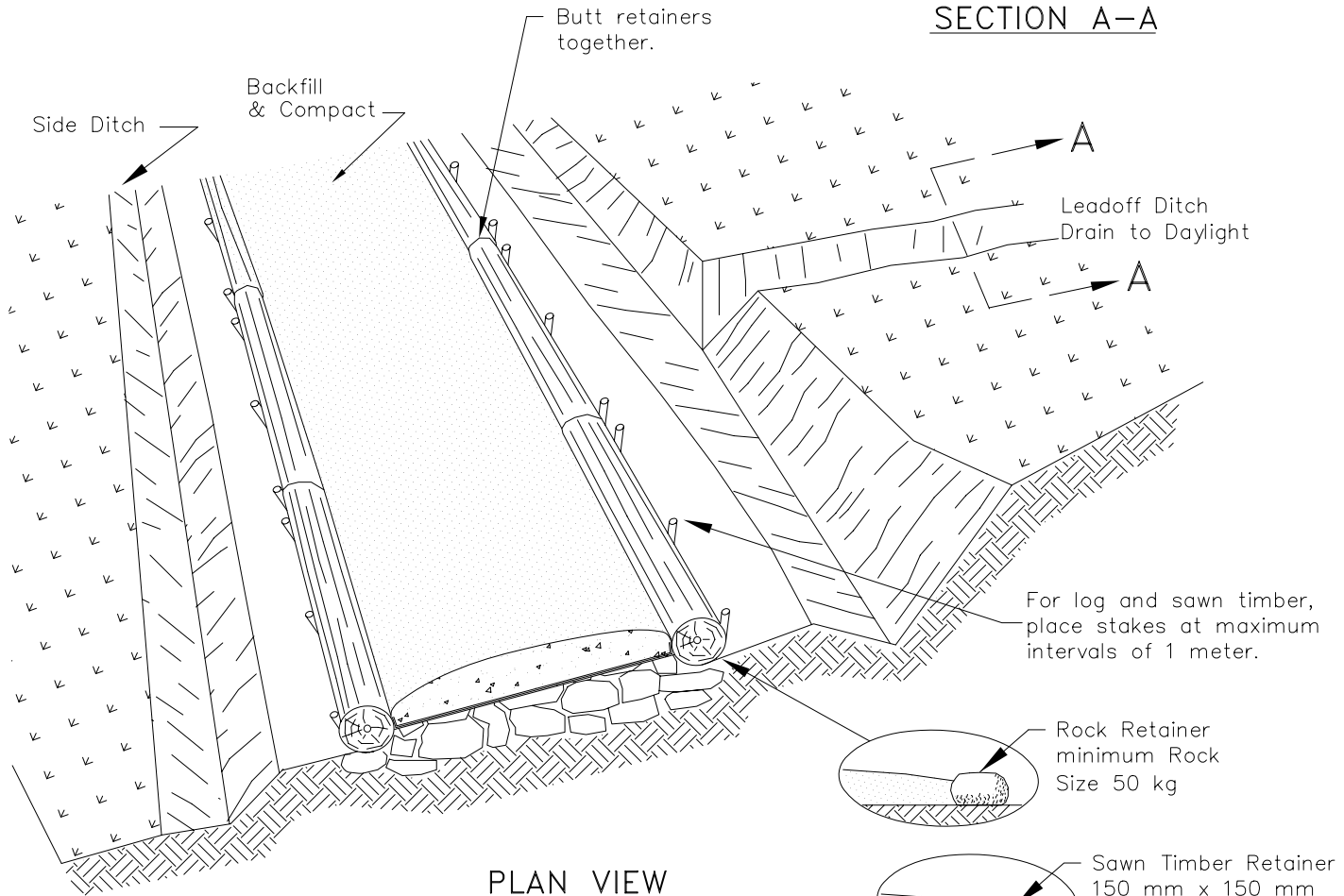
TURNPIKE -TYPE II

NOT TO SCALE

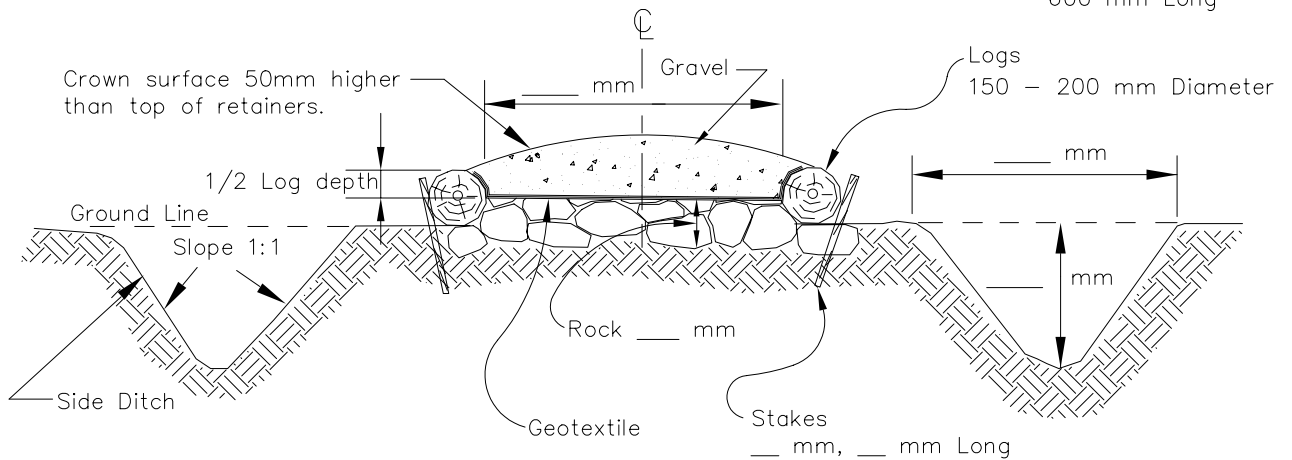
Backfill Material	Min. Size	Max. Size	% Max. Size
Rock			



SECTION A-A



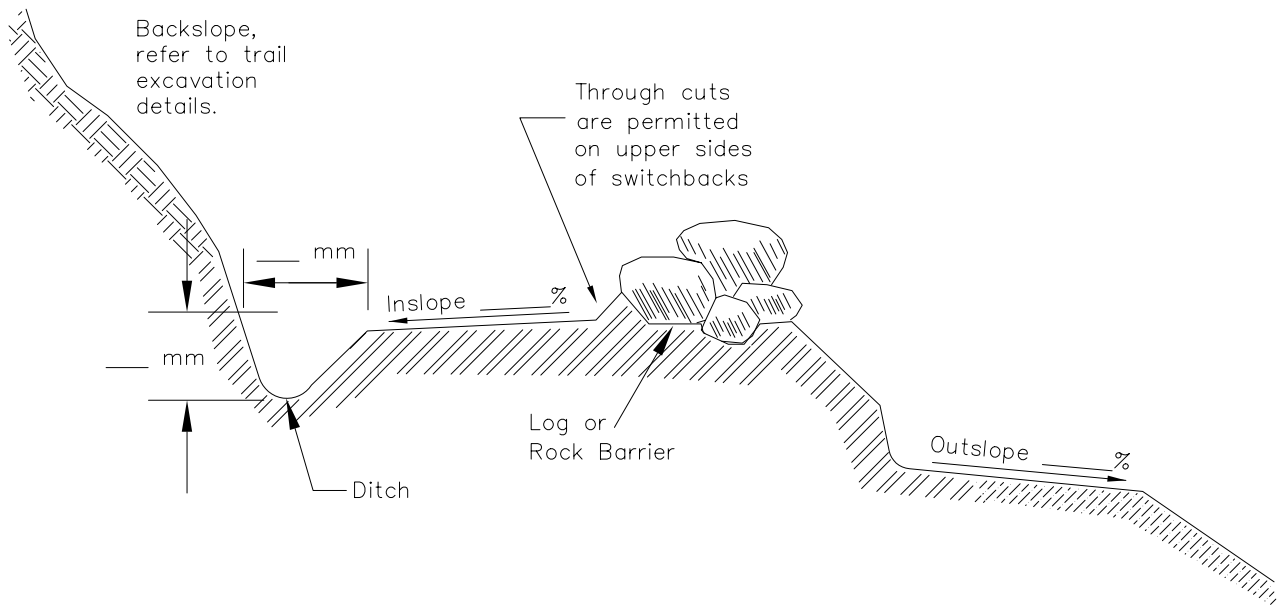
PLAN VIEW



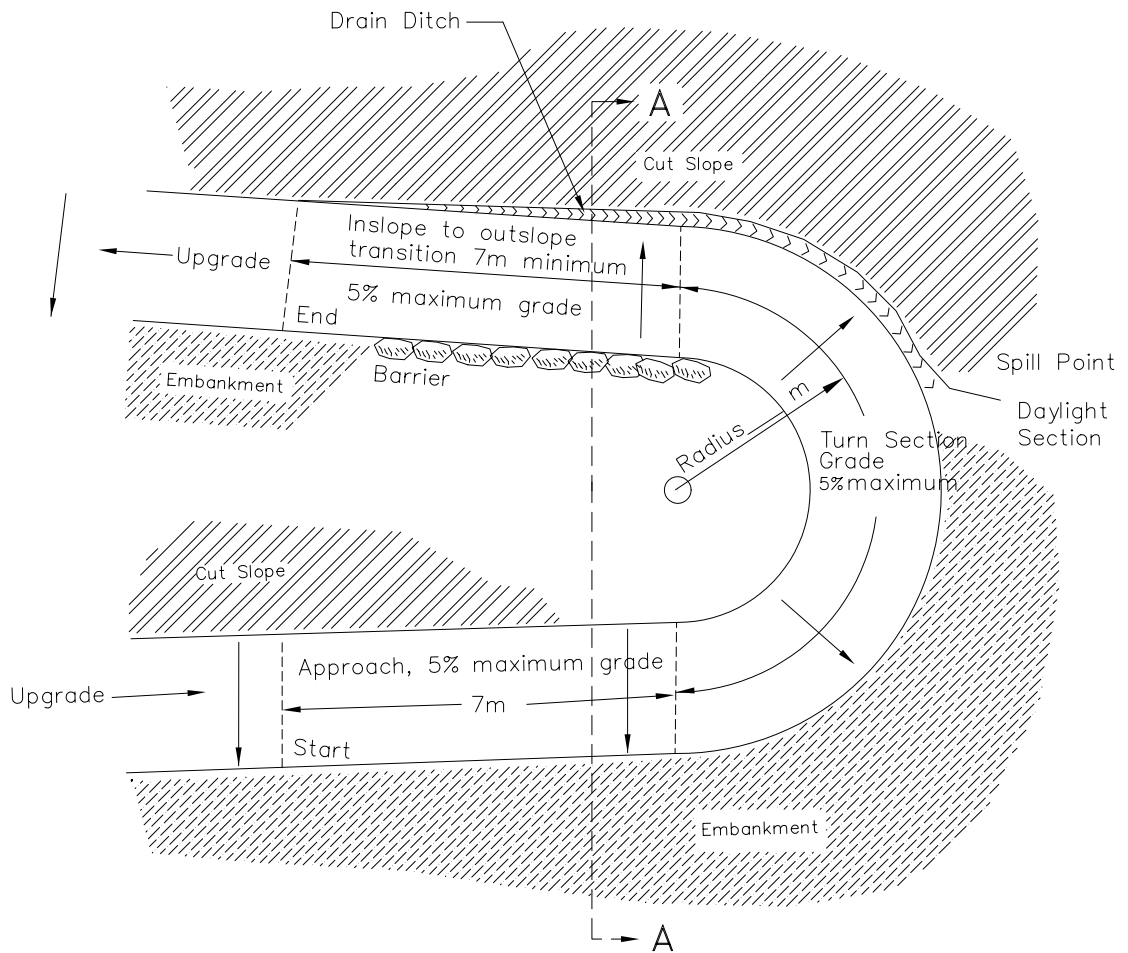
CROSS SECTION

SWITCHBACK – TYPE I

NOT TO SCALE



SECTION A-A

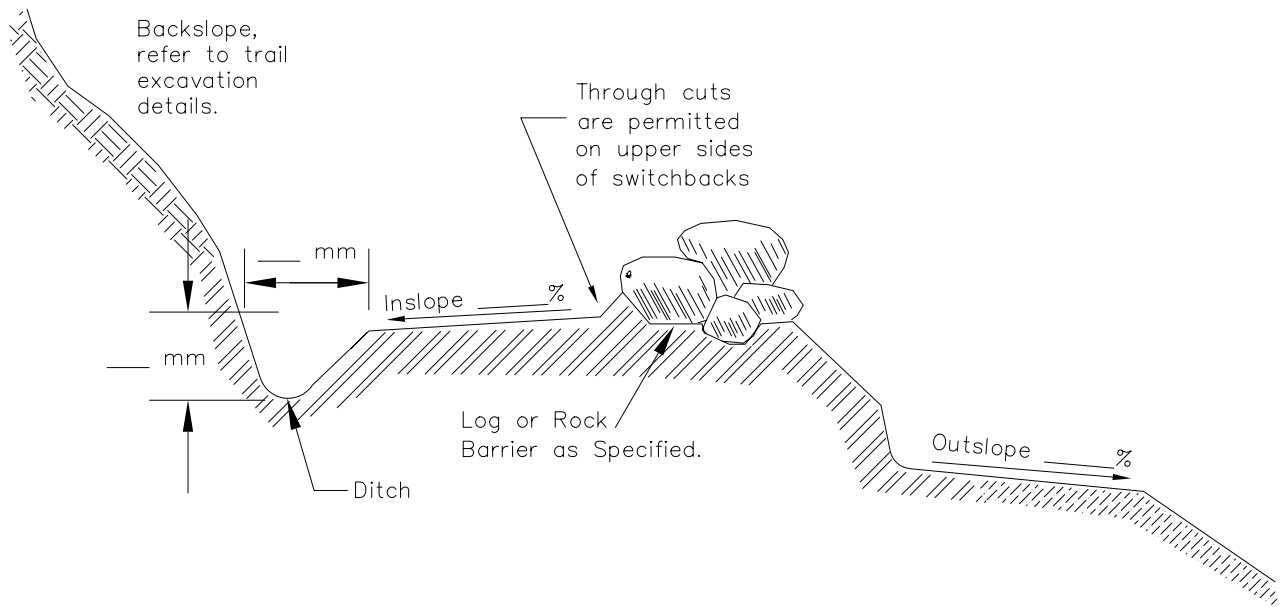


Radius point is staked at each individual site.

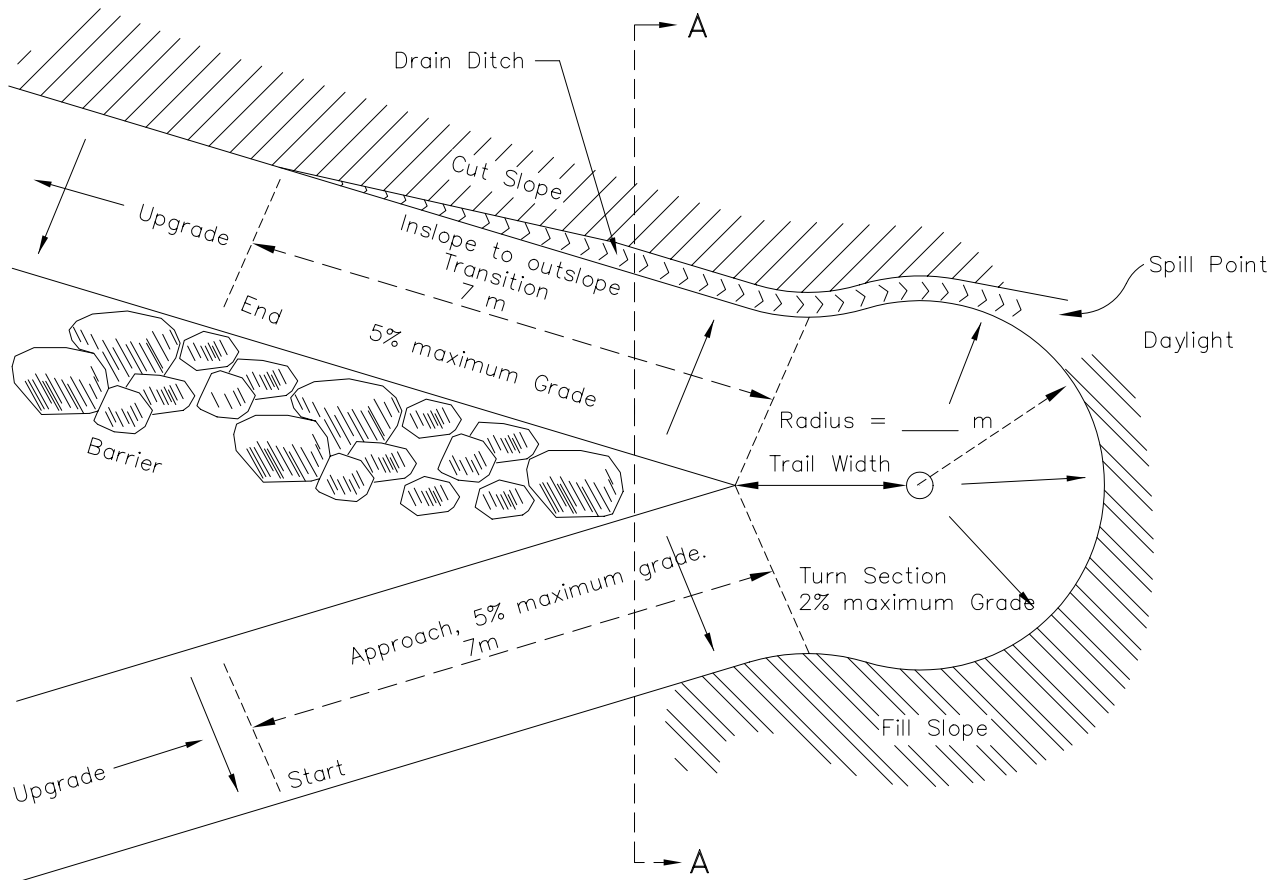
PLAN VIEW

SWITCHBACK – TYPE II

NOT TO SCALE



SECTION A-A

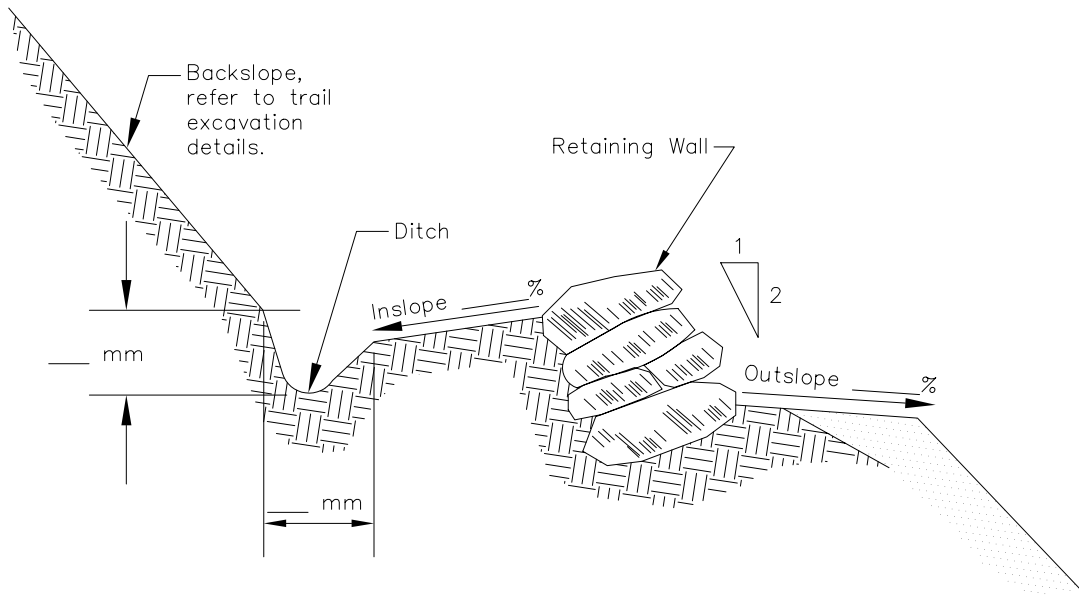


Radius point is staked at each individual site.

