

# TRACS

Trail Assessment & Condition Surveys



2009  
User Guide

*Collect the right information the first time...*





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# 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 real property inventory, the condition of facilities, and the cost of maintaining those facilities 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 real property 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, providing an efficient and versatile approach for the consistent collection of trail inventory, condition, and prescription data:

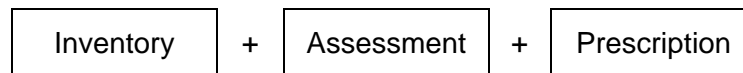
- **Efficient Approach:** Trail managers recognize the importance of having current and accurate trail inventory, condition and prescription information, but are often frustrated by a lack of time, resources, and an efficient approach for accomplishing this.
- **Business Management:** Accurately, efficiently 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:

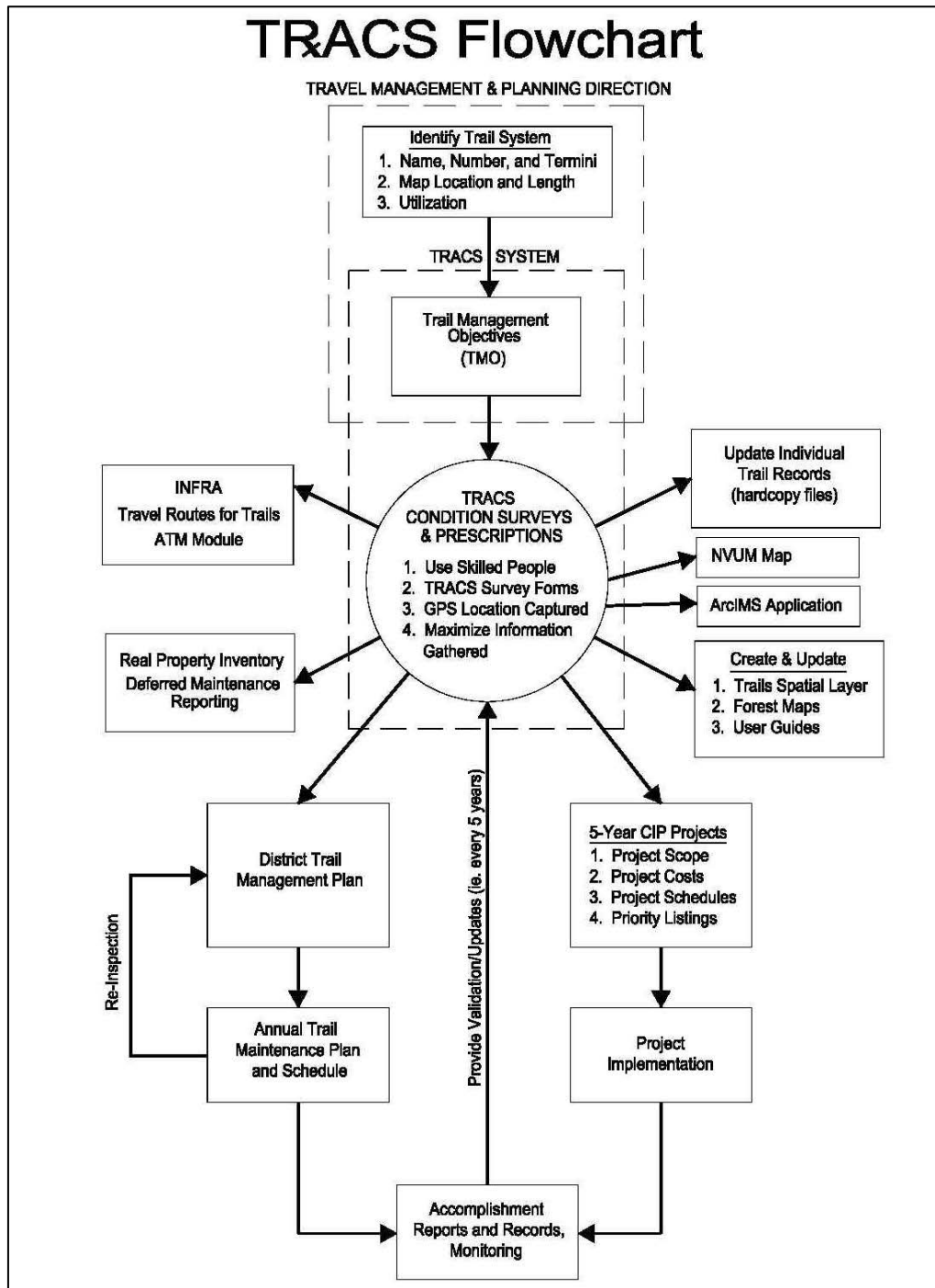
- Establishment of a TMO for each trail.
- Implementation of TRACS by qualified personnel.
- Standardized data dictionary for consistent and efficient field data collection.
- Standardized process for completing trail logs, condition surveys and prescriptions.
- Standardized TRACS forms.