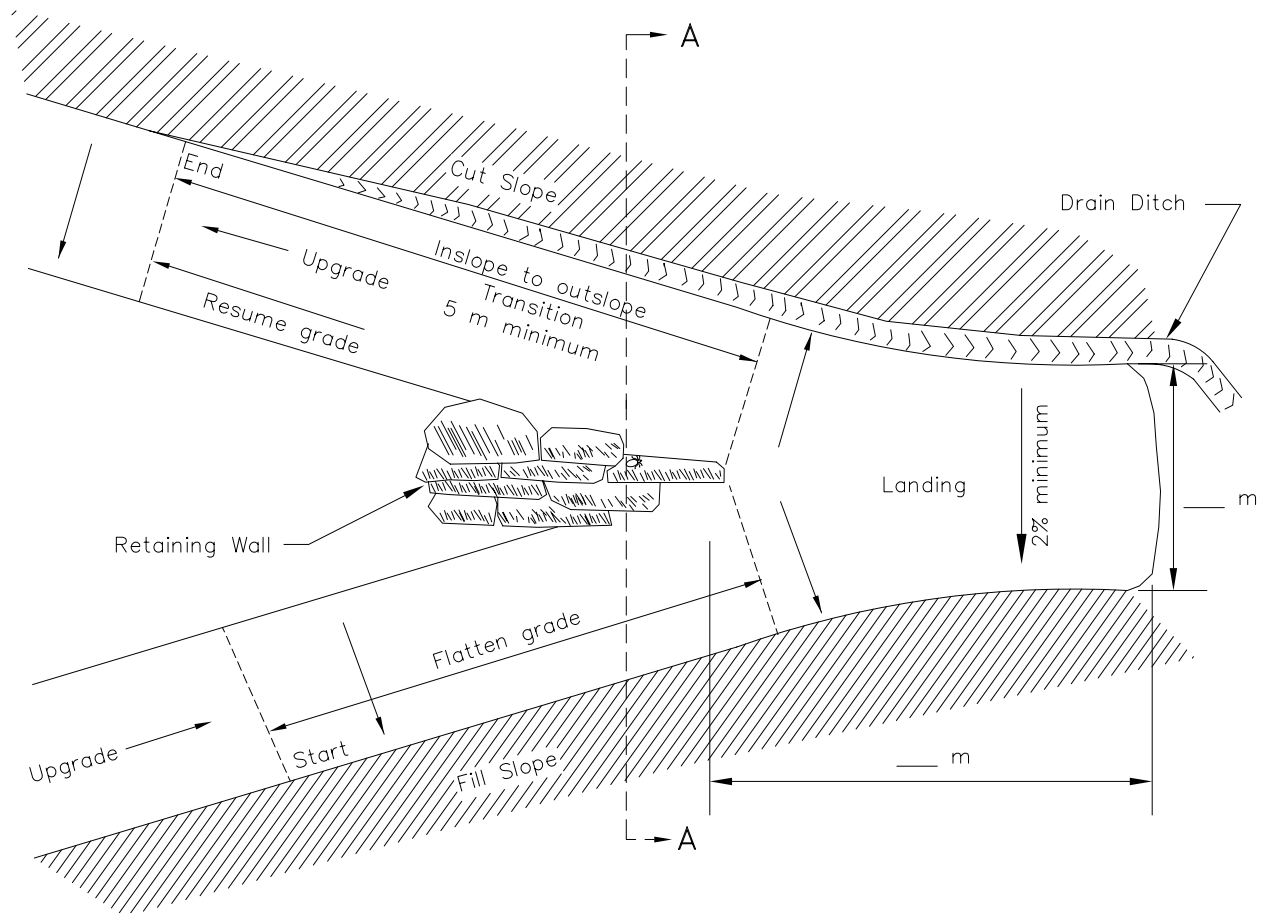
PLAN VIEW

SWITCHBACK – TYPE III

NOT TO SCALE



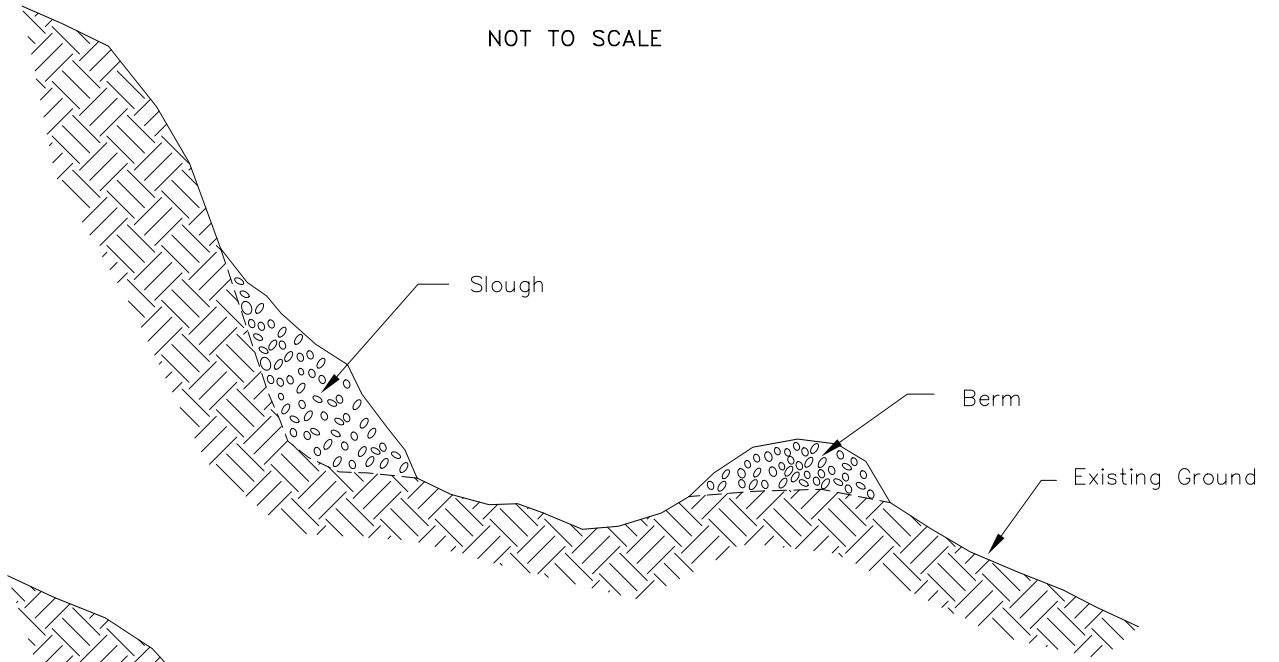
SECTION A-A



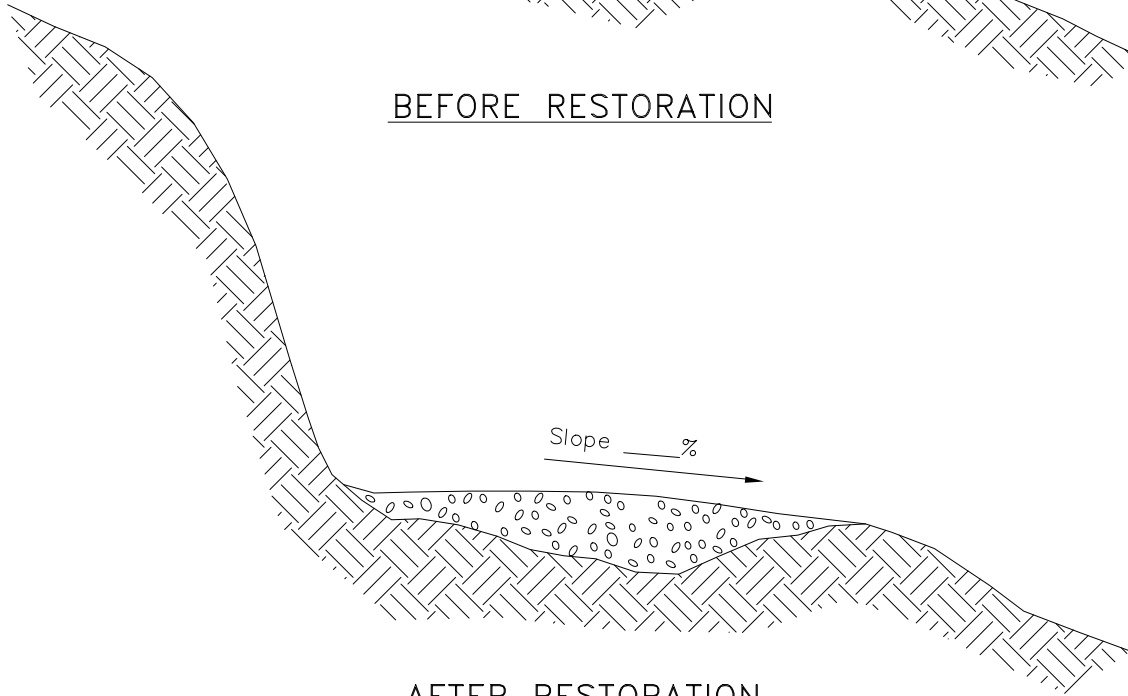
PLAN VIEW

EXISTING TRAIL RESTORATION

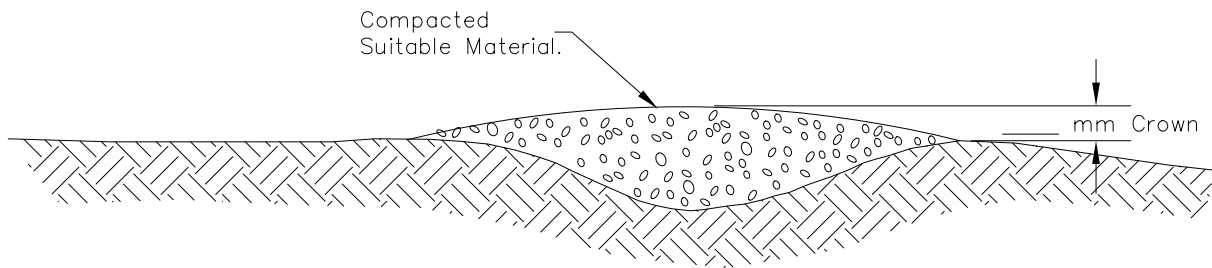
NOT TO SCALE



BEFORE RESTORATION



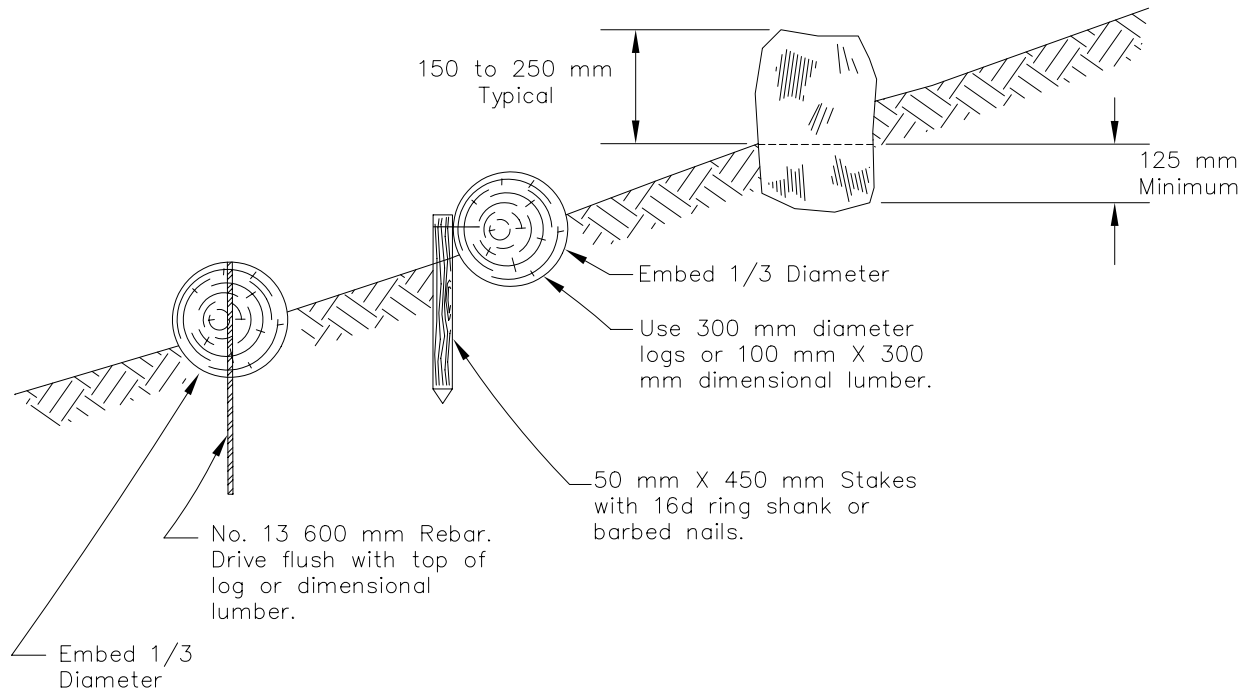
AFTER RESTORATION



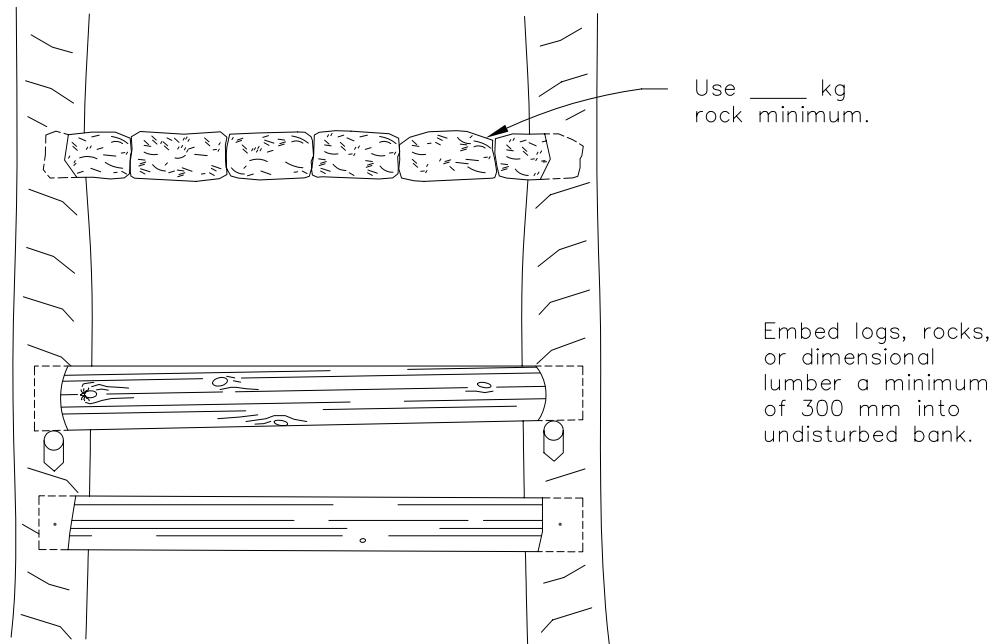
FLAT SLOPES

CHECK DAMS

NOT TO SCALE



SECTION

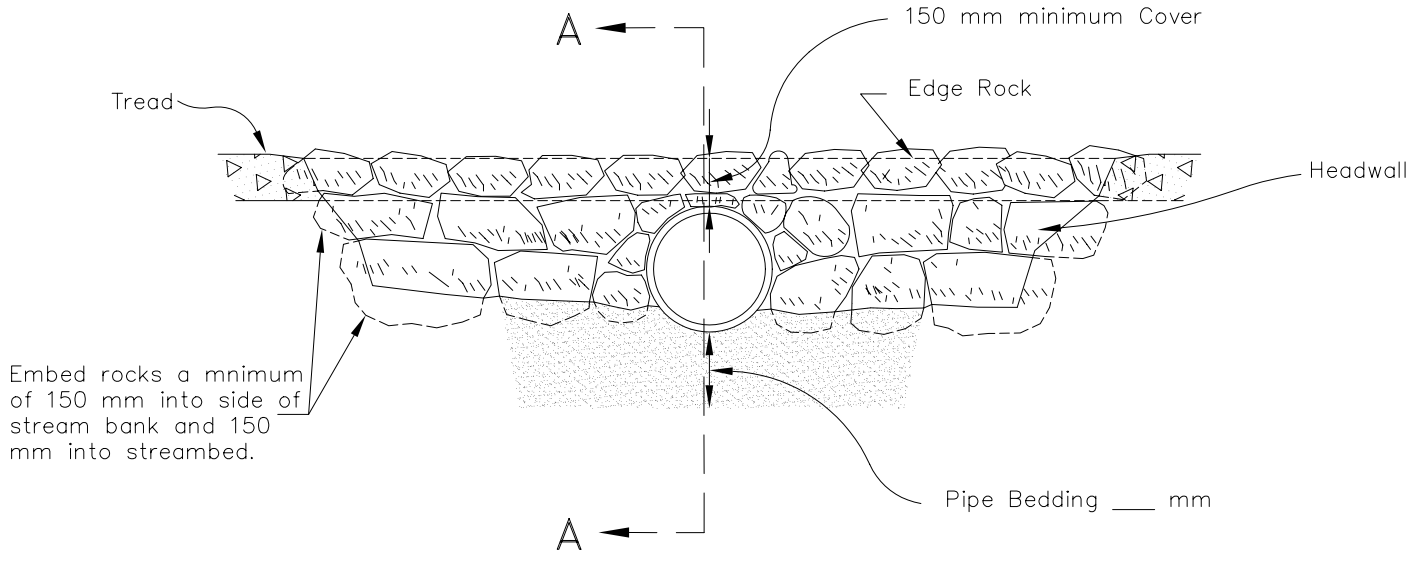


Construct check dams at locations staked on the ground. Space check dams ___ m apart.

PLAN VIEW

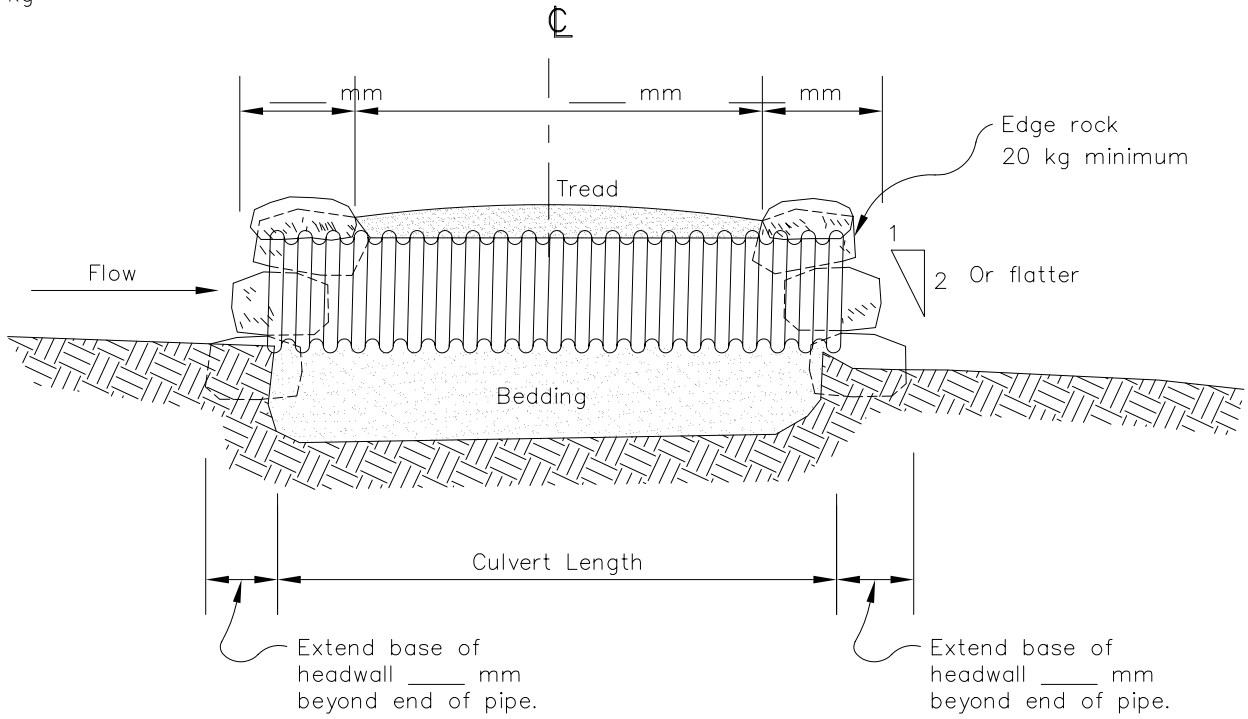
CULVERT WITH HEADWALLS

NOT TO SCALE



END VIEW

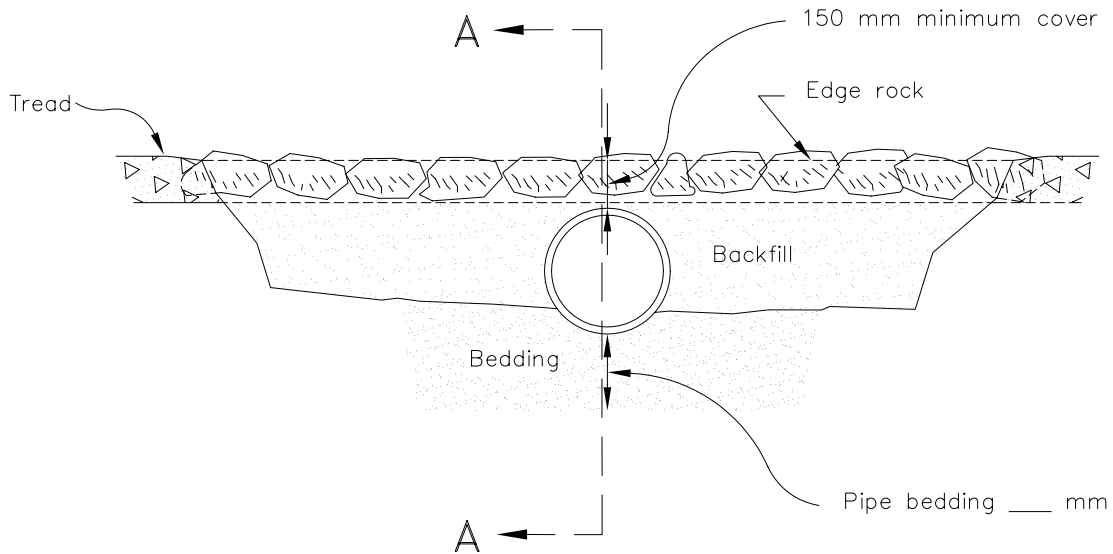
Headwall rocks:
20 kg minimum,
50% larger than
30 kg



SECTION A-A

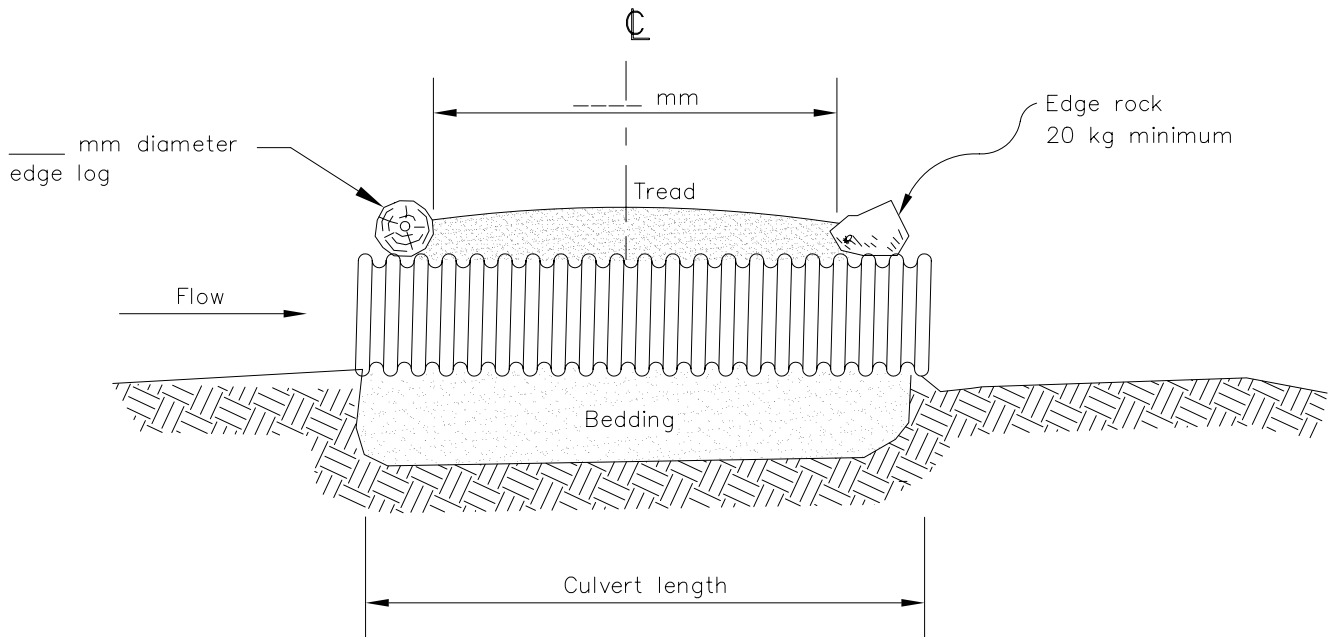
CULVERT WITHOUT HEADWALLS

NOT TO SCALE



END VIEW

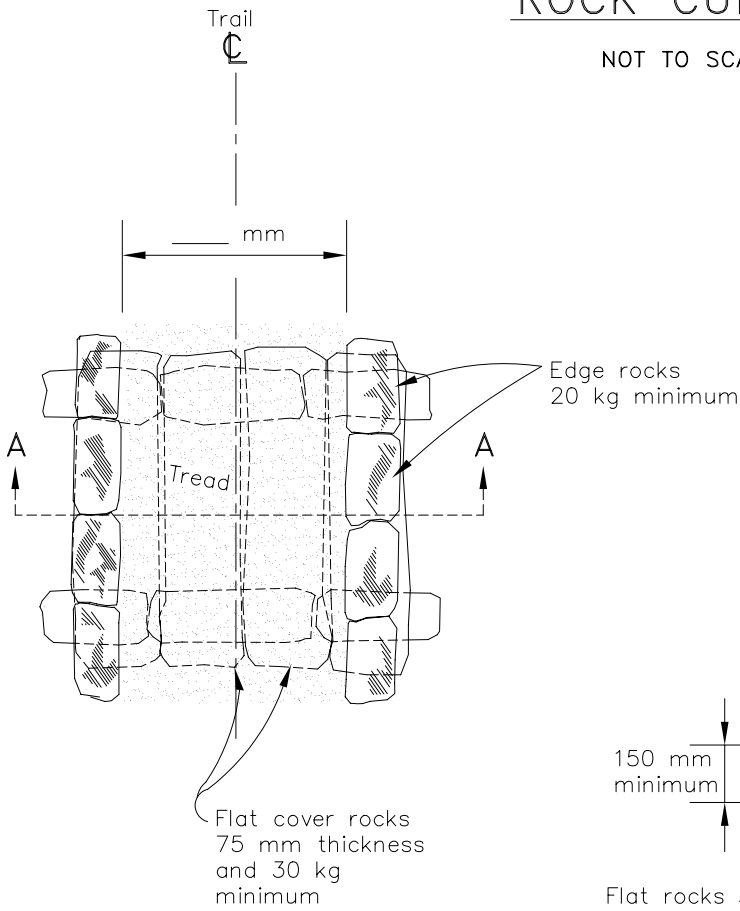
Headwall rocks:
20 kg minimum
50% larger than
30 kg



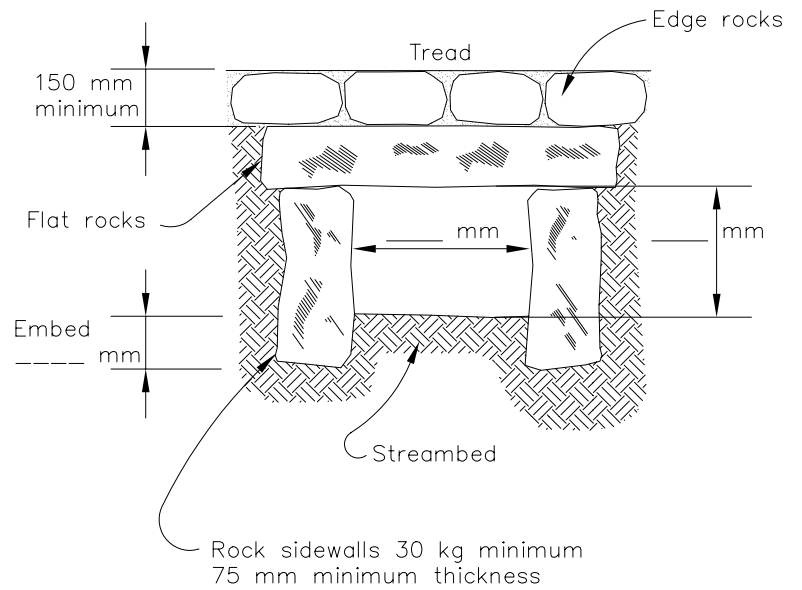
SECTION A-A

ROCK CULVERT

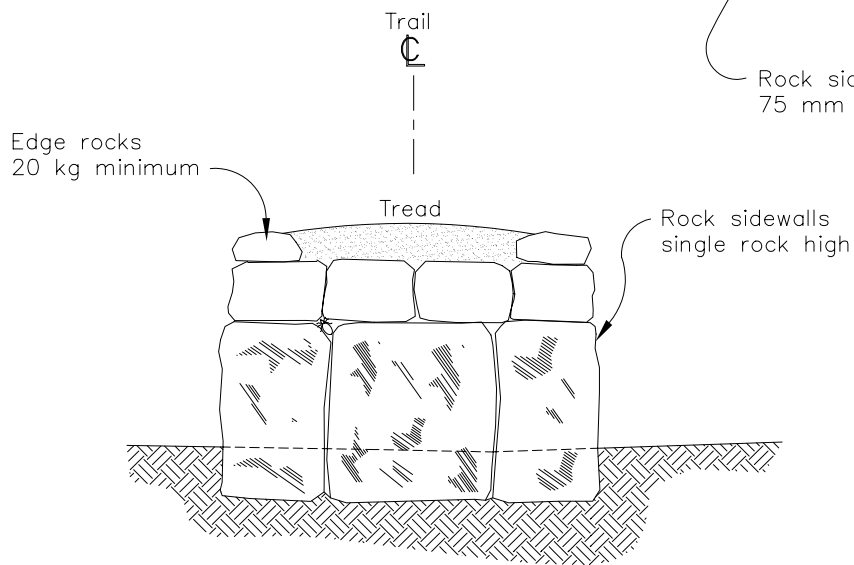
NOT TO SCALE



PLAN VIEW



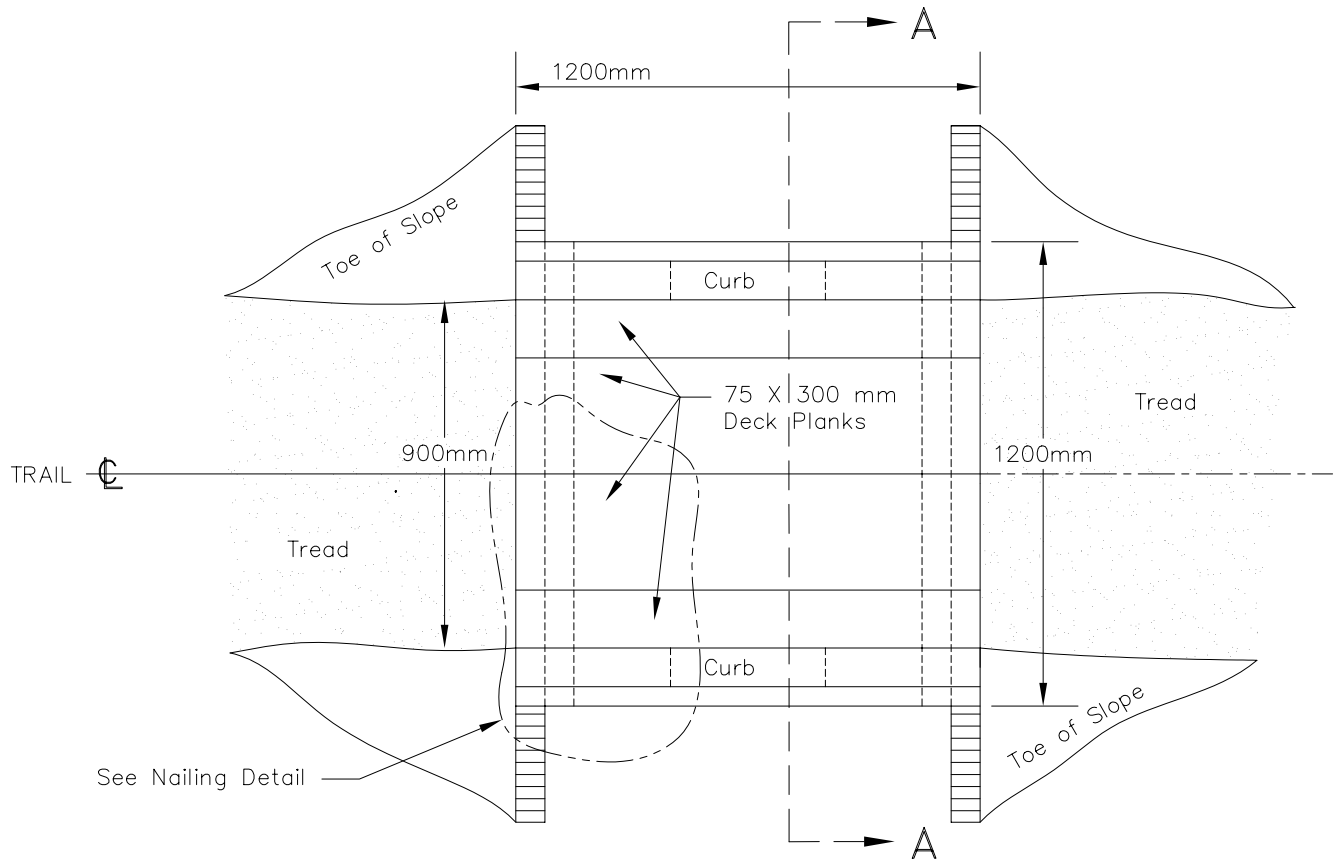
SIDE VIEW



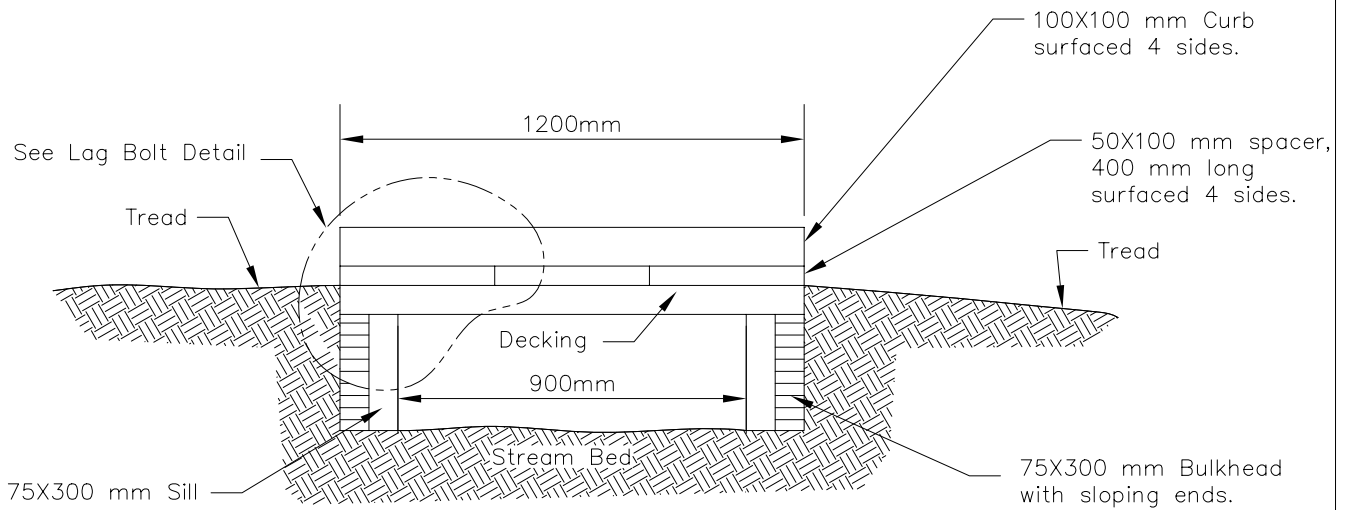
SECTION A-A

TREATED TIMBER BOX CULVERT

NOT TO SCALE



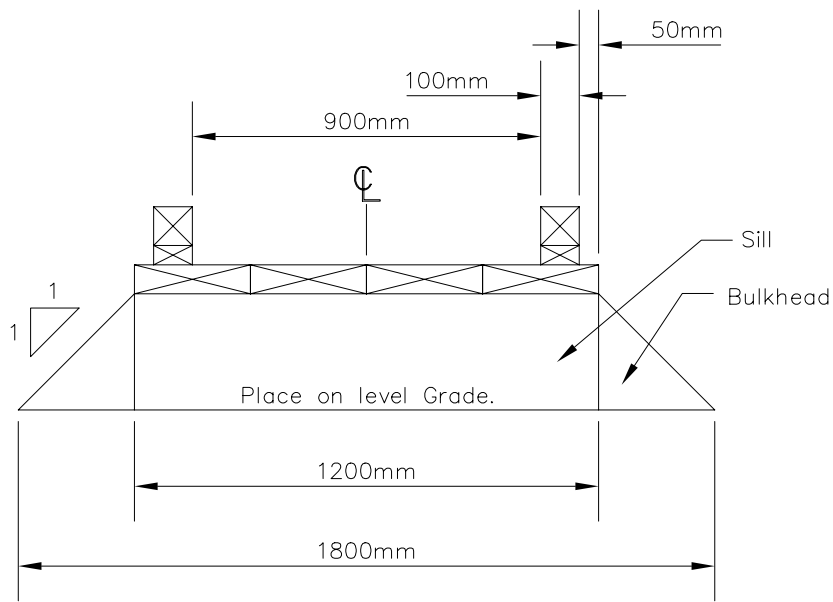
PLAN VIEW



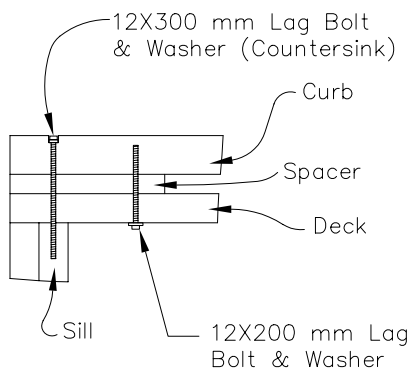
END VIEW

TREATED TIMBER BOX CULVERT DETAILS

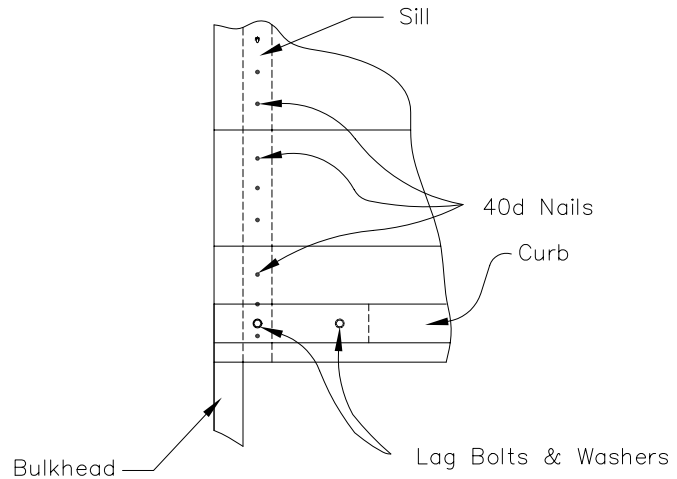
NOT TO SCALE



SECTION A-A



LAG BOLT DETAIL



NAILING DETAIL

NAILING PATTERN:

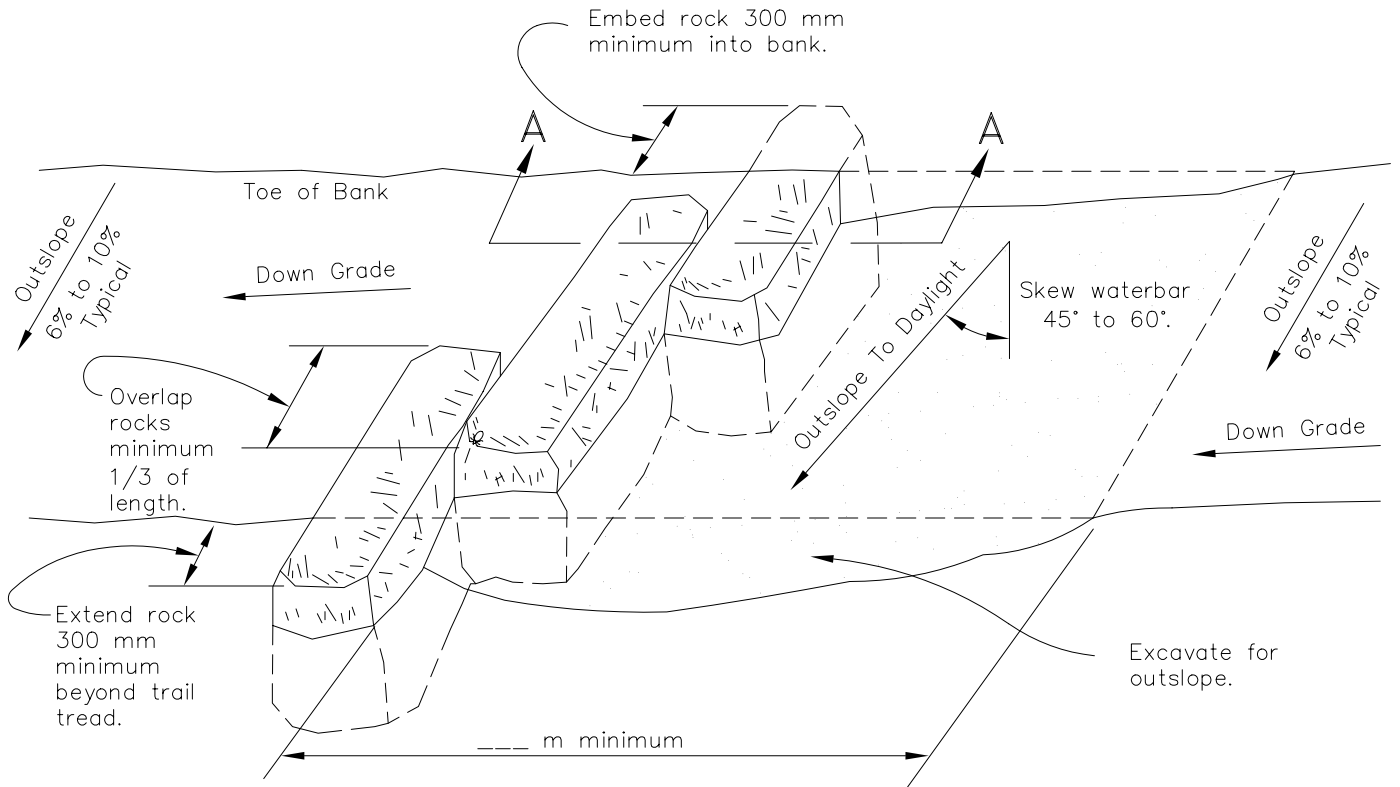
Sill To Bulkhead - 30d nails in two 150 mm staggered rows, 50 mm minimum from edges of sills.
Deck To Sill - Three 40d nails through each deck plank into sills, on both ends of plank, 50 mm minimum from sides of deck.

PRESERVATIVE TREATMENT:

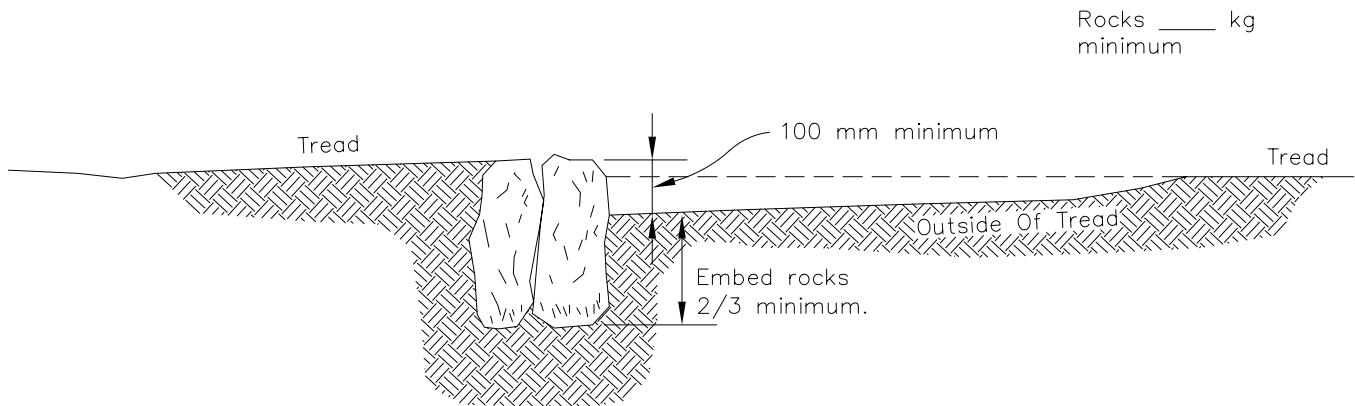
_____ Net Retention _____ kg/m³
 Lumber rough sawn except as noted.

ROCK WATERBAR

NOT TO SCALE



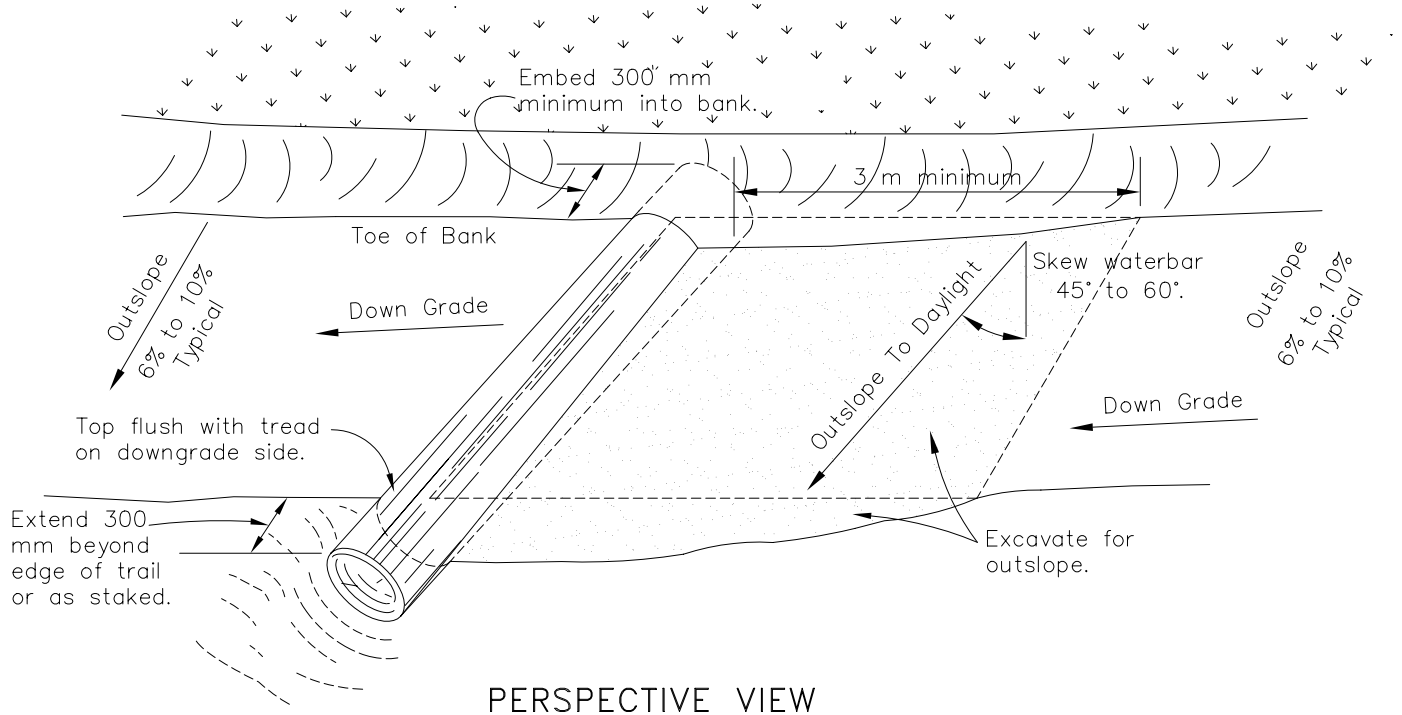
PERSPECTIVE VIEW



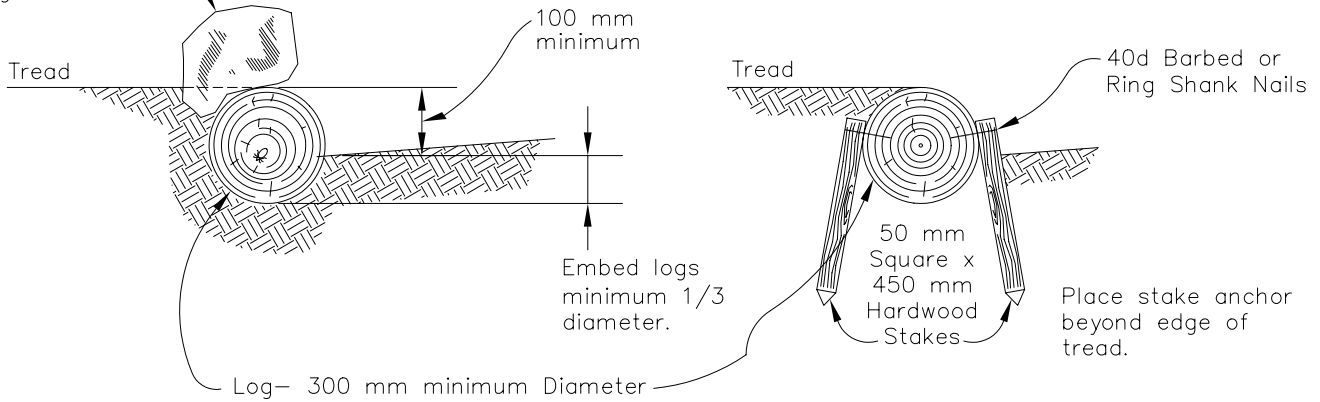
SECTION A-A

LOG OR TREATED TIMBER WATERBAR

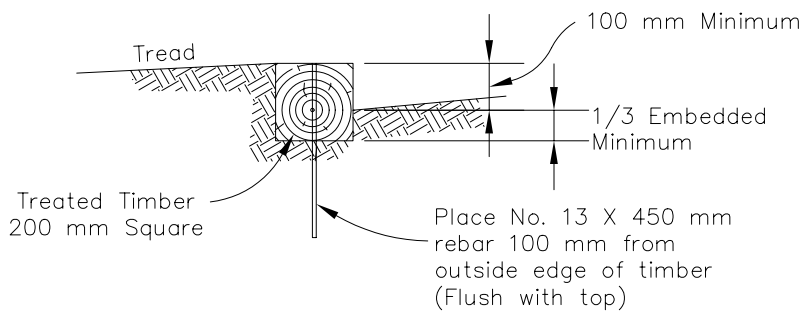
NOT TO SCALE



Place 50 kg (minimum) rock anchor beyond edge of tread.



LOG ANCHORS



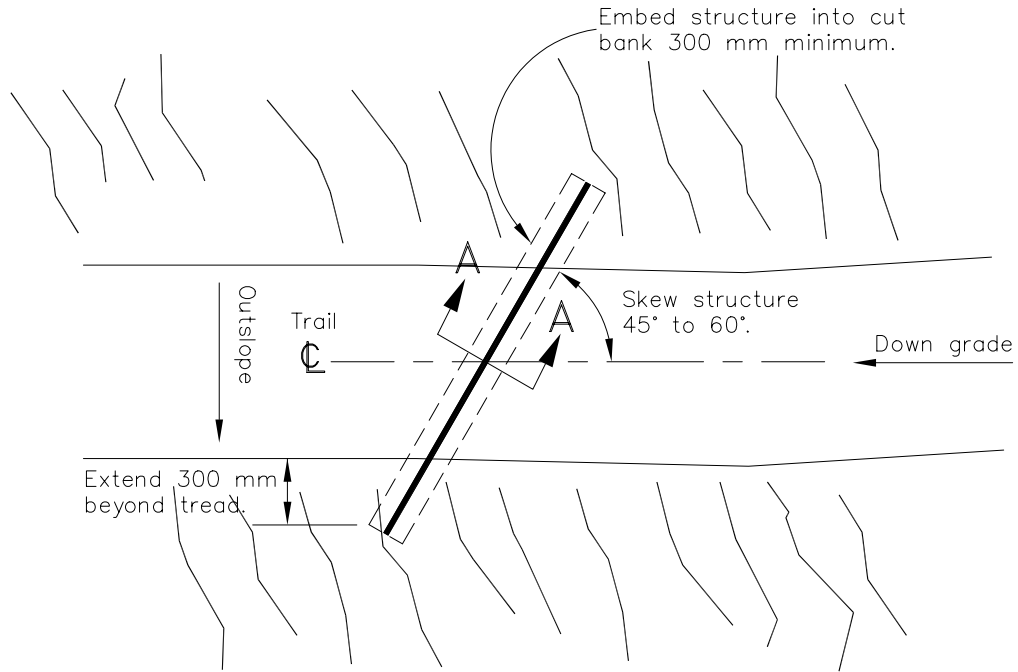
Preservative Treatment:

Net Retention _____ kg/m³

TREATED TIMBER ANCHOR

RUBBER BELTING WATERBAR

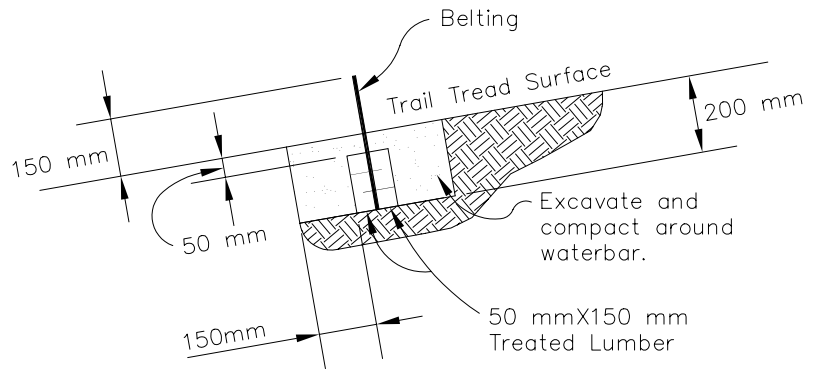
NOT TO SCALE



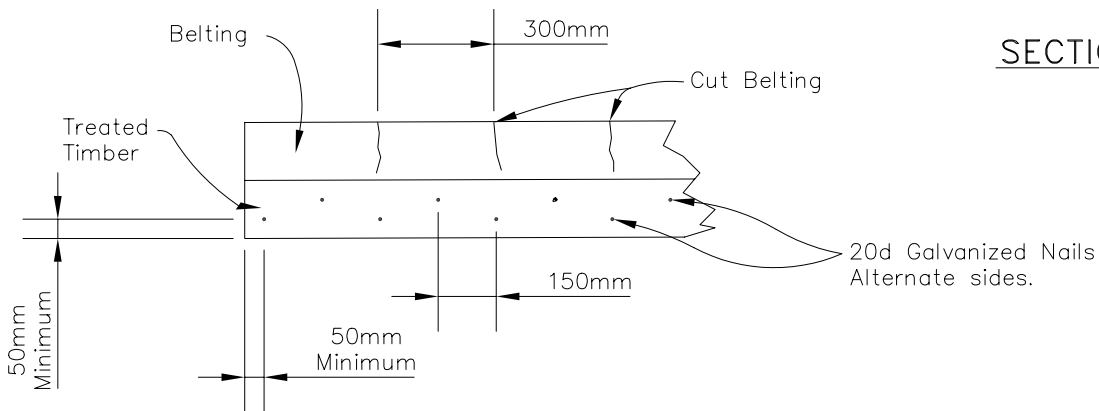
PLAN VIEW

Preservative Treatment:

Net Retention _____ kg/m³



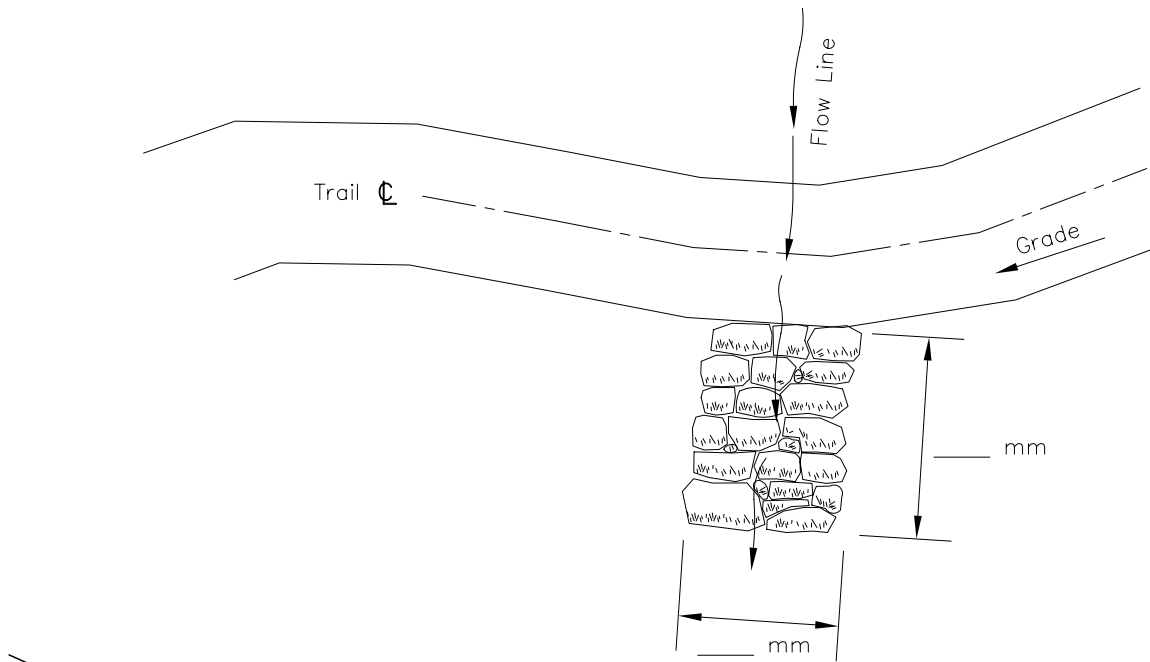
SECTION A-A



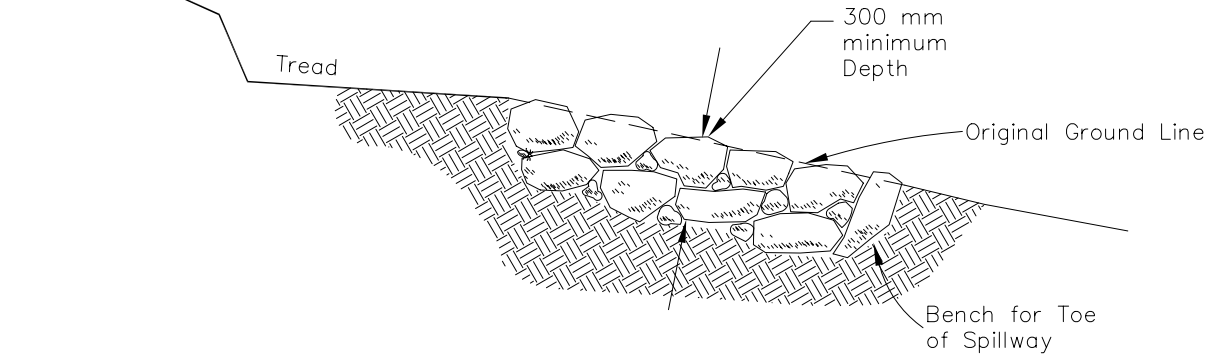
NAILING AND CUTTING DETAIL

ROCK SPILLWAY

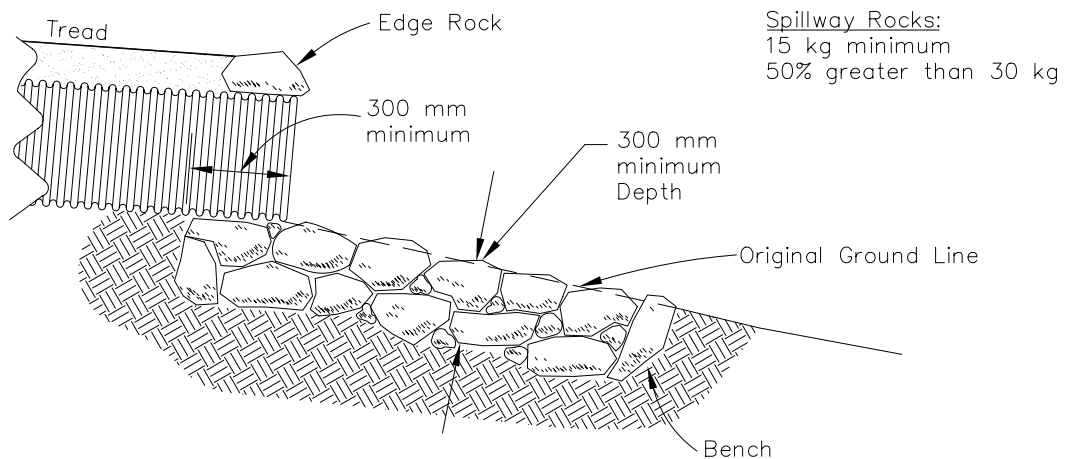
NOT TO SCALE



PLAN VIEW



TYPICAL CROSS SECTION
DRAINAGE DIP OR CROSS DRAINAGE

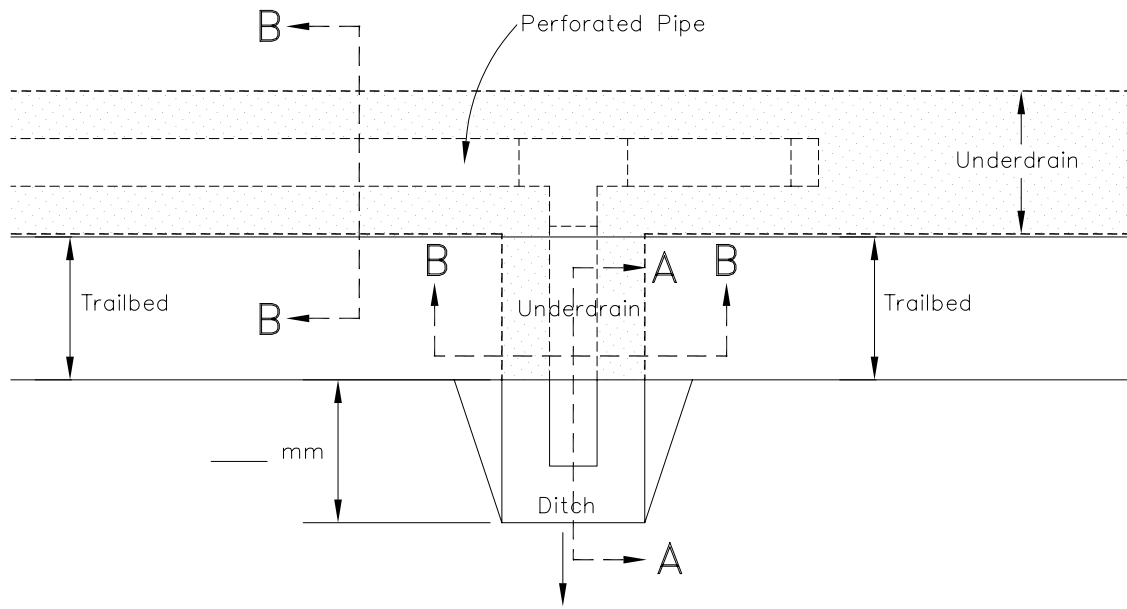


Spillway Rocks:
15 kg minimum
50% greater than 30 kg

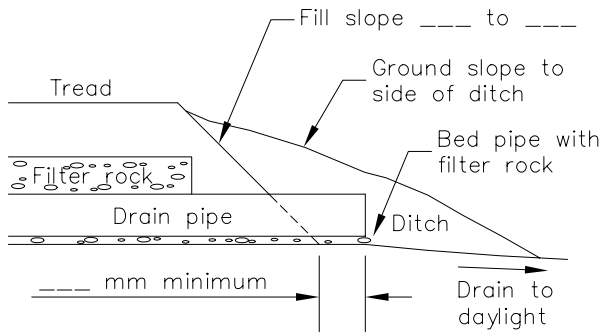
TYPICAL CULVERT
CROSS SECTION

UNDERDRAIN

NOT TO SCALE

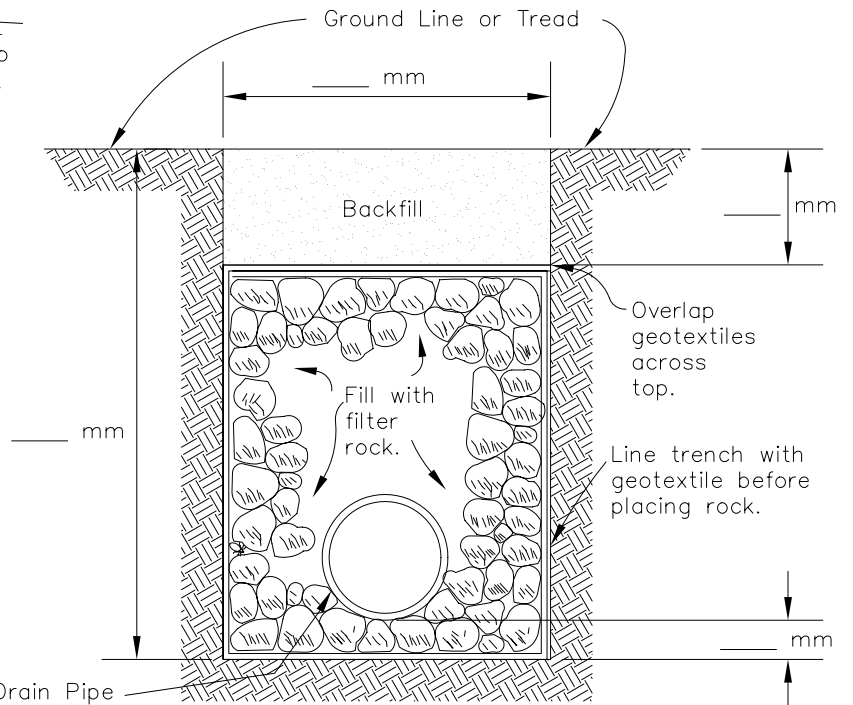


PLAN VIEW



SECTION A-A

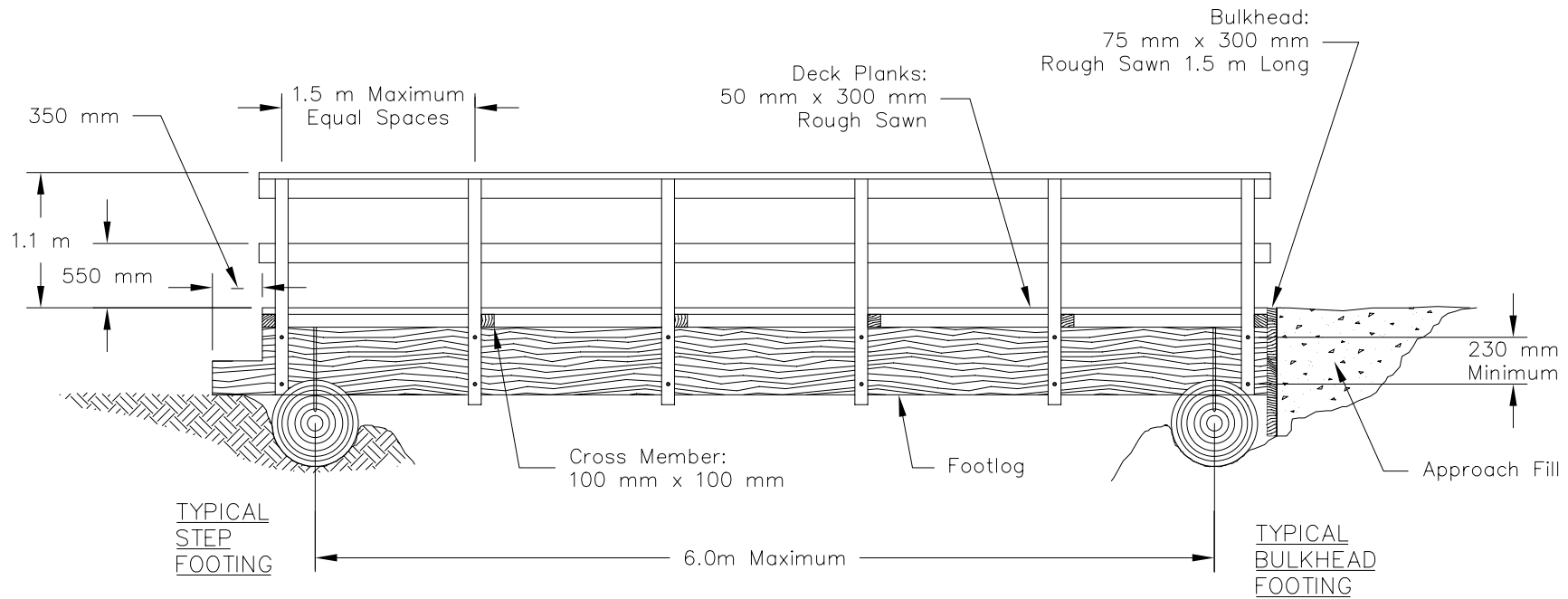
Filter Rocks:
Use clean, durable rock between 25 mm and 100 mm in diameter.



SECTION B-B

FOOT LOG TRAIL BRIDGE WITH 2 HANDRAILS

NOT TO SCALE



SIDE VIEW

Notes:

- This drawing applies to all species except aspen, cottonwood and cedar.
- Lap log a maximum of 70 mm for rail posts and cross members.
- Pre-drill holes for lag screws and insert by turning with a wrench. Do not drive with a hammer.
- Peel all Logs.

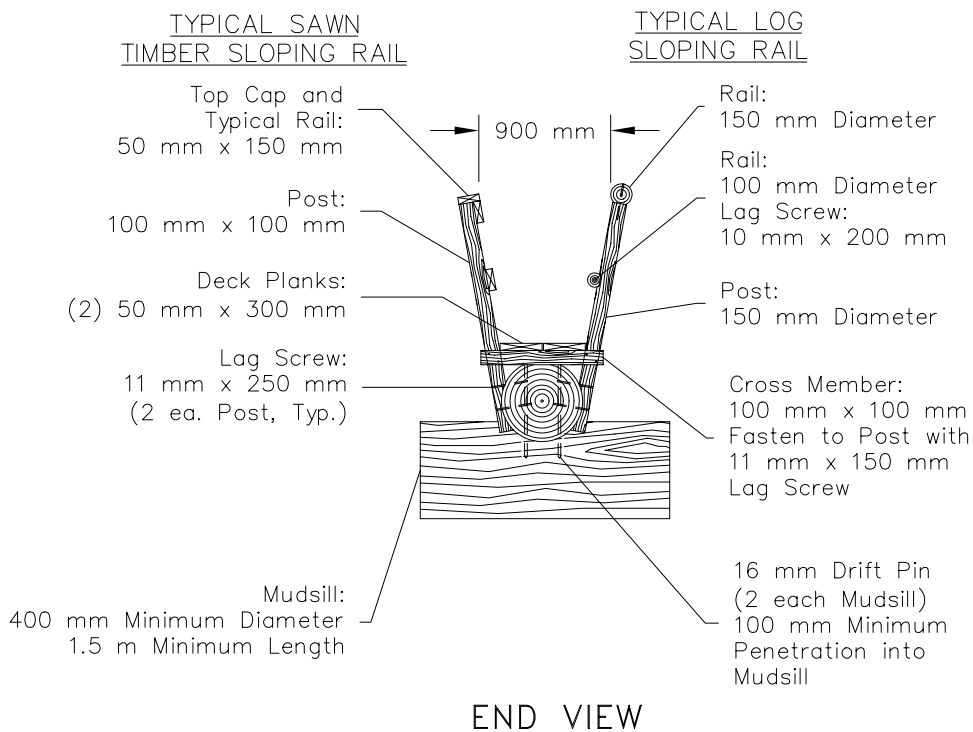
3/97

931-1a

Member	Species	Treatment Type	Minimum Retention (kg/m ³)
Rail			
Bulkhead			
Deck Plank			

FOOT LOG TRAIL BRIDGE WITH 2 HANDRAILS

NOT TO SCALE



Minimum Log Diameter at Midspan	
Span m	Minimum Diameter mm
> 5	350
5.0	375
5.5	425
6.0	475

PROJECT DATA:

Type of Rail: _____

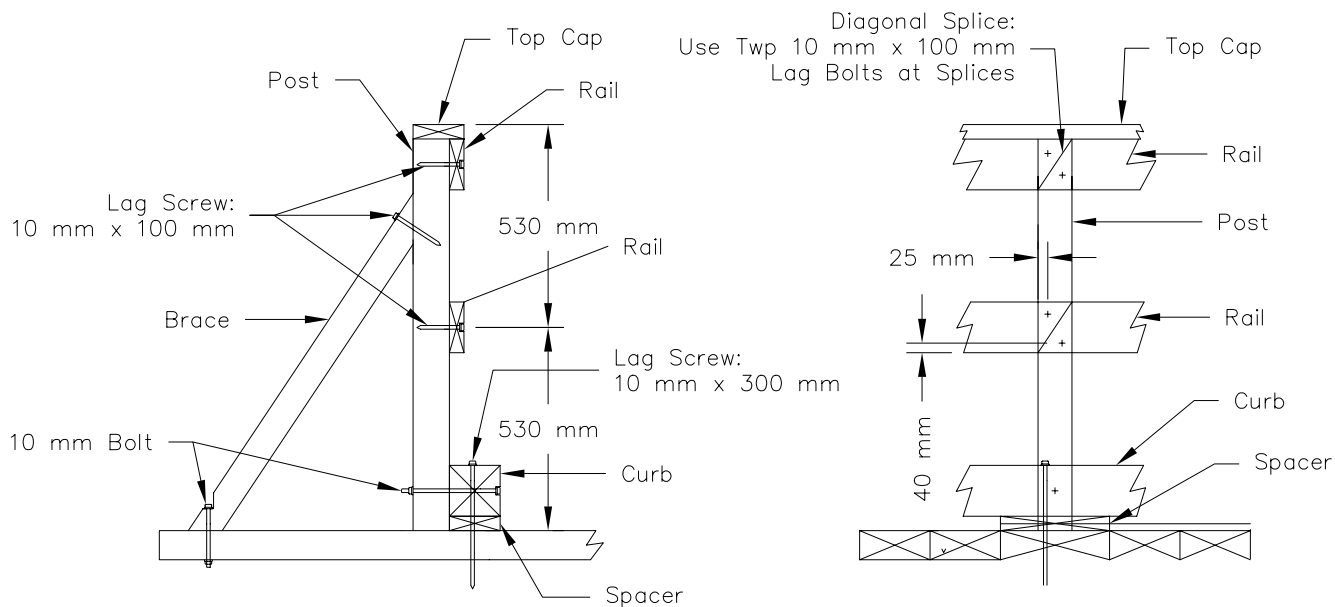
Ftg Type at Begin of Bridge _____

Ftg Type at End of Bridge _____

Fasten each cross member to footlog with 2-20d nails.

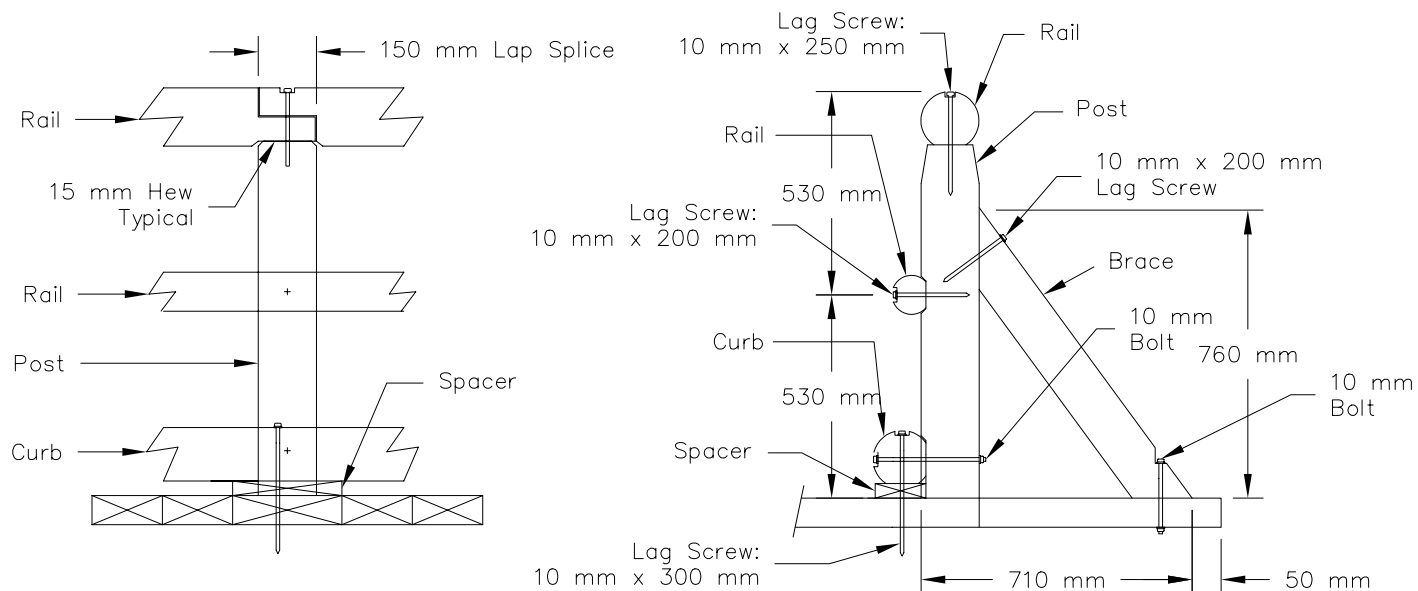
OPTIONAL DECK AND HANDRAILS

NOT TO SCALE



SAWN TIMBER RAIL ALTERNATIVE

NOTE:
±25 mm Tolerance for Diameters
of Rails, Posts, & Curbs.

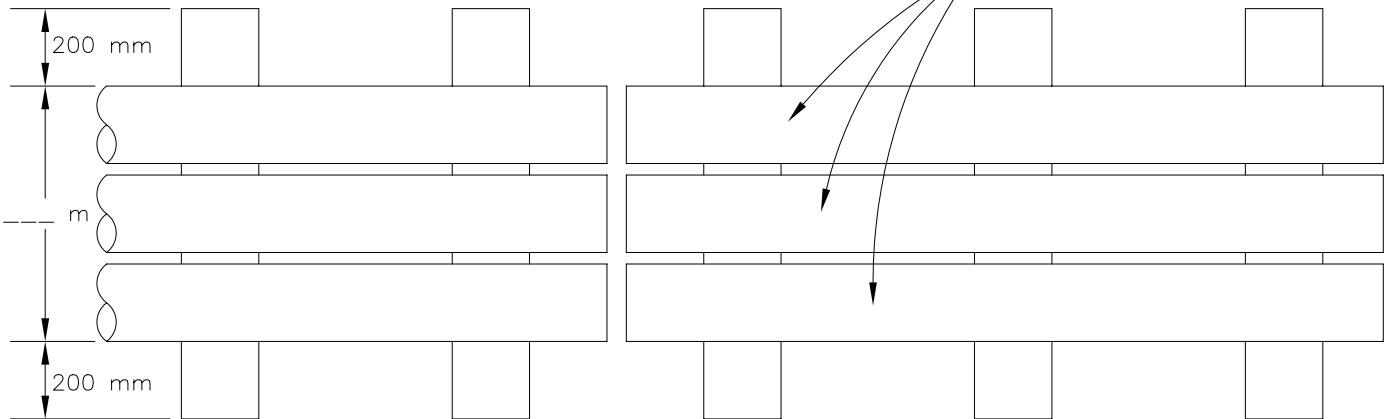


LOG RAIL ALTERNATIVE

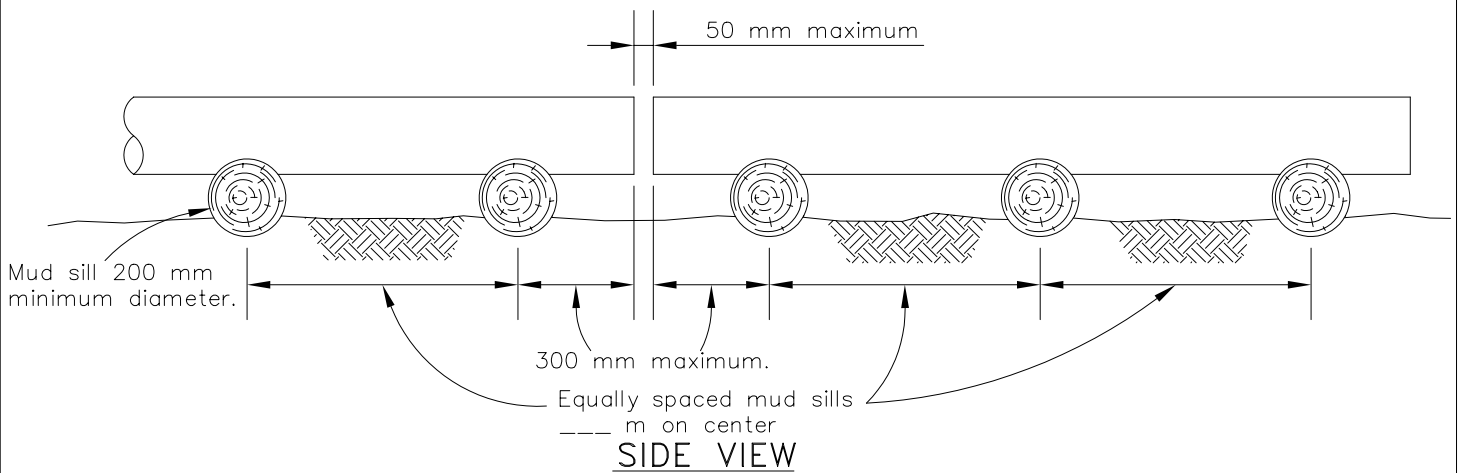
PUNCHEON WITHOUT DECKING

NOT TO SCALE

Logs with tops flattened or sawn timber.

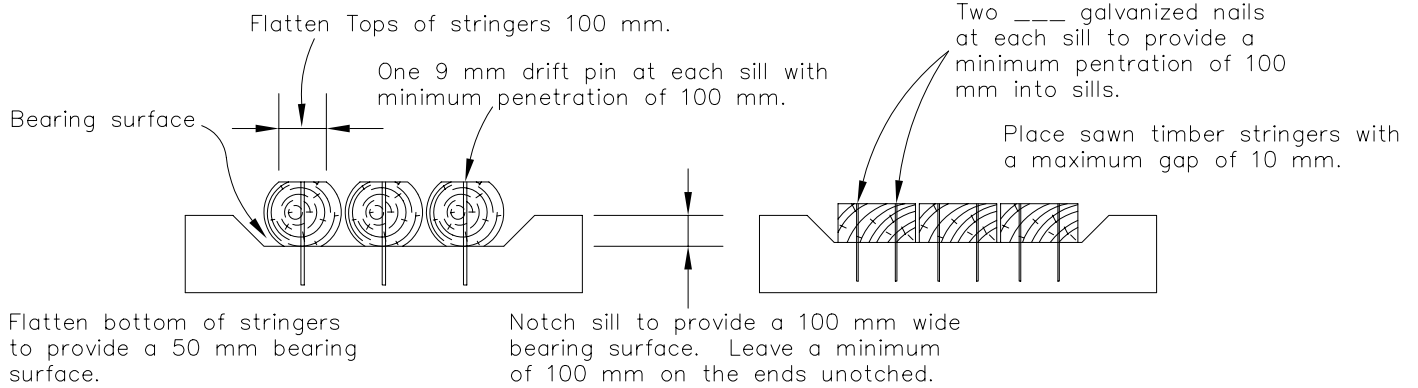


PLAN VIEW



SIDE VIEW

Place round log stringers as close together as possible with no gaps greater than 50 mm.



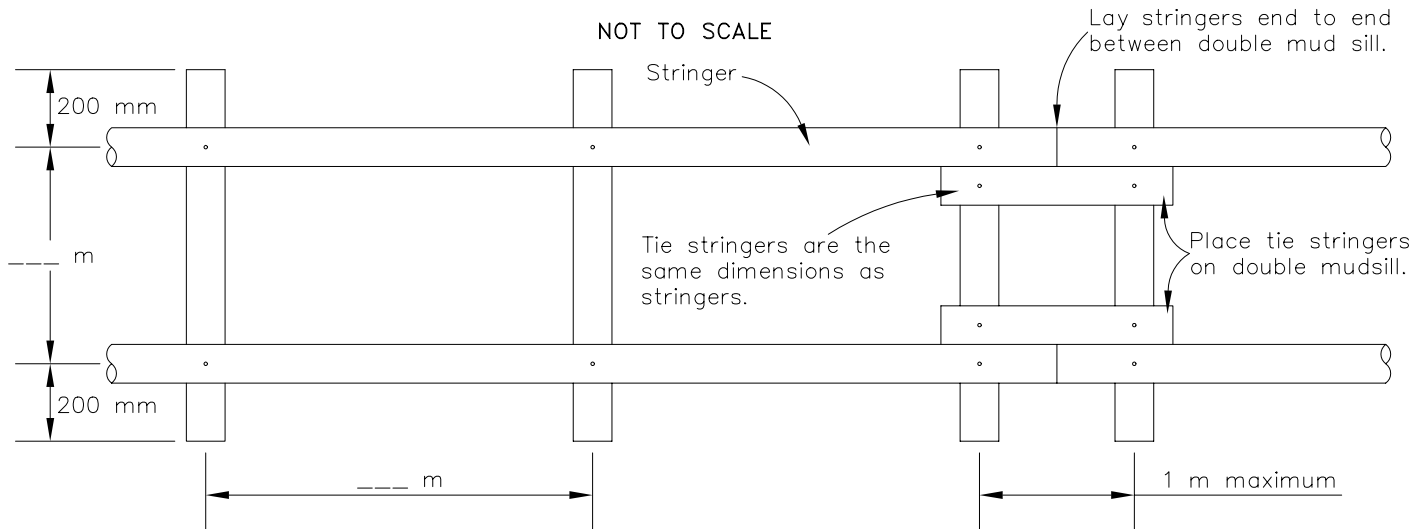
END VIEW
LOG STRINGER

END VIEW
SAWN TIMBER STRINGER

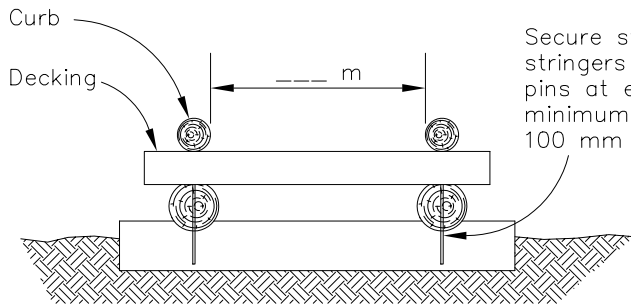
MEMBER	TYPE	SPECIES	SIZE (mm)	TREATMENT TYPE	MINIMUM RETENTION (kg/m ³)
Stringer					
Deck					
Bulkhead					

PUNCHEON WITH DECKING

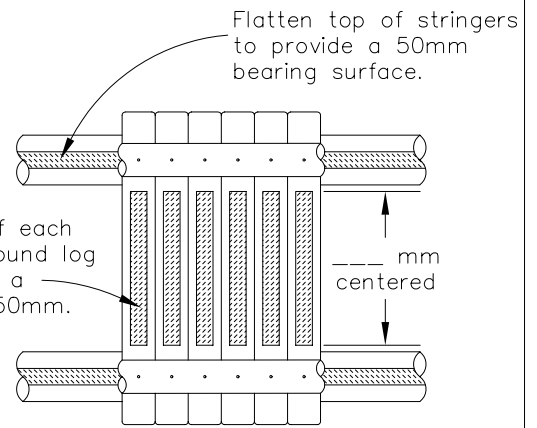
NOT TO SCALE



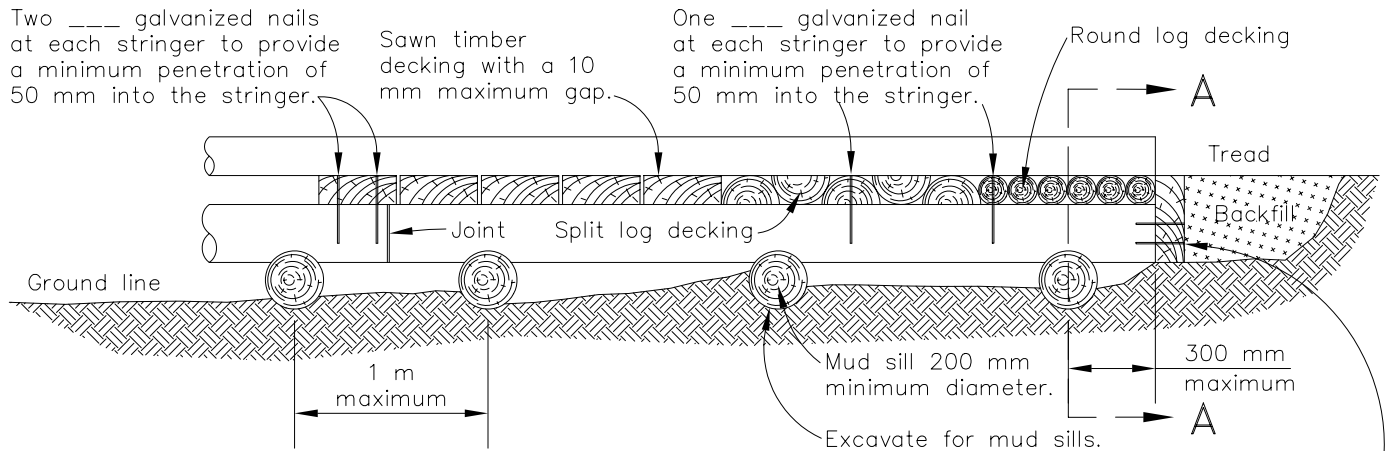
MUD SILL AND STRINGER LAYOUT



SECTION A-A



PLAN VIEW



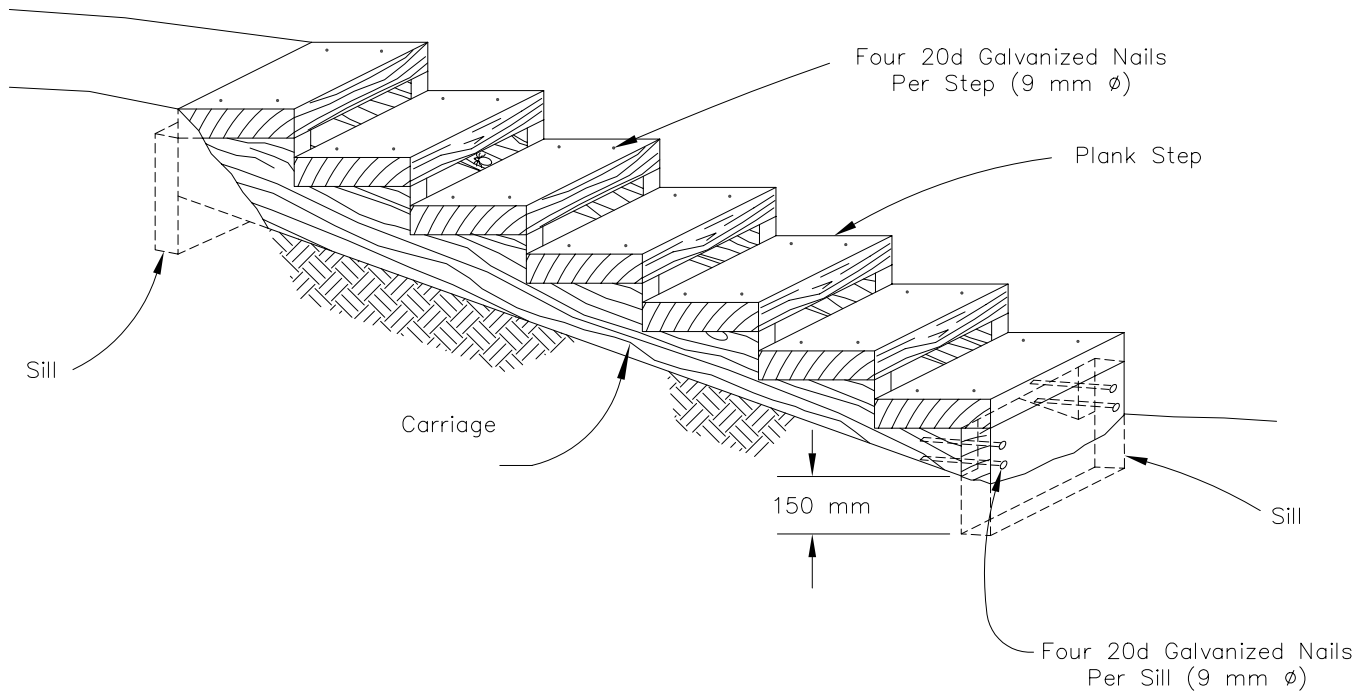
SECTION VIEW

Bulkhead:
Secure with a minimum of two galvanized spikes with a minimum penetration of 50 mm into the stringer.

MEMBER	TYPE	SPECIES	SIZE (mm)	TREATMENT TYPE	MINIMUM RETENTION (kg/m ³)
Stringer					
Deck					
Curb					
Bulkhead					

PLANK STAIRWAY

NOT TO SCALE



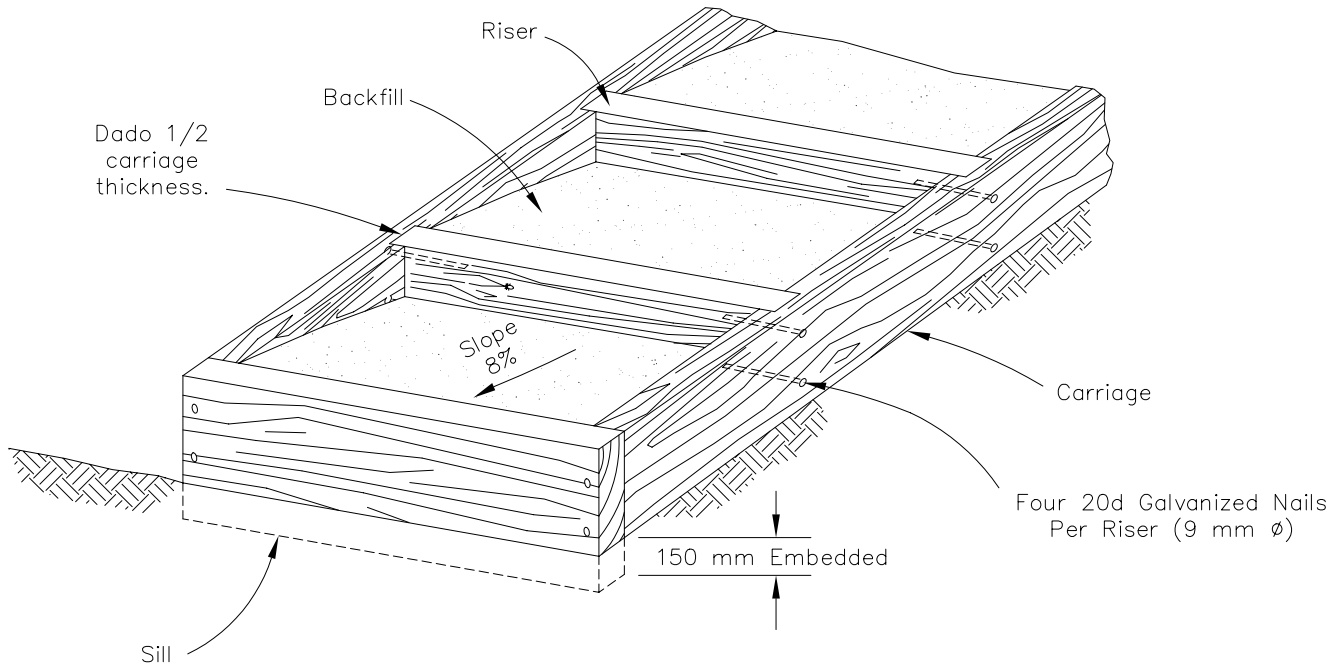
Preservative Treatment:

Net Retention _____ kg/m³

Location	Step Rise	Step Run	Width	Carriage Length	Carriage/Plank Step Dimensions	Sill Dimensions	Species

CRIB LADDER STAIRWAY

NOT TO SCALE



Preservative Treatment: _____

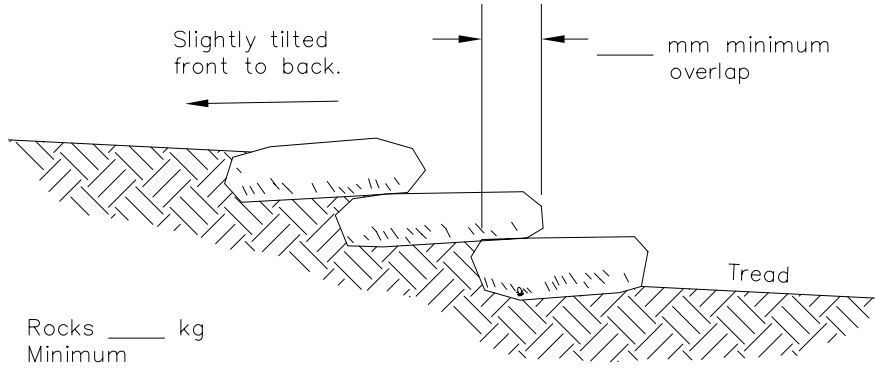
Net Retention _____ kg/m³

STAIRWAY DIMENSIONS

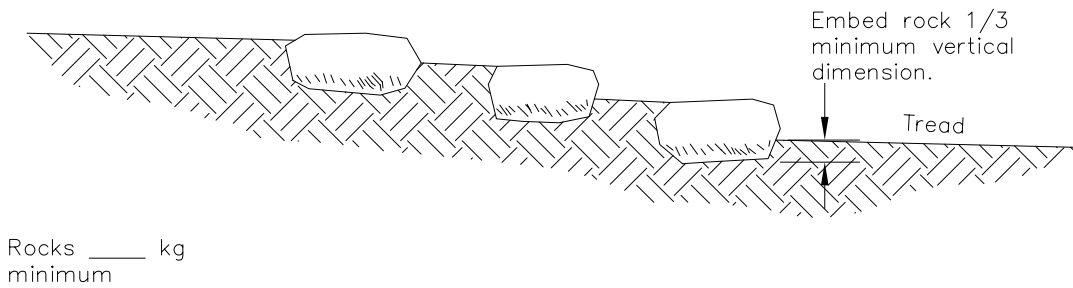
Location	Step Rise	Step Run	Width	Carriage Length	Carriage/Plank Step Dimensions	Sill Dimensions	Species

ROCK STAIRWAYS

NOT TO SCALE



OVERLAPPING ROCK STAIRWAY

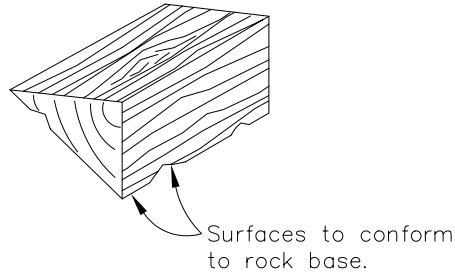


ROCK RISER STAIRWAY

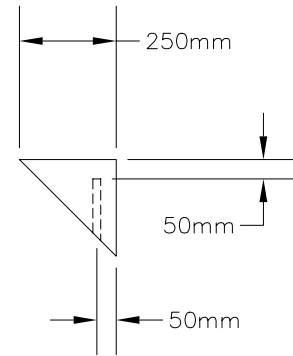
Location	Type	Maximum Step Rise	Maximum Step Run	Width

PINNED STAIRWAY

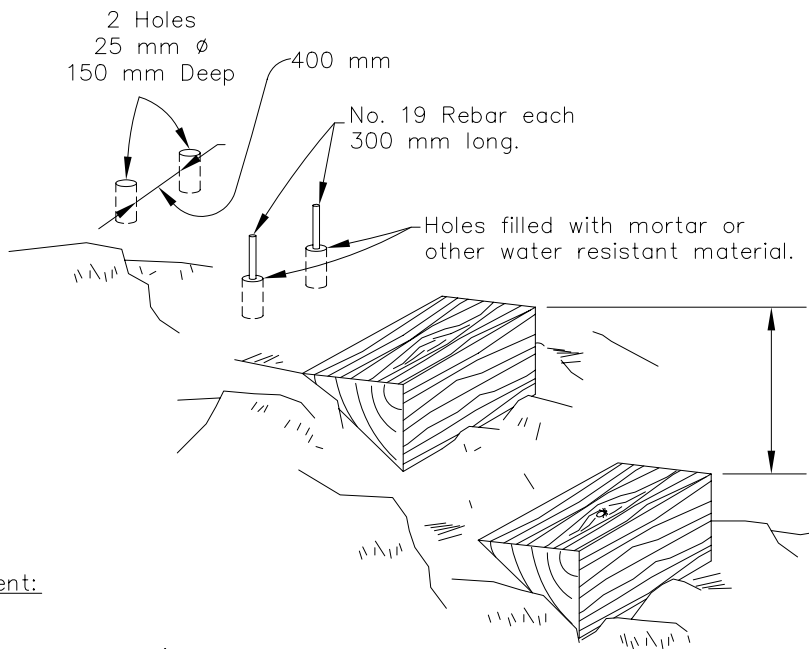
NOT TO SCALE



STEP



TYPICAL END VIEW OF TREADS



Preservative Treatment:

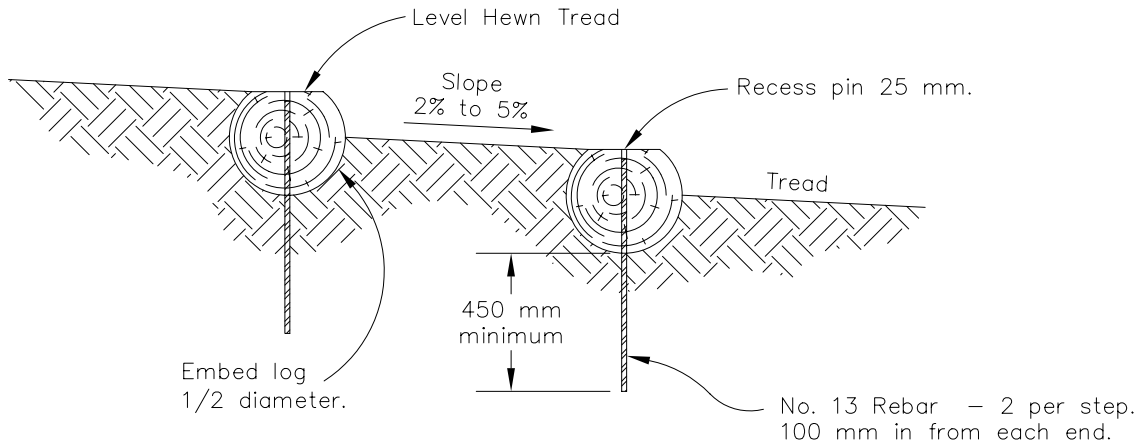
Net Retention _____ kg/m³

Shape treads and place over rebar to provide a firm, solid contact with the rock. Tilt tread front to back 2%.

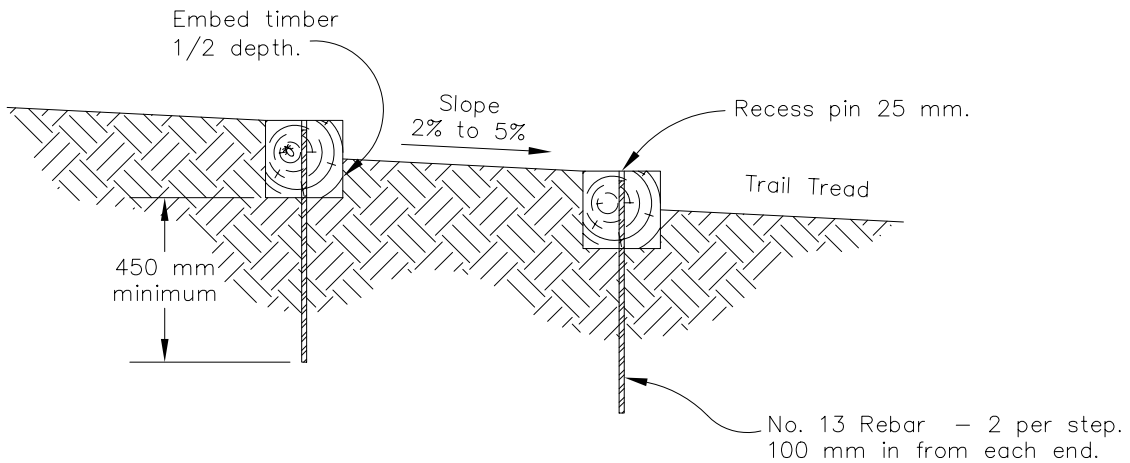
Location	Step Rise	Step Run	Width	Species

LOG AND TREATED TIMBER RISER STAIRWAY

NOT TO SCALE



LOG RISER STAIRWAY



TREATED TIMBER RISER STAIRWAY

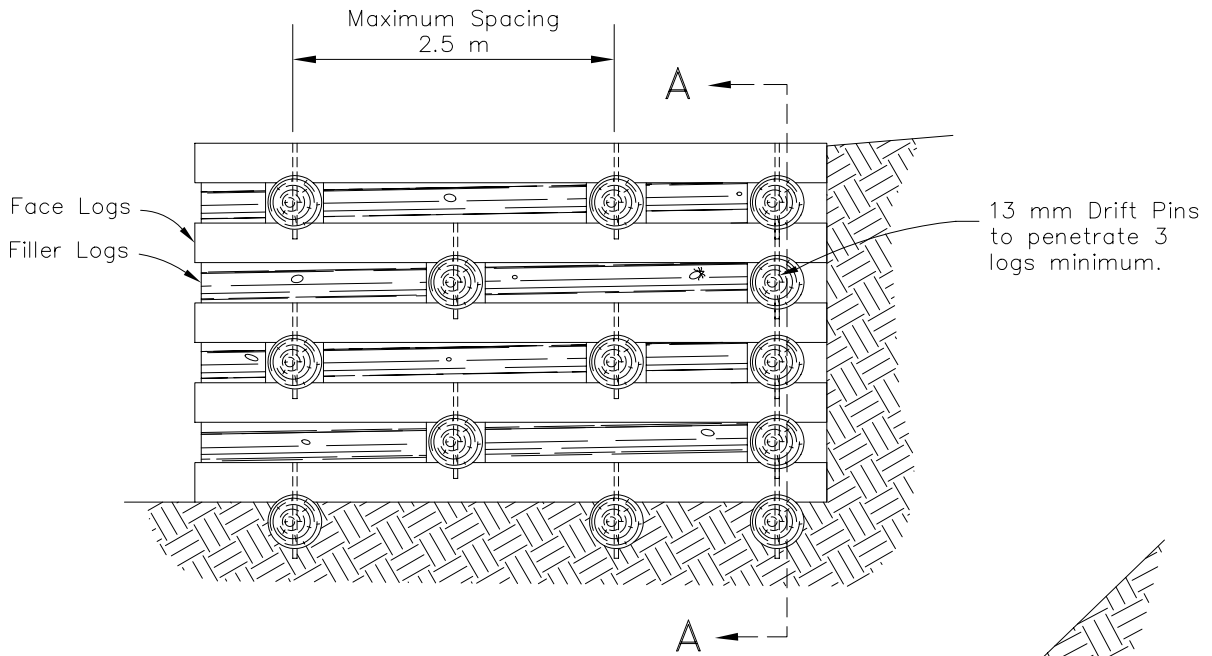
Preservative Treatment:

Net Retention _____ kg/m³

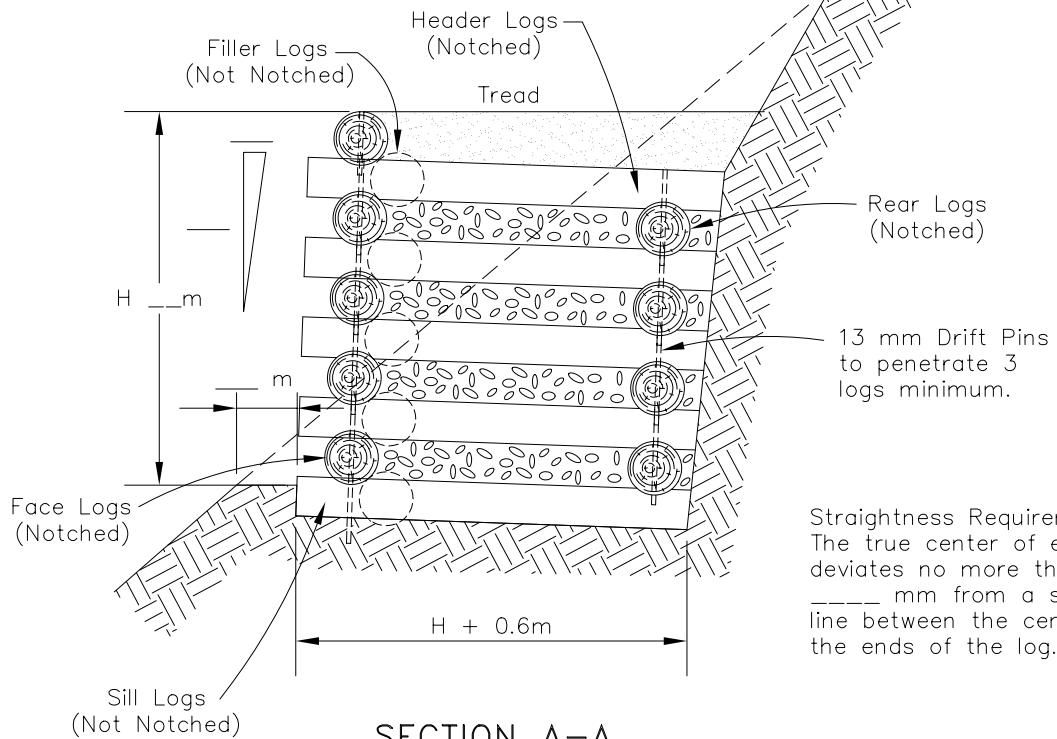
Location	Step Rise	Step Run	Step Width	Riser Material Type	Riser Material Dimensions	Species

LOG RETAINING WALL

NOT TO SCALE



FRONT VIEW



SECTION A-A

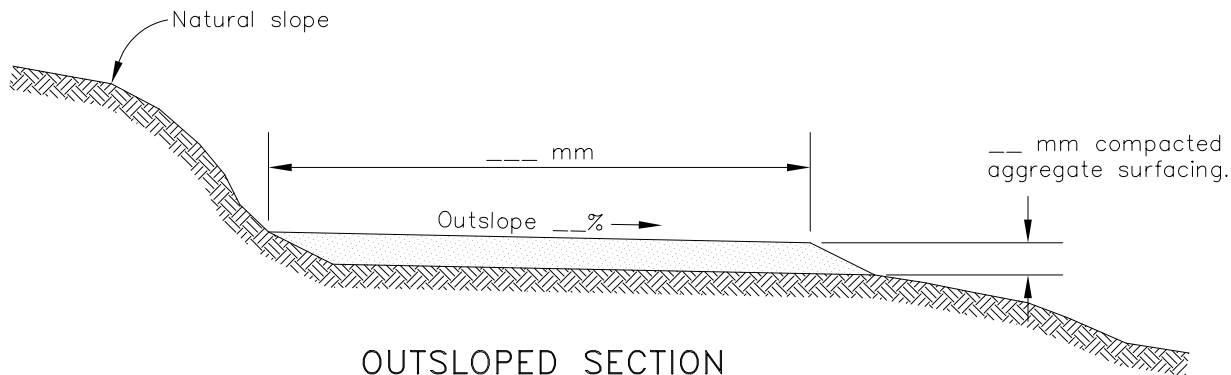
LOCATION	LOGS	SPECIES	LENGTH (m)		SIZE (mm)
			Minimum	Maximum	
	Sill Logs				
	Filler Logs				
	Header Logs				
	Rear Logs				
	Face Logs				

Preservative Treatment:

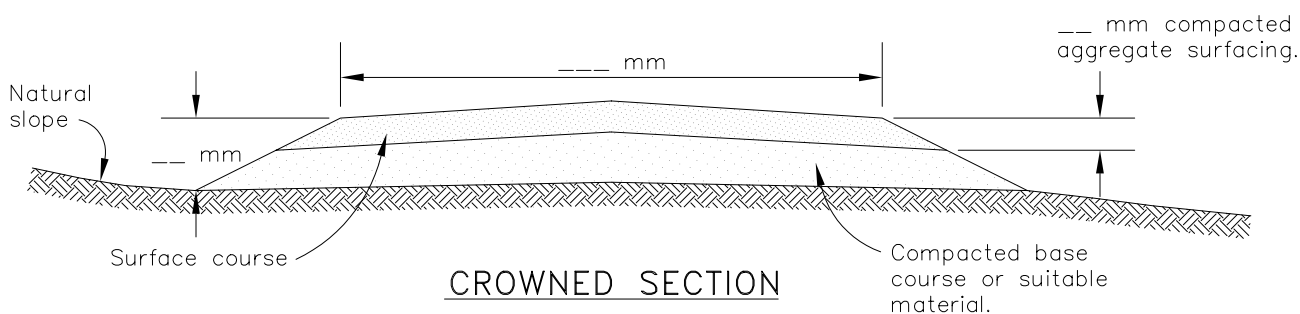
Net Retention _____ kg/m³

AGGREGATE SURFACING

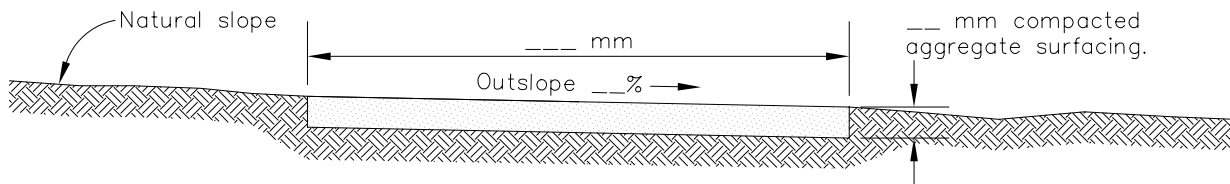
NOT TO SCALE



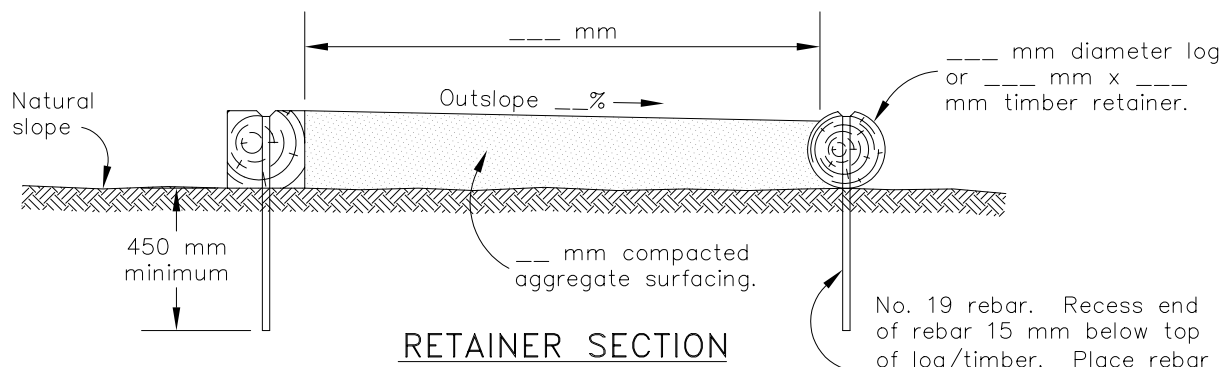
OUTSLOPED SECTION



CROWNED SECTION



EXCAVATED SECTION

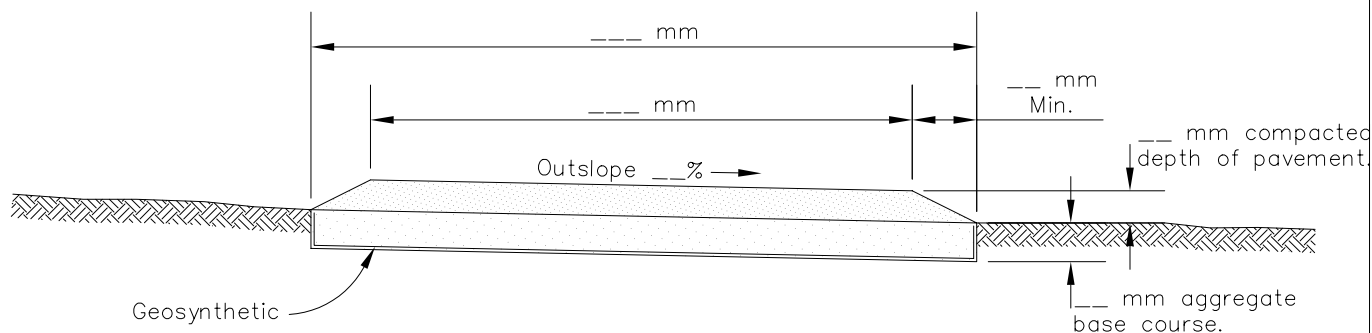


RETAINER SECTION

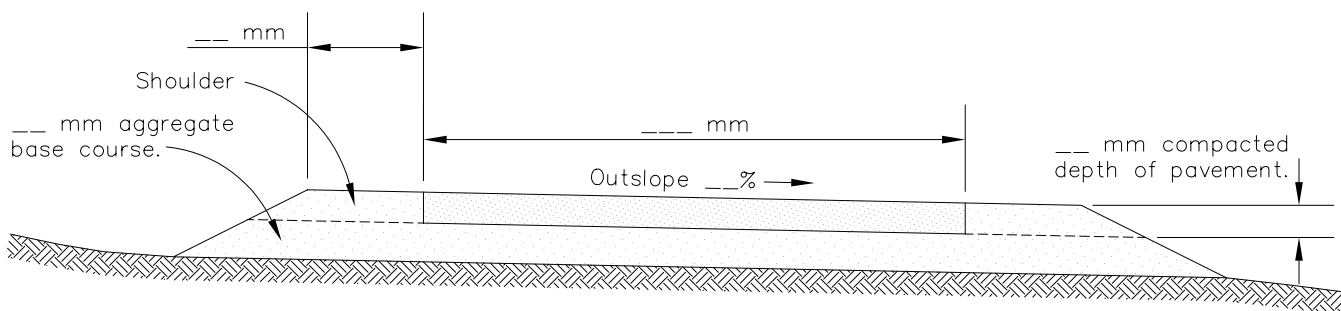
LOCATION	TREAD DEPTH (mm)	TREAD WIDTH (mm)	RETAINER MATERIAL	RETAINER SPECIES	SIZE (mm)	TYPE OF TREATMENT	MINIMUM RETENTION kg/m ³

BITUMINOUS SURFACING

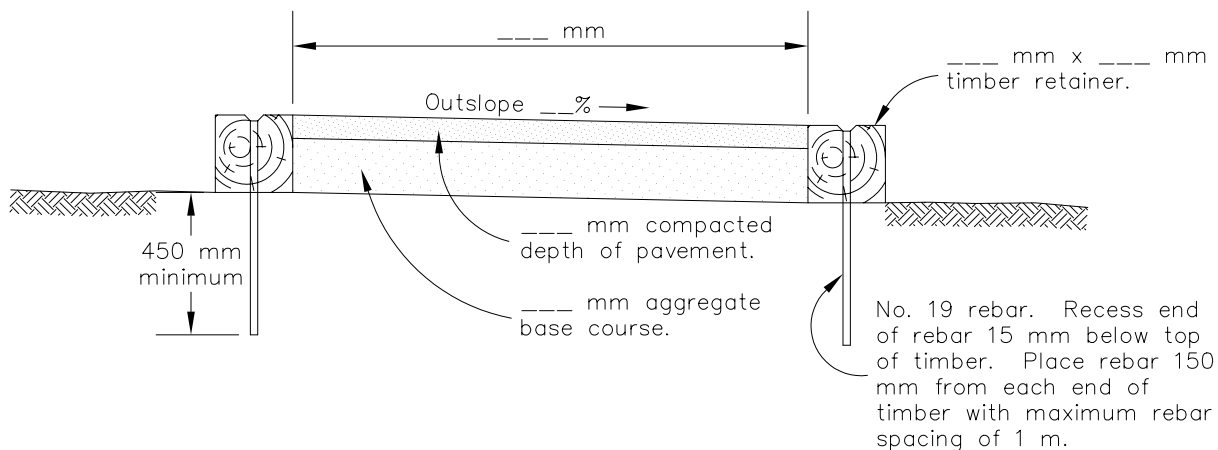
NOT TO SCALE



BITUMINOUS SURFACING – NO SHOULDERS



BITUMINOUS SURFACING WITH SHOULDERS



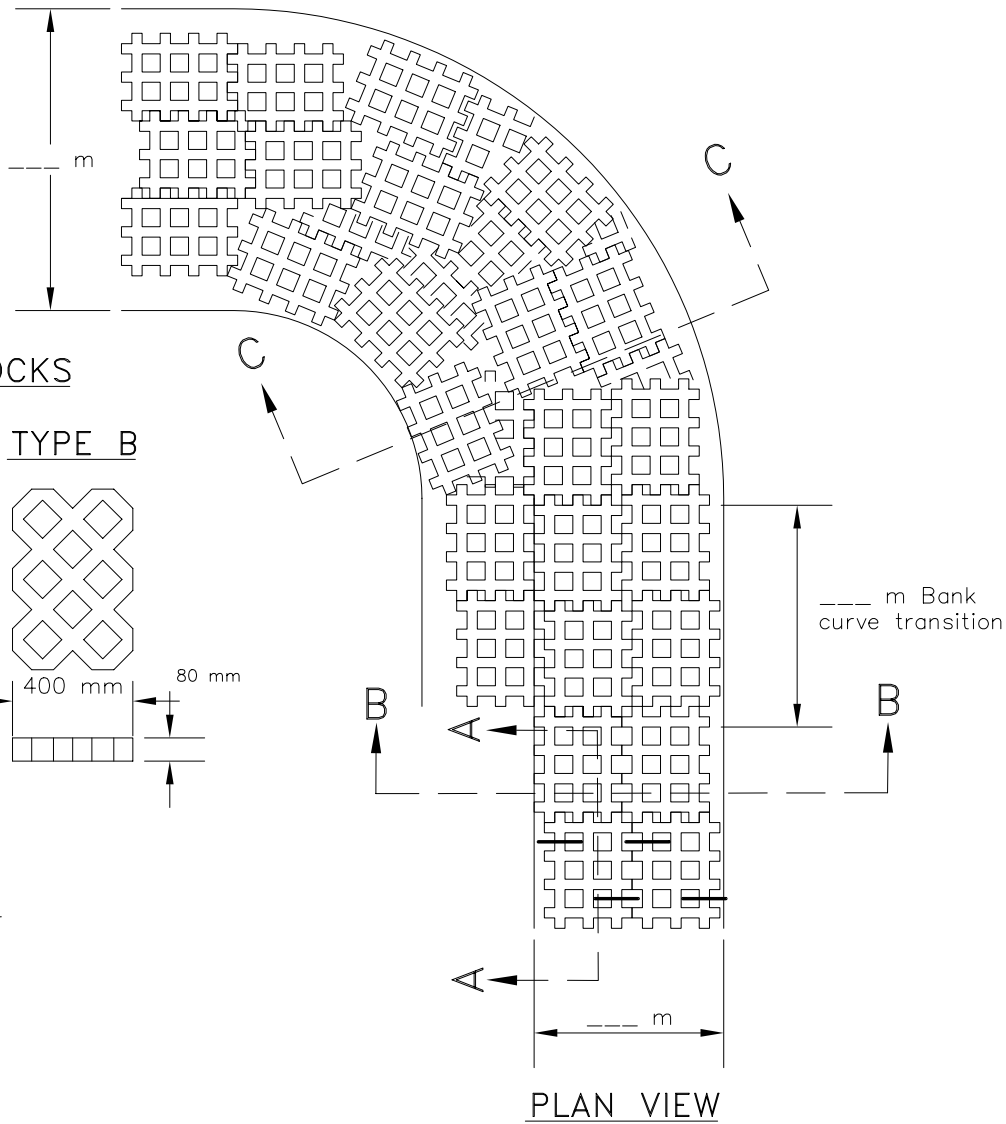
BITUMINOUS SURFACING WITH RETAINERS

RETAINER NOTES:

LOCATION	MATERIAL	SPECIES	SIZE (mm)	TYPE OF TREATMENT	MINIMUM RETENTION kg/m ³

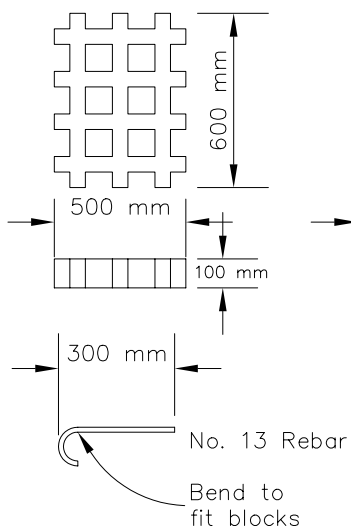
GRID PAVEMENT UNITS

NOT TO SCALE

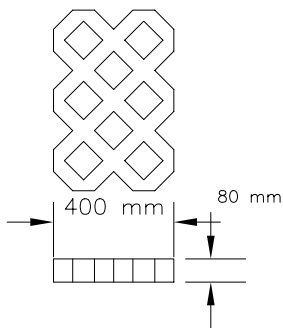


TYPICAL BLOCKS

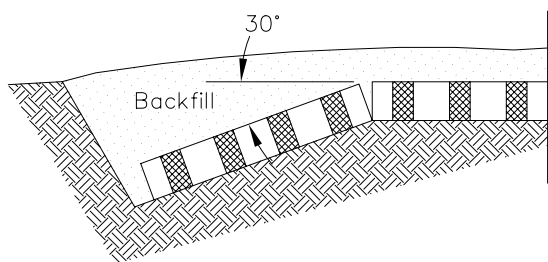
TYPE A



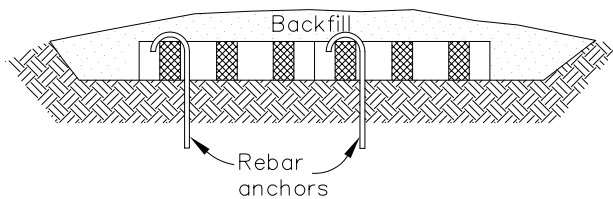
TYPE B



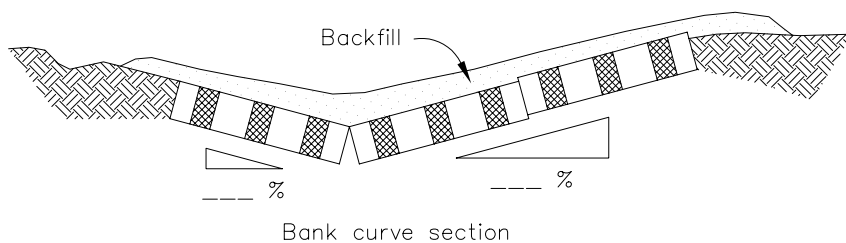
ANCHOR DETAIL



SECTION A-A



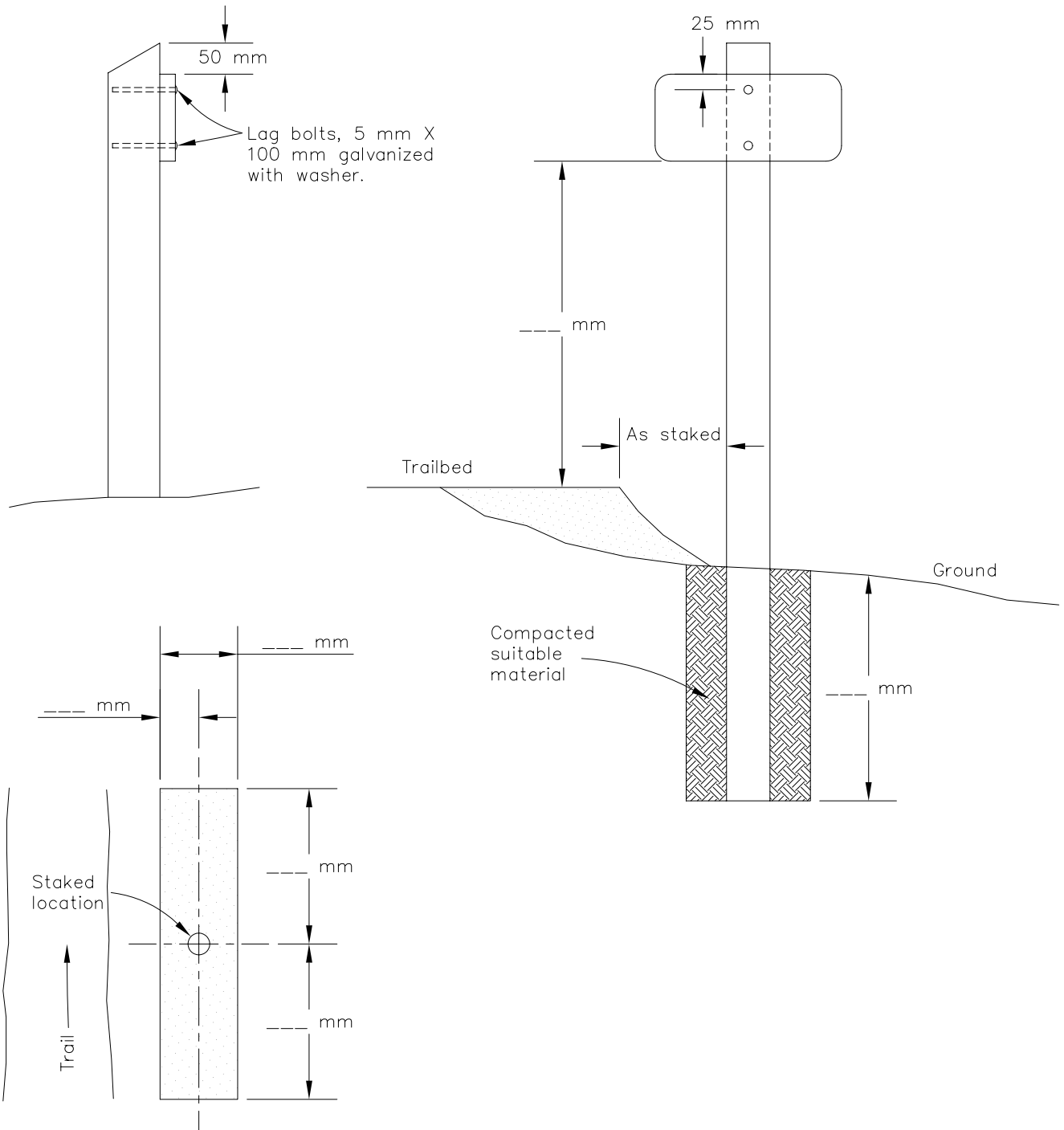
SECTION B-B



SECTION C-C

SIGN AND POST INSTALLATION

NOT TO SCALE



Placement tolerance within shaded area for avoiding obstacles.

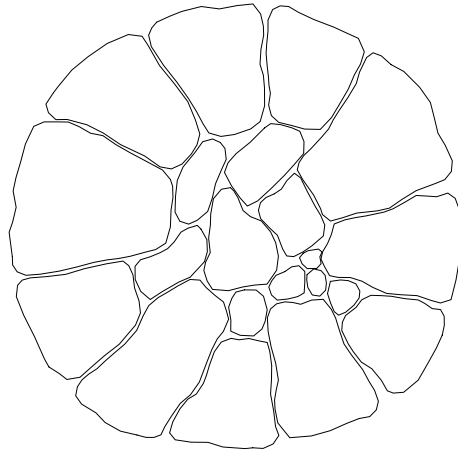
Preservation type _____

Minimum net retention _____

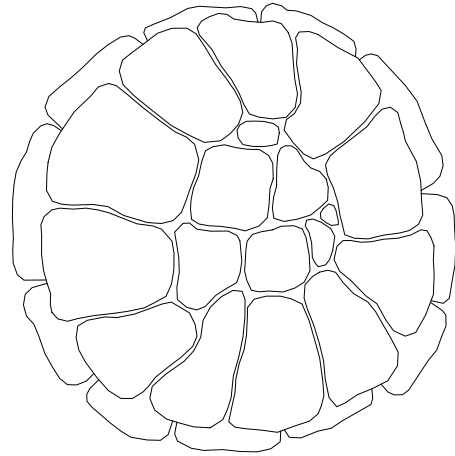
POSTS			SIGN
LOCATION	MATERIAL	SIZE (mm)	

ROCK CAIRN CONSTRUCTION

NOT TO SCALE

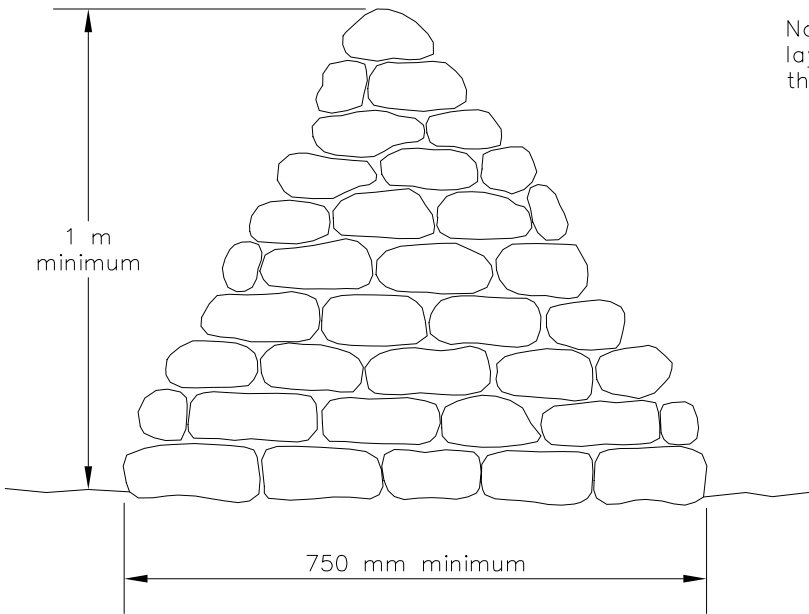


FIRST LAYER



SECOND LAYER

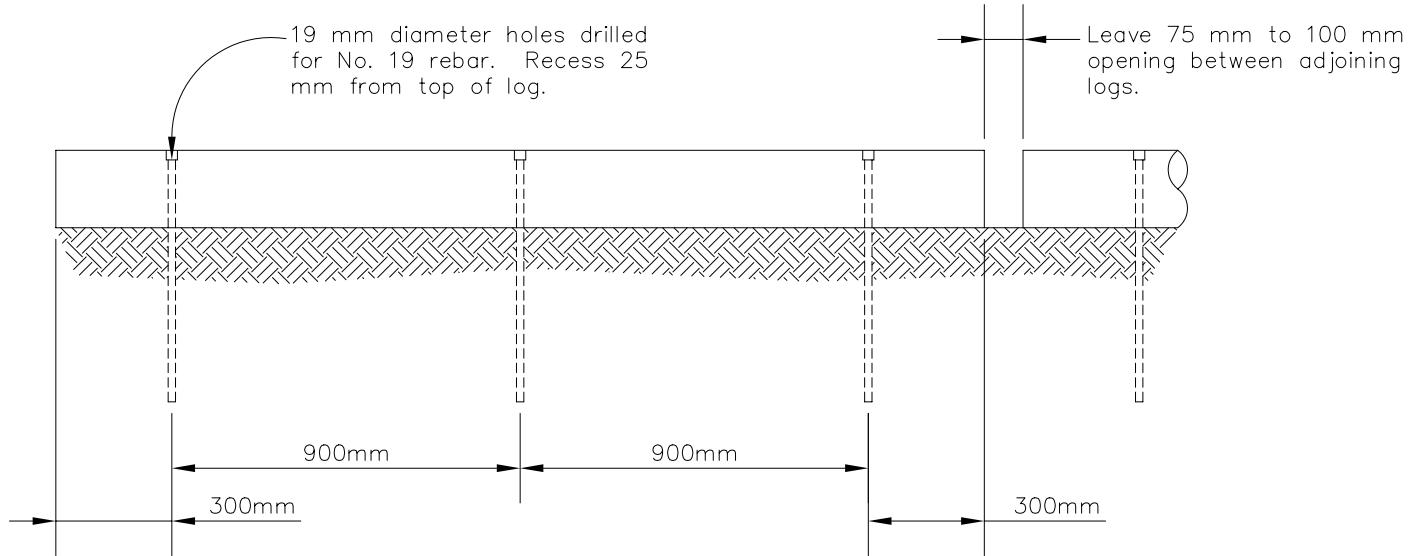
Note joints of first layer are bridged by the second.



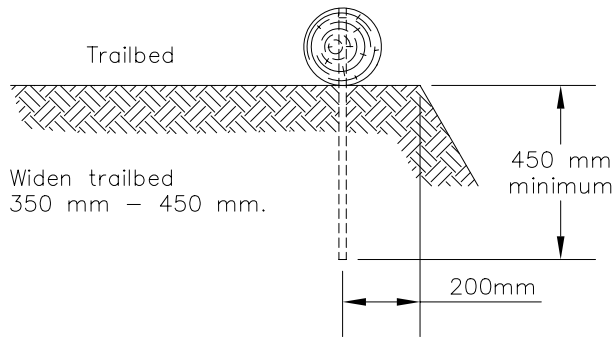
LOCATIONS

LOG BARRIER

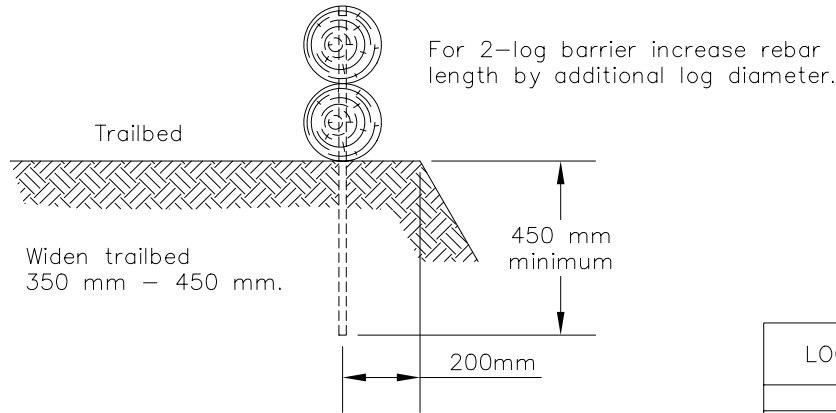
NOT TO SCALE



FRONT VIEW



END VIEW
ONE LOG

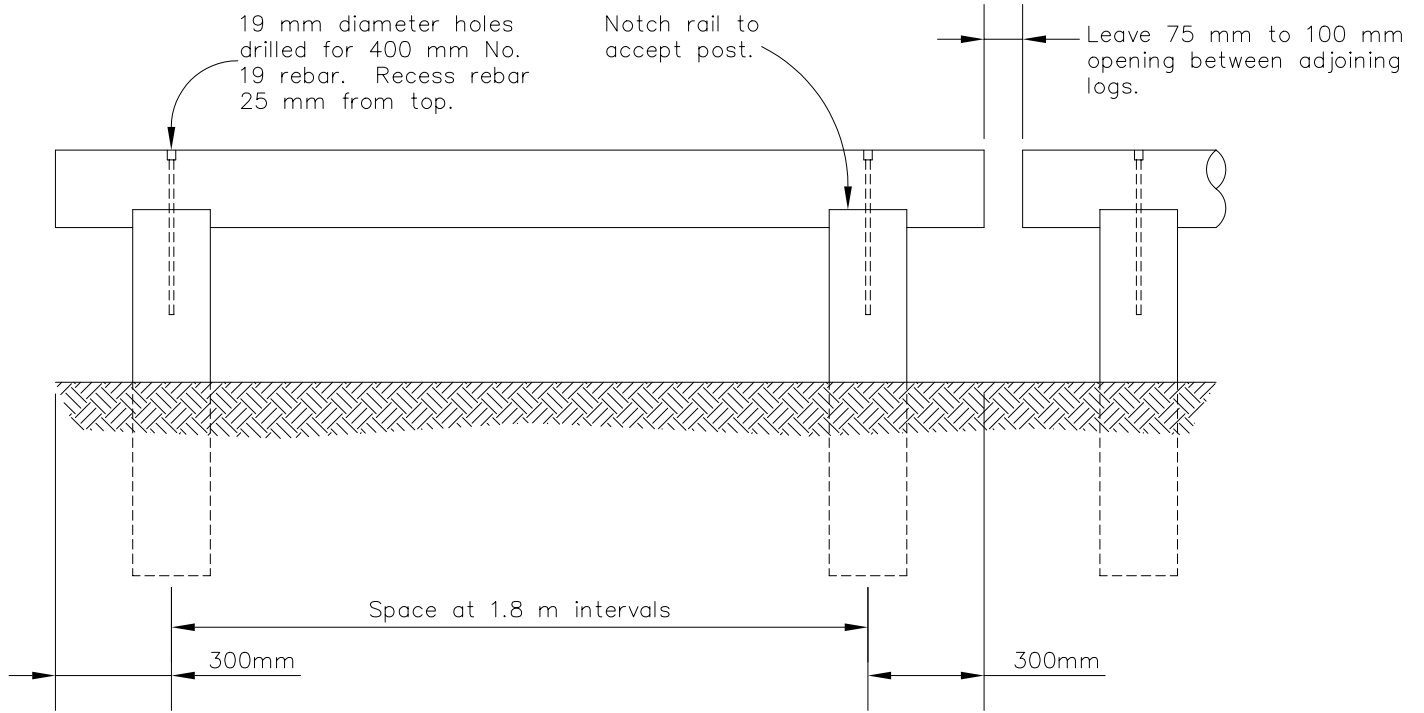


END VIEW
TWO LOG

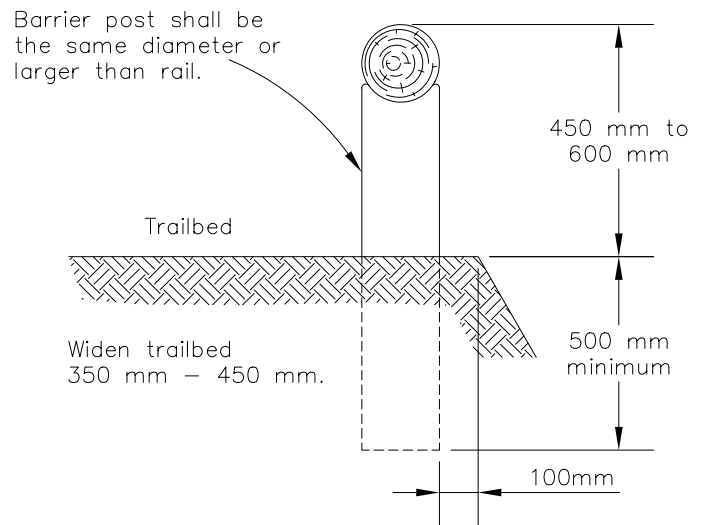
LOCATION	MATERIAL	DIAMETER (mm)

LOG BARRIER ON POSTS

NOT TO SCALE



FRONT VIEW

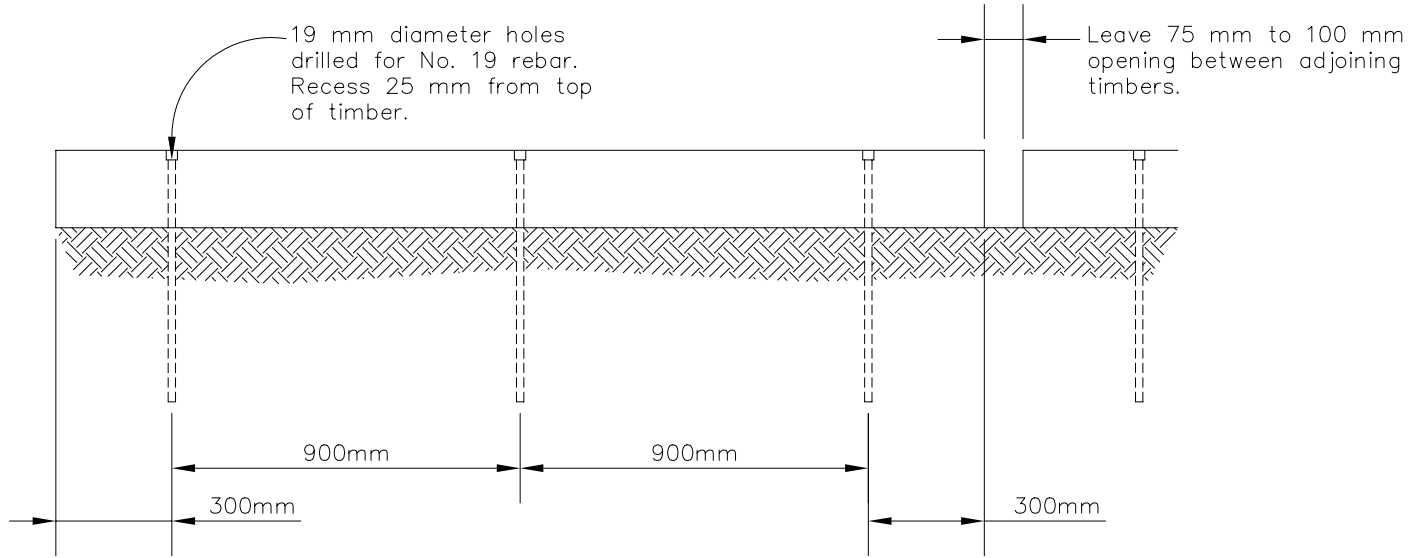


END VIEW

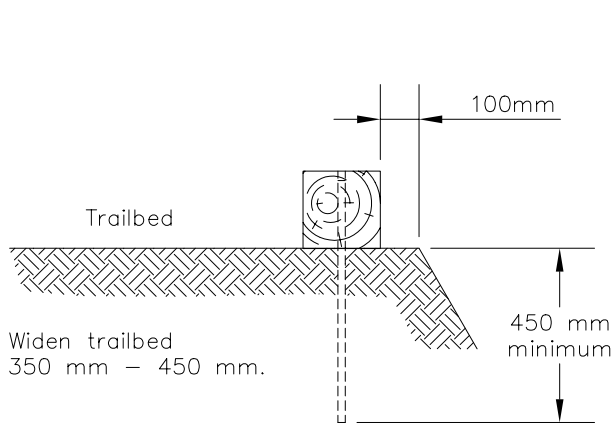
LOCATION	RAIL DIAMETER (mm)	SPECIES

TREATED TIMBER BARRIER

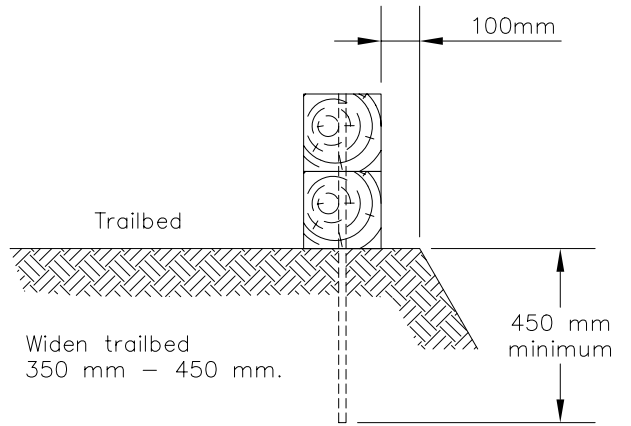
NOT TO SCALE



FRONT VIEW



END VIEW ONE TIMBER

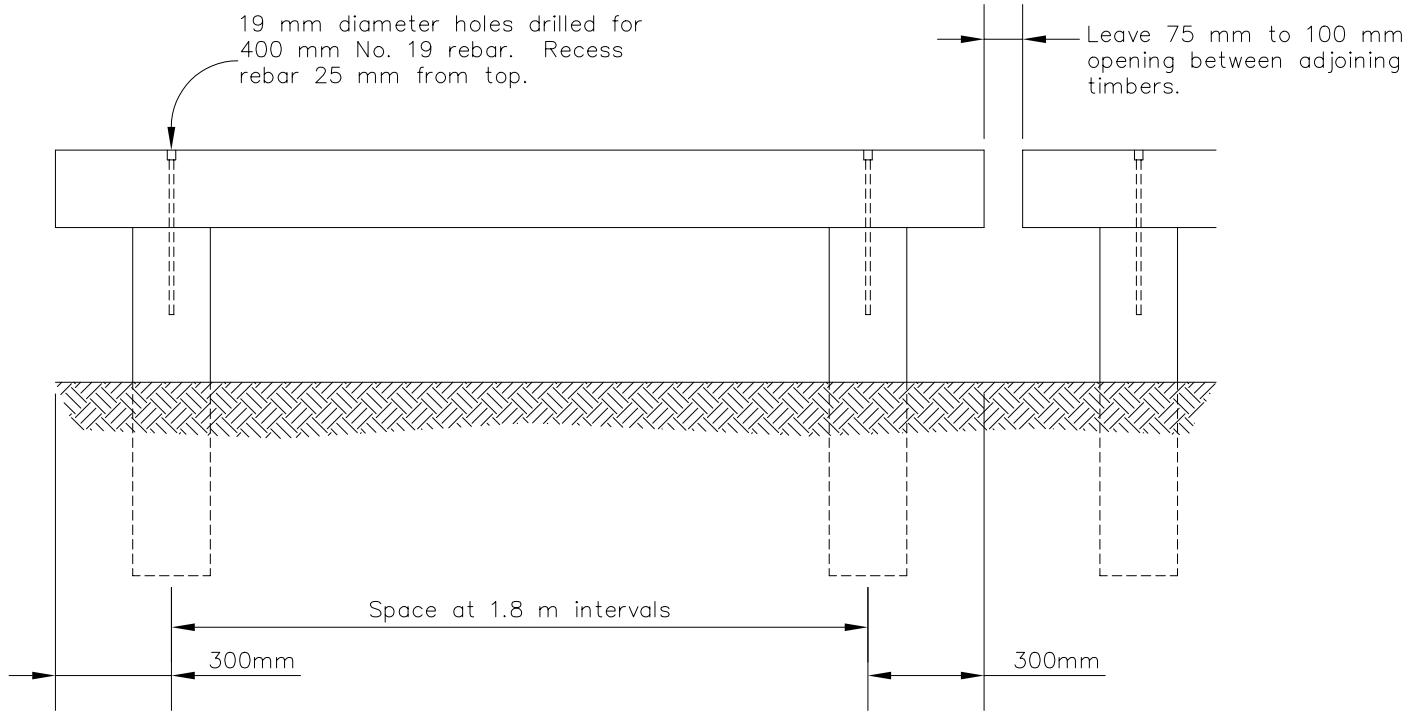


END VIEW TWO TIMBER

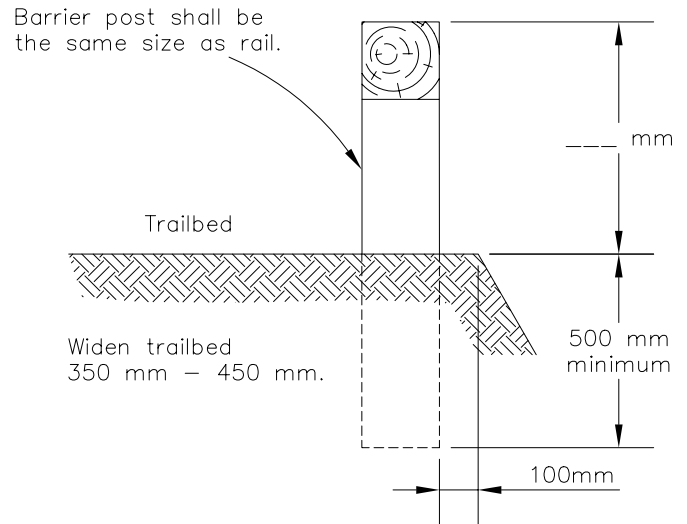
LOCATION	MATERIAL DIMENSIONS (mm)	SPECIES	TREATMENT TYPE	MINIMUM RETENTION

TREATED TIMBER BARRIER ON POSTS

NOT TO SCALE



FRONT VIEW

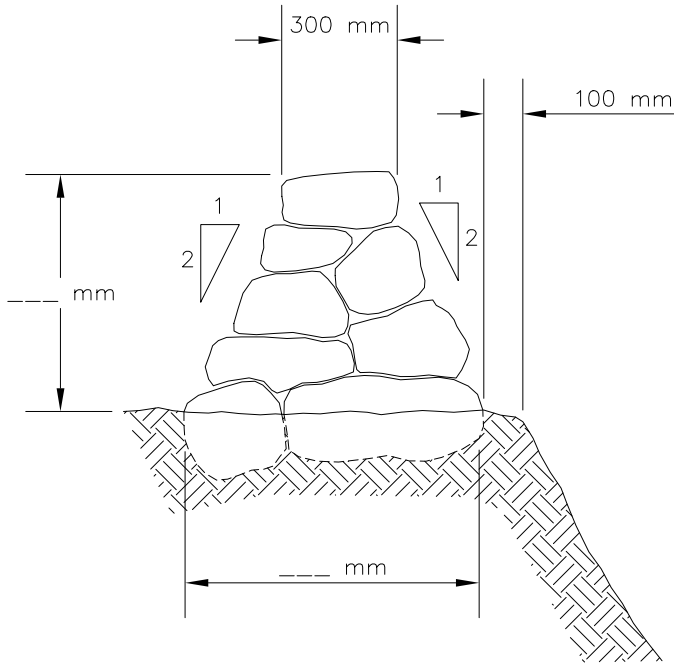


END VIEW

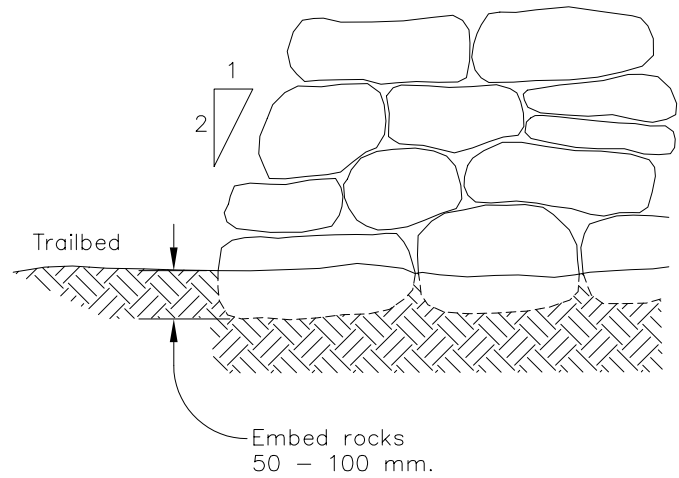
LOCATION	MATERIAL DIMENSIONS (mm)	SPECIES	TREATMENT TYPE	MINIMUM RETENTION
to				
to				
to				
to				
to				
to				

ROCK BARRIER

NOT TO SCALE



END VIEW



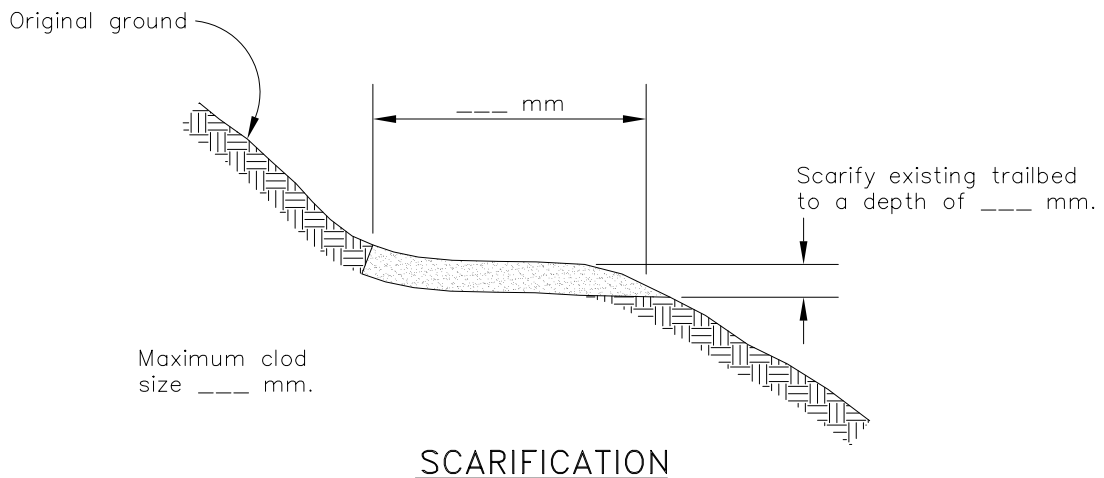
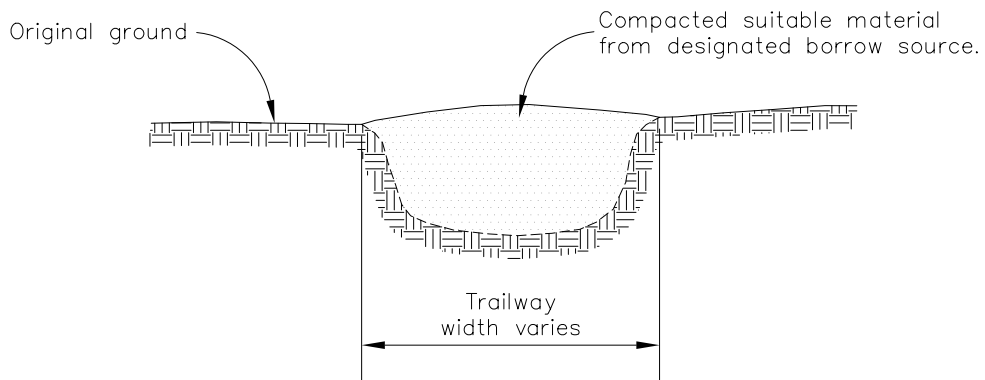
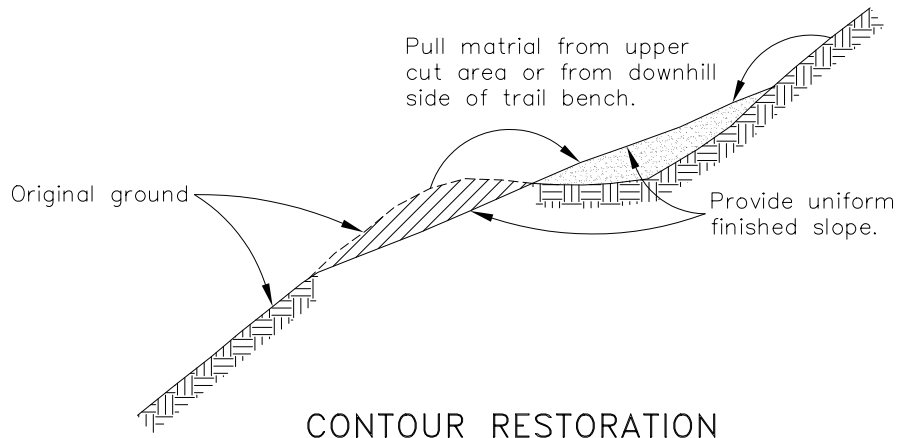
FRONT VIEW

Note:
Use rocks of general rectangular
shape between 20 kg and 60 kg.
Place larger rocks on bottom.

LOCATIONS

TRAIL OBLITERATION

NOT TO SCALE



SEEDING AND FERTILIZING

Perform seeding during the following season:

- 1) _____
 2) _____

Furnish the kinds of seed as specified:

Species	% Purity	% Germination	Application Rate (kg/m ²)	% Weed Content	% Crop Seeds	% Inert Matter	Origin

Test Date _____

Apply seed by the _____ method.

Apply fertilizer at a rate of _____ kg/m² in _____ applications by the _____ method. Provide fertilizer meeting the following requirements:

Nutrient	Percent
Nitrogen, N.....	_____
Phosphorus, P2O5....	_____
Potassium.....	_____

Appendix D

Appendix E: TRACS Forms





TRACS Trail Management Objectives

Region: Forest: District:

Trail Name: Trail Number:

Trail Beginning Termini: Beg. Milepost:

Trail Ending Termini: End. Milepost:

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

TMO Trail Section

Section Beg. Termini: Beg. Milepost:

Sec. # 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)

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

Designed Use (Check one)

Hiker / Pedestrian

Pack & Saddle

Bicycle

Wheelchair

Motorcycle

All Terrain Vehicle (ATV)

Cross-Country Ski

Snowshoe

Dog Sled

Snowmobile

Watercraft - NonMotorized

Watercraft - Motorized

Design Parameters (Fill in all that apply)

Tread Width (inches)

Clearing Width (feet)

Clearing Height (feet)

Switchback Radius (feet)

Grade: Target Range (%) (> 30% of TMO segment)

Grade: Short Pitch Max (%) (up to 200' lengths)

Cross-Slope (%)

Target Frequency Per Year (Fill in all that apply)

Trail Opening

Tread Repair

Drainage Cleanout

Logging Out

Brushing

Snow Trail Grooming

Condition Survey



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

Prohibited Use

(Check if applicable)

	From Date (mm/dd)	To Date (mm/dd)
<input type="checkbox"/> All Motorized Use		

(Or, fill in all that apply)

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

Other Use

(Optional: Check any that apply)

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

Special Considerations

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

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

Remarks / Reference Information

(Use continuation sheet if needed.)

Line Officer: Name
 Title

Signature
 Date



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 Field Checklist: Materials to take on TRACS Surveys

Forms

Recommendation : Bring several copies of TRACS Survey Form sheets, and extra sheets for additional forms as needed. If possible and/or applicable, photocopy field forms on write-in-the-rain paper.

- TRACS Survey Form (1st page and several continuation sheets)
- TRACS Productivity Factor Form (if conducting a Productivity Factor Survey)
- TRACS Sign Inventory Form
- TRACS Photo Log

Trail Bridge Inspection/Assessment Forms:

Based on regional protocol regarding inspection delegation, bring appropriate regional or national trail bridge forms for any bridges along the trail.

- Major Trail Bridge Inspection Form (per regional protocol)
- Minor Trail Bridge Assessment Form (per regional protocol)

Field Gear

Recommendation : Adjust field gear based on local conditions, length of planned time in field, etc.

- Clipboard
- Compass
- Clinometer
- Trail Wheel
- 100-ft Tape Reel
- Extra pencils and erasers
- Write-in-the-Rain Note Pad
- Digital Camera
- Extra Batteries for Camera
- Extra Memory Card for Camera
- Ziplocs (to keep materials dry)
- _____
- _____

Reference Material

Recommendation : Bring all of the following reference materials for every TRACS survey.

- TMD: Trail-Specific**
Bring TMD or copy applicable TMD reference information onto TRACS Survey Form: i.e. Trail Class, Designated/Managed/Prohibited Use, Design Parameters, Target Frequency, and Special Considerations
- CASM** (or CASM tolerances for applicable Trail Classes)
- TRACS Condition Codes**
- TRACS Productivity Factor Codes (if conducting a Productivity Factor Survey)**
- Trail Design Parameters (for applicable Trail Classes)**

TRACS Data Dictionary:

- Features, Dimensions, Material Type**
- Tasks**
- _____

Additional Reference Material

Recommendation : Unless you are a journey-level surveyor and well-versed in the following materials, it is recommended that you take these along for field reference.

- Trail Class Matrix**
- USFS Drawings and Specifications**
- TRACS Form Instructions** (for any of the forms listed above)
- _____
- _____

- _____
- _____
- _____
- _____
- _____

TRACS Survey

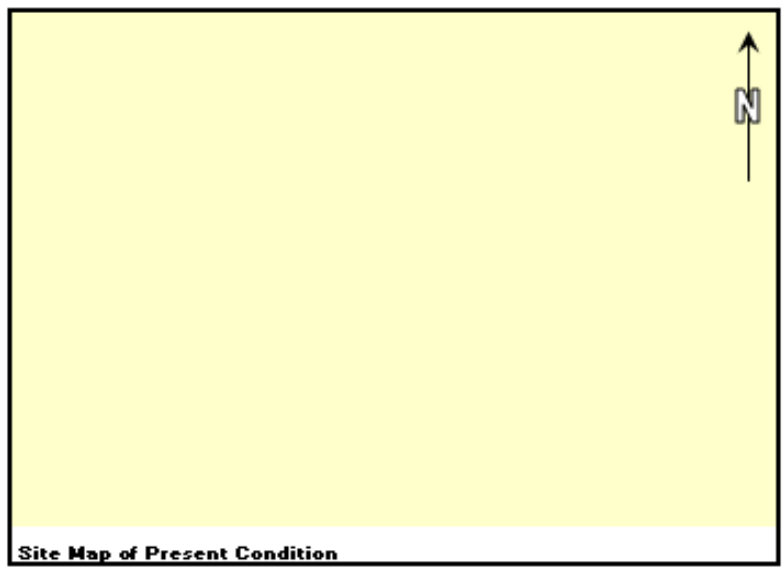
Trail Name:						Trail No:				Survey Date:								
Termini this Survey:		BMP		Description:						Surveyors:								
		EMP		Description:														
Overall Trail Condition Comments:																		
Unit of Measure:			English	Metric	Measure Method:		Wheel	Tape			Trail Use Comments							
Trail Management Objectives (TMO):			Established	Attached	Not established													
TMO Comments:																		
Other Attachments:		Productivity Factors Form	Photo Log Form(s)	Photo Record Form	Sign Inventory Form(s)	Trail Bridge Form(s)												
BMP	Feature	Condition	Task	Critical	Non-Crit													
EMP	Code	Comments	Code	Comments	Code	Comments	Freq	Sevty										
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=										
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=										
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=										
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=										
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=										

TRACS Survey (continuation sheet)

Trail Name:				Trail No:				Survey Date:						
Beg Station	Feature				Condition				Task				Critical	Non-Crit
End Station	Code	Comments			Code	Comments			Code	Comments			Freq	Sevty
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=						
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=						
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=						
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=						
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=						
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=						
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=						
Qnty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=						

TRACS Sign Inventory

Trail Name: Trail Number: Milepost:



Surveyor:

Date:

Photo ID:

Installation Comments:

Sign Panel				Sign Type
A	B	C	D	Destination/Guide
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Travel Management
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Sign Panel A

↑
↓

Sign Panel				Panel Substrate
A	B	C	D	Routed Oak
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pluwood
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Plastic
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Aluminum
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Redwood
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Sign Panel B

↑
↓

Sign Panel				Letter Size
A	B	C	D	1 Inch
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2 Inch
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Sign Panel c

↑
↓

Sign Panel				Reflectorized
A	B	C	D	Non-reflectorized
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Reflectorized
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Sign Panel D

↑
↓

Sign Panel				Post Material
A	B	C	D	Live Tree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Native Post
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Treated Post
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fiberglass Marker
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

TRACS Photo Log

Trail Name:

Trail Number:

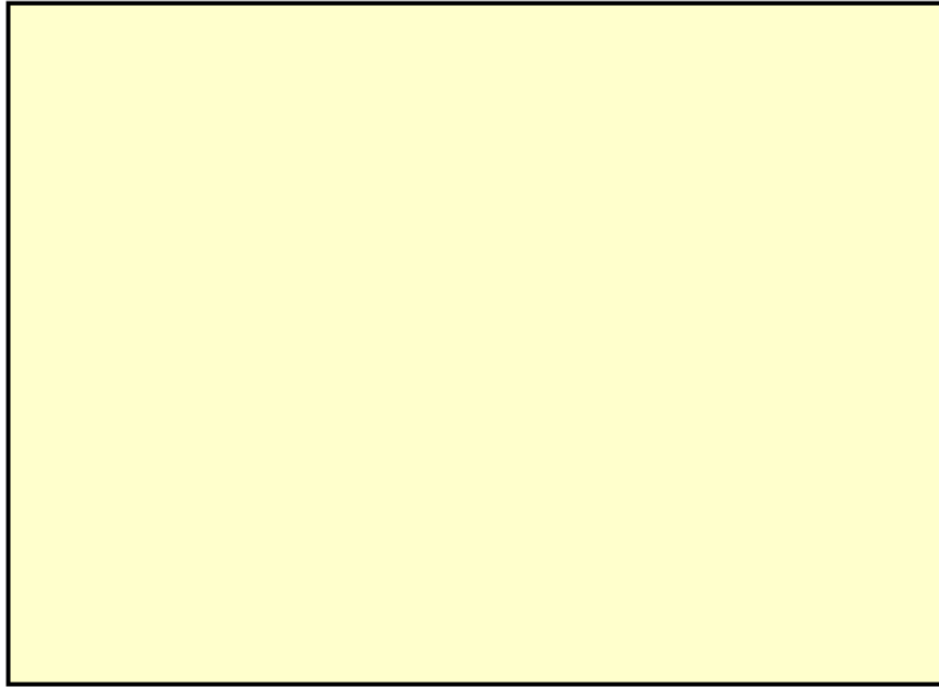
Photo File:

Photo #	Date	Location & Description	Photo #	Date	Location & Description
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

TRACS Photo Record

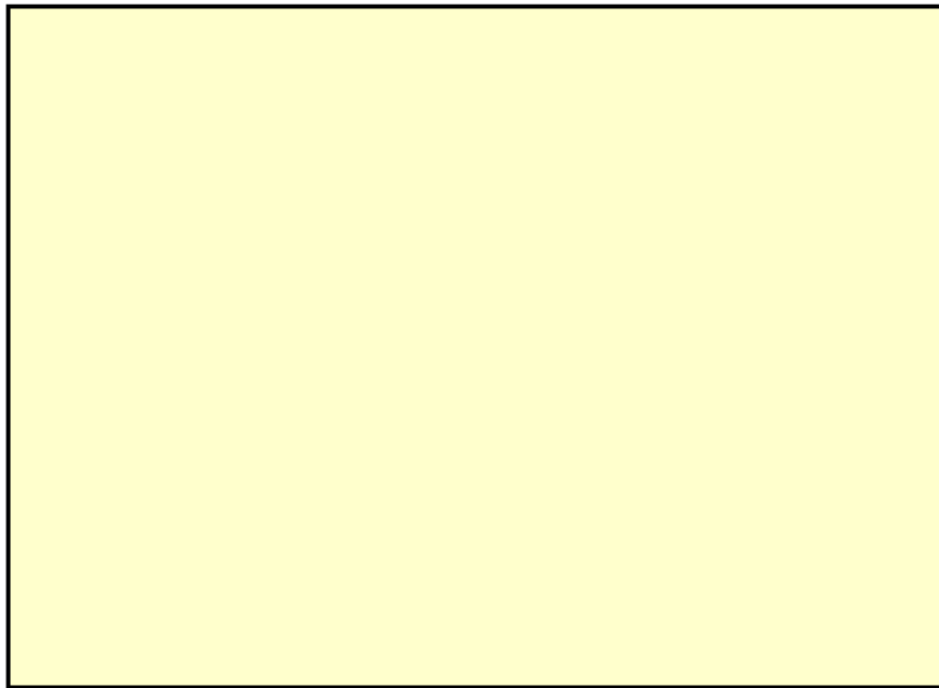
Trail Name:

Trail Number:



Milepost:

Description:



Milepost:

Description:

Appendix F: TRACS Tips



Implementing TRACS: Lessons Learned

Pre-Trip and Survey Planning

- To meet annual survey requirements and desired schedule, keep in mind that you may have to make up what you did not finish the previous year. Focus on specific mountain ranges or areas that have not been inventoried. Start as **early** as you can. You may have another intense fire season.
- Visit with your outfitters about the trail history, trail locations, conditions and potential problems or hazards. You may want to prioritize which trails you inventory next, due to hazards or amount of use a trail receives. Take time to explain to outfitters what the TRACS program is and the inventory work that is being accomplished. Tie other field work into inventories such as Outfitter/Guide camp inspections, campsite inventories, signing, or meeting up with wilderness rangers/trail crews.
- Before doing inventories make sure you understand the travel management direction in the Forest Plan, Wilderness Plan and specifically for the trail you are going to inventory. Make sure you understand all the associated factors in the TMO and discuss with your District Ranger, trail coordinator and planners.
- If possible, look for any historical records about a trail. Talk to previous trail managers, outfitters or other personnel who may have been on the trail. Try to find when the trail was built, who built it and why. Look for old Forest or topographic maps. This may help in finding the trail location or reason it was designed. Was the trail a sheep driveway or a mining trail? Did a local rancher or the Civilian Conservation Corps build the trail?
- Look at maps and plan out your inventories so you can cover ground effectively and efficiently. Try to start at the beginning or terminus of a trail and completely finish the inventory from the start to the end. Partial sections are hard to keep track of and also difficult to account for in MM and in INFRA. It can be hard to get back to a remote location.
- Look at where the trail is located and take in to account the aspect, elevation and the best time to inventory the trail from a seasonal perspective. A north slope in the spring may have too much snow. Pushing the wheel on a highly used trail during hunting season may not be a wise or safe option.
- Make sure you understand all trail features before you go in the field. If you're not sure, then ask for help with trail experts on your Forest. Plan to include in your training plan courses that focus on trail construction.
- Go out with an engineer if possible to learn more about trail standards and construction. Go out with the contracting officer if you have trail contracts to learn what the proper specifications are for trail work.
- Use bad weather as an opportunity to evaluate how well your trail drains and the erosion that is occurring. However, be aware of high passes, lightning etc. and plan accordingly.

- Read the Trail Management Handbook FSH 2309.18 Trail Operation and Maintenance. Read the standard specifications for Construction and Maintenance of Trails EM-7720-103. Another excellent resource is Trail Construction and Maintenance Notebook 9623-2833-MTDC. Alright, if you can't handle reading at least look at the pictures.
- Look for Signs that are included as part of Wilderness or District/Forest sign plans. Look at these in advance to see where signs were once located and for photos of signs. You may not need to take new photos. Make sure you understand current direction for signing in Wilderness and outside of wilderness. (Refer to FSM (7100-15 and FSM 7103.1.)
- If you're going to use seasonals to do trail inventory, go out with them a couple times in the field to make sure they understand everything they should be inventorying (trail features) etc. Most folks who have never done any construction on trails often don't understand what trail features are or what needs to be fixed. Make sure they understand trail standards for stock, ATV's or just hikers. We currently recommend the program manager does the inventories.
- Work with private landowners in advance if you need access across their land to get to a trail more easily.
- Work with other District and Forests when doing inventories on trails that cross boundaries.
- Buy wheels that measure in feet to convert to miles, NOT metric.
- Use waterproof paper for all your survey forms.
- Have a durable clipboard. You may want to mount the clipboard on your wheel. Take extra pencils, extra survey sheets, rubber bands, extra wing nut for writing stand, compass and even a tape measure. You may want to take flagging and a spike nail for measuring alone.
- Take extra film, and camera battery or disks if your using digital.
- If using a GPS unit, you may want a second Pathfinder due to limited storage. You will want an antennae and also extra batteries. If need be you could download your data on a laptop in the field and continue using the GPS. There is limited storage in the pathfinders, so use sparingly. There are many places in deep canyons or heavy cover where GPS does not hit satellites. The traditional tool can have its advantages.
- Average time to inventory trails has been 3-6 miles per day. Take weather into account. Rain and snow slow you down.
- Paint your wheel-per-Leave No Trace ethics

Field Survey

- Communications are important. Let people know where you are going and make sure you check in/out. Pairs work well for trail inventories. One can push the wheel and look

for features and the other can record. Plan logistics, shuttle needs, stock use, ATV's etc. Develop a trip itinerary in advance.

- Look at Forest maps and always carry topographic maps. If you have Arcview trail maps use them. Trails have often had changes over the years and the older maps can often be helpful to find way trails or trails that have no apparent tread. Look for old blazes.
- Make sure both counters on your wheel start out on zero.
- Trails take on different perspectives when your hiking up compared to hiking down. Take time to look at various points in both directions especially at difficult spots.
- Wear light gloves, polypro not leather for writing. A small plastic garbage bag or a piece of tarp over your clipboard helps keep moisture off your survey sheets.
- Make sure you clean your wheel as your going through mud, streams, brush and check occasionally to make sure the odometer is working. You may want to carry an extra spring for long trips.
- You can do feature totals in the field each evening to simplify work in the office or just input in the ACCESS database upon return. INFRA will do totals for you but works only from the beginning to the termini of a trail.
- During breaks place wheel off the trail and hide in brush if stopping for the day. I often will hide wheel and leave it instead of having to carry off to camp. You have to remember where you put it.
- It is easier to start inventory at the beginning or end of trail. Always start at a trailhead or trail junction where the tread begins. This could also be at a signpost, parking area, bulletin board or hitch rail.
- Access database will unravel the trail and mileposts for you if you choose to inventory a trail backwards or to do sections of a trail instead of going beginning to end. Access will total features for you. INFRA cannot convert inventories that have been done backwards or just in sections.
- Try to do inventory in similar chunks. Don't get too detailed. Note where sideslope, grade or vegetation really change. Note all trail features and places that need a feature installed.
- Carry extra straps so you can put the wheel on your pack, If you have stock, pack in a pannier but take off the clipboard and fold down the wheel.
- Step off to the downhill side of the trail and be aware that wheels are spooky for stock.
- Write legibly and make sure you number the pages and keep them in order. If windy put completed pages in your pack in a plastic folder. A light metal box (tatum) also works well, especially if you have stock support.

- Take photos of all the trail features, signs, bridges or extensive failures. This can help down the road in estimating costs and work needed to bring the trail to standard. Use photo logs.

Out of the Field

- Start a permanent file for each trail. This includes a hard copy and a computer file.
- Develop film or download digital pictures as soon as you can. Label and catalog. The longer you wait, the harder it gets.
- Take GPS files and download on PC and do differential correction.
- Keep a running list of work priorities and sign needs. Make a note of trails that will need a potential minimum tool analysis and NEPA.
- Input surveys in the access database to get totals for MM or for INFRA. Mileages often change after you have done the inventory. Make a note on trail brochures, etc.
- Share trail conditions with receptionists and frontliners.
- Work in advance with the District and Forest on priority trail projects. Get folks involved early on with projects that may involve a minimum requirement analysis. Bridge the gap between the trails and wilderness programs.
- Enjoy being able to be out in the field.

Measuring Percent Trail Grade

Trail Grade: The ascent or descent of a trail segment expressed as a percentage of its length. (FSH 2309.18 Zero Code (10/16/2008))

Design Grade: The trail grade determined to be appropriate to accommodate the Managed Uses of a trail. (FSH 2309.18 Zero Code (10/16/2008))

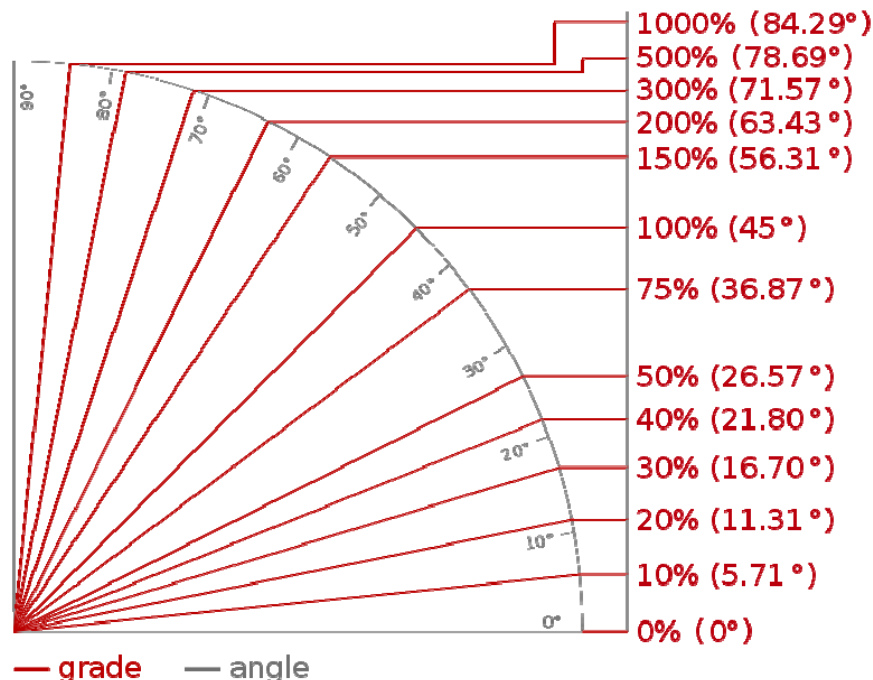
- a. **Target Grade:** The trail grade that is determined to be appropriate over most of a trail to accommodate its Managed Uses.
- b. **Short Pitch Maximum:** The steepest grade that is determined to be appropriate based on the Managed Uses of a trail, that generally occurs for a distance of no more than 200 feet, and that does not exceed the maximum pitch density.
- c. **Maximum Pitch Density:** The maximum percentage of a trail with grades that exceed the Target Grade and that are less than or equal to the short pitch maximum, which is determined to be appropriate based on the Managed Uses of the trail.

Percent Grade: Grade is vertical feet change in elevation per 100 feet travelled (“rise over run”). At 10% grade, you’d climb 10 vertical feet in 100 horizontal feet. At 40% grade, you’d climb 40 vertical feet in 100 horizontal feet.

Degree of Slope: The angle of rise of a slope.

Percent Grade versus Degree Slope: The degree or angle of slope is roughly equal to about ½ the percent grade. If the slope angle is 40%, the percent grade is roughly 80 – 90%. If the slope angle is 20%, the percent grade is roughly 45%.

Road cut-slopes are generally a 100% grade (rise over run of 1:1), which is difficult to walk up and/or drive a tractor up.



Example: Job Hazard Analysis

FS-6700-7 (2/98)

U.S. Department of Agriculture Forest Service	1. WORK PROJECT/ACTIVITY Trail condition surveys (TRACS)	2. LOCATION Mountaintop R.D.	3. UNIT Big River N.F.
JOB HAZARD ANALYSIS (JHA) References-FSH 6709.11 and -12 (Instructions on Reverse)	4. NAME OF ANALYST Dell Zeller	5. JOB TITLE Forestry Technician	6. DATE PREPARED 03/28/2008
7. TASKS/PROCEDURES	8. HAZARDS	9. ABATEMENT ACTIONS Engineering Controls * Substitution * Administrative Controls * PPE	
<p>*NAVIGATION</p> <p>*GENERAL GUIDELINES FOR FOOT TRAVEL</p> <p>*WORKING IN GLACIAL TERRAIN</p> <p>*LARGE MAMMAL ENCOUNTERS</p>	<p>Disorientation</p> <p>Sprains/strains</p> <p>Uneven terrain</p> <p>Avalanche/slide areas</p> <p>Blisters</p> <p>Dehydration</p> <p>Insects</p> <p>Falls</p> <p>Bear encounters</p> <p>Moose encounters</p>	<p>Familiarize everyone on crew with project area during planning stages. Everyone on crew should have at least a rudimentary knowledge of topographic map reading and use. Compass skills should be reinforced if necessary. GPS units should have spare batteries with them. Crew members should avoid travelling alone. Be sure of footing. Wear sturdy, properly fitted boots. Take into consideration wet, snowy, or icy conditions. Stretch and warm up before strenuous walking.</p> <p>Become familiar with topography by studying topo maps in planning stages of project. Be aware of cliffs, drop offs, streams, etc.. Become familiar with these areas before traversing them, if possible. Watch for falling rock, snow, or debris. Traverse these areas using the shortest safe route(usually perpendicular to the slide path). Blisters can make foot travel difficult to impossible, so precautions should be taken to prevent them. Wear properly fitted boots, sock liners under outer socks, and keep feet as dry as possible. Exertive walking, especially in the dense vegetation and steep terrain encountered here necessitates that crew members keep well hydrated to prevent heat related injuries. Drink plenty of fluids throughout the day, even when not thirsty. Modify clothing to changing weather conditions and exertion levels.</p> <p>Large numbers of biting insects can make field work difficult if preventive measures are not taken. Use repellents or headnets or a combination of both. Long sleeves and gloves will also offer some relief.</p> <p>Be aware of possible unstable ground near glacially scarified areas. Use caution on icy spots.</p> <p>Make noise, especially by talking, when working in areas frequented by bears. Be wary of sows with cubs. Use caution when travelling near streams with salmon runs. Carry firearms as required. If encountered, stand your ground while waving arms and making noise. If charged, stand your ground and react appropriately as per bear encounter training.</p> <p>Same avoidance technique as bears. Be especially wary of cows with calves and rutting bulls.</p> <p>For any possible injury caused by an animal, make sure first aid kit is properly equipped to deal with these injuries.</p>	

Example: Job Hazard Analysis

*TRANSPORTING EQUIPMENT ON THE TRAIL	Falls Strains/sprains Cut injury	Carry reasonably sized loads. Make sure packs are well balanced. Be sure of footing. Use guards on tools with sharp edges.
*COMMUNICATIONS	Faulty radio Faulty transmission	Carry spare batteries for portable radios. Have more than one radio per crew available. Be aware of proper repeater channels for use in work areas. Try transmitting from different locations. Have a backup, such as a satellite or cellular phone for use in dead zones, if working in remote areas. Enact a plan for inter-crew and outside communications, including emergency transmissions. Practice proper radio etiquette.
*FIRST AID		Every crew should have a properly equipped first aid kit both in camp and on the trail. Crew members should be certified in basic first aid and in CPR. Evacuation plan should be in place in the event that a serious injury should occur. Crew leader should be aware of previous medical conditions of crew members, such as illnesses and allergies, especially anaphalactic responses to insect bites/stings.
*STREAM CROSSINGS	Drowning Hypothermia Slippage	Do not attempt to cross swollen steams. Wear hipboots if possible or at least sturdy shoes. Try to "sound" streams with rocks or long sticks if unsure of depth. Cross diagonally upstream. Use a staff to assist in crossing and proceed slowly. Make sure pack hipbelts and straps are unfastened and loosened before crossing. If crossing on downed log, be sure it is stable and wide enough. Provide rope crossings if other options are not available. Be familiar with first aid for hypothermia victims.
*WORKING IN INCLEMENT WEATHER	Lightening Falling limbs Hypothermia	Discontinue work if a lightning storm occurs Be aware of possible falling branches in high winds. Cease fieldwork if windspeeds exceed 35 MPH. Always wear hard hat when in the field. Use appropriate clothing; dress in layers. A wicking layer should be worn next to skin, followed by an insulating layer if necessary, and a wind and waterproof shell. Modify as needed. Avoid wearing cotton in wet conditions. Remember that hypothermia can occur in temperatures as high as fifty degrees.
*TRAVELING THROUGH HEAVY BRUSH	Eye injury Thorns/Devil's club	Wear protective goggles or glasses Wear protective clothing. Medium weight rain bibs have proven very effective in preventing injuries from thorns. Wear long sleeved shirt, leather gloves, and hard hat.
*WORKING IN STEEP TERRAIN	Sprains Falls	Stretch and warm up before working in the field. Wear appropriate, sturdy footwear. Proceed slowly and carefully through steep terrain. Maintain three points of contact on very steep grades. Be aware of what is underfoot; proceed slowly. Do not carry loads beyond your

Example: Job Hazard Analysis

<p>As per 29 CFR Part 1910, Subpart I, 1910.132(d)(2), the required workplace hazard assessment has been performed. This document serves as the certification of hazard assessment for the work activities described within.</p>	<p>Falling rocks or logs</p>	<p>ability. Use switchbacks, rather than traverse straight up and down steep terrain. Study topographic maps to become familiar with possible hazards. When walking in a group, be aware debris loosened by crew members ahead and above one another.</p>
10. LINE OFFICER SIGNATURE	11. TITLE	12. DATE

Previous edition is obsolete

(over)

Example: Job Hazard Analysis

JHA Instructions (References-FSH 6709.11 and .12)	Emergency Evacuation Instructions (Reference FSH 6709.11)																												
<p>The JHA shall identify the location of the work project or activity, the name of employee(s) writing the JHA, the date(s) of development, and the name of the appropriate line officer approving it. The supervisor acknowledges that employees have read and understand the contents, have received the required training, and are qualified to perform the work project or activity.</p> <p>Blocks 1, 2, 3, 4, 5, and 6: Self-explanatory.</p> <p>Block 7: Identify all tasks and procedures associated with the work project or activity that have potential to cause injury or illness to personnel and damage to property or material. Include emergency evacuation procedures (EEP).</p> <p>Block 8: Identify all known or suspect hazards associated with each respective task/procedure listed in block 7. For example:</p> <ul style="list-style-type: none"> a. Research past accidents/incidents b. Research the Health and Safety Code, FSH 6709.11 or other appropriate literature. c. Discuss the work project/activity with participants d. Observe the work project/activity e. A combination of the above <p>Block 9: Identify appropriate actions to reduce or eliminate the hazards identified in block 8. Abatement measures listed below are in the order of the preferred abatement method:</p> <ul style="list-style-type: none"> a. Engineering Controls (the most desirable method of abatement). For example, ergonomically designed tools, equipment, and furniture. b. Substitution. For example, switching to high flash point, non-toxic solvents. c. Administrative Controls. For example, limiting exposure by reducing the work schedule; establishing appropriate procedures and practices. d. PPE (least desirable method of abatement). For example, using hearing protection when working with or close to portable machines (chain saws, rock drills portable water pumps) e. A combination of the above. <p>Block 10: The JHA must be reviewed and approved by a line officer. Attach a copy of the JHA as justification for purchase orders when procuring PPE.</p> <p>Blocks 11 and 12: Self-explanatory.</p>	<p>Work supervisors and crew members are responsible for developing and discussing field emergency evacuation procedures (EEP) and alternatives in the event a person(s) becomes seriously ill or injured at the worksite.</p> <p>Be prepared to provide the following information:</p> <ul style="list-style-type: none"> a. Nature of the accident or injury (avoid using victim's name). b. Type of assistance needed, if any (ground, air, or water evacuation) c. Location of accident or injury, best access route into the worksite (road name/number), identifiable ground/air landmarks. d. Radio frequency(s). e. Contact person. f. Local hazards to ground vehicles or aviation. g. Weather conditions (wind speed & direction, visibility, temp). h. Topography. i. Number of person(s) to be transported j. Estimated weight of passengers for air/water evacuation. <p>The items listed above serve only as guidelines for the development of emergency evacuation procedures.</p> <p style="text-align: center;">JHA and Emergency Evacuation Procedures Acknowledgment</p> <p>We, the undersigned work leader and crew members, acknowledge participation in the development of this JHA (as applicable) and accompanying emergency evacuation procedures. We have thoroughly discussed and understand the provisions of each of these documents:</p> <table style="width: 100%; border: none;"> <thead> <tr> <th style="text-align: center; width: 25%;">SIGNATURE</th> <th style="text-align: center; width: 25%;">DATE</th> <th style="text-align: center; width: 25%;">SIGNATURE</th> <th style="text-align: center; width: 25%;">DATE</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black;"> Work Leader </td> <td style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> <td style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> <td style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> </tr> <tr> <td style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> <td style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> <td style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> <td style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> </tr> <tr> <td style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> <td style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> <td style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> <td style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> </tr> <tr> <td style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> <td style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> <td style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> <td style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> </tr> <tr> <td style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> <td style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> <td style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> <td style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> </tr> <tr> <td style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> <td style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> <td style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> <td style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> </tr> </tbody> </table>	SIGNATURE	DATE	SIGNATURE	DATE	Work Leader																							
SIGNATURE	DATE	SIGNATURE	DATE																										
Work Leader																													

Appendix G: My TRACS Stuff