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 specifics on Trail Fundamentals, Trail Classes, Trail Design Parameters, and National Trail Drawings. Appendix E provides a place to where you can file TRACS tips, additional examples, and related information. Appendix F provides reference information on key trail publications, websites and other references. Appendix G includes a complete set of TRACS forms that can be used to make copies, 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, yet versatile approach for completing trail conditions surveys and prescriptions. TRACS focuses field data collection efforts, providing efficiency and consistency, 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 discussed earlier and 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 a 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 Management Objectives

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### 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, in applicable sections of the TRACS User Guide, and on the USFS website for Recreation & Heritage Resources Integrated Business Systems (<http://fsweb.wo.fs.fed.us/rhwr/ibsc/index.shtml>). Review these materials for step-by-step instructions, examples, and basic guidance on documenting TMOs.

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



## TMO Form 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 Appendices, Infra Trails documentation, and on the USFS Recreation, & Heritage Resources Integrated Business Systems website: <http://fsweb.wo.fs.fed.us/rhwr/ibsc/index.shtml>

### Overall Trail Information

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

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

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

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

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

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

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

## TMO Trail Section

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

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

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

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

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

## Designed Use Objectives

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

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

✓ Assign one Trail Type for the trail.

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

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

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

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

✓ Locate and refer to the forest ROS and/or Wilderness classification maps.

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

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

Designed Use: *The Managed Use of a trail that requires the most demanding design, construction, and maintenance parameters and that, in conjunction with the applicable Trail Class, determines which Design Parameters will apply to a trail.*

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

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

✓ Select only one Designed Use per trail or trail segment

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

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

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

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

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

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

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

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

Examples:

<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:

<u>Design Parameters</u>	
Basic Tread Width, inches	24" <sup>1</sup>
<u>Maintenance Frequency</u>	
Trail Opening	1 <sup>2</sup>
<u>Special Considerations</u>	
T&E or Sensitive Species Present	X <sup>3</sup>

### Footnote Explanations in Remarks:

#### Remarks / Reference Information

- <sup>1</sup> Tread width exceptions allowed at existing wood trail structures.
- <sup>2</sup> Complete annual Trail Opening by 6/15.
- <sup>3</sup> Goose grass sedge, sensitive plant, located in 1<sup>st</sup> mile of trail, refer to 3/15/1999 BE for Smith Ridge Trail for mitigation specifications.

## Line Officer Approval

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

### TMO Preparation:

Typically:

1. Draft TMOs are developed by the local trail program manager working in conjunction with other district and/or forest personnel as applicable. This usually includes a review by the forest trail program manager for consistency with the forest plan, travel management decisions, or other relevant decisions or protocols. Any needed edits are identified and incorporated in the draft TMO.
2. Final draft TMOs are then reviewed by the line officer for their concurrence and any needed edits are identified and incorporated. (Note: pending local protocol, some line officers may choose to indicate their concurrence by initialing a hard copy of the final draft.)

**TMO Approval:** After the line officer has concurred with the final draft TMO, it is ready to be printed and signed as the final approved TMO. The approved TMO is retained in local files.

### Excel Form

If using the Excel version of the TMO form, once the line officer has concurred with the final draft TMO, the final TMO should be dated, printed as a hard copy, and then signed by the line officer to document approval. Retain the signed hard copy of the approved TMO in local files.

### Infra Trails Form

If using the Infra Trails TMO form, once the line officer has concurred with the final draft TMO, it is ready to be saved in Infra Trails as an approved TMO.

1. On the TMO Status Tab in Infra Trails, change the Status to “Approved.” Then record the line officer’s first and last name, title, and the current date. NOTE: if documenting a previously approved hard-copy TMO (that was created before the electronic Infra TMO screen was available, enter the approval date from the hard copy.
2. When the TMO is approved, save the automatically generated PDF (or use the ‘Print TMO’ button).
3. Then print a hard copy of the approved TMO. Obtain the line officer’s signature on the hard copy, along with the actual date of their hard copy signature. NOTE: the date of the electronic signature and the hard copy signature may differ, although the hard copy signature should be obtained as soon as practical.
4. Retain the signed hard copy of the approved TMO in local files.

### Revisions to Previously Approved TMOs:

#### Excel Form

To modify, update or correct a TMO using the Excel TMO form, follow the steps above to incorporate needed edits, receive applicable reviews and line officer concurrence, followed by line officer approval and signature on the new/revised approved TMO.


#### Infra Trails Form

To modify, update or correct a TMO using the Infra Trails TMO form, on the TMO Status Tab change the Status to “Pending Revision.” Then follow the steps above to incorporate any needed edits, receive applicable reviews and line officer concurrence, and then save and print the new/revised approved TMO. NOTE: all currently approved and previously approved TMOs are retained as PDFs in Infra Trails for reference.





# TMO Form (Excel Form)<sup>1</sup>



## 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** (Click one)

Standard Terra Trail

Snow Trail

Water Trail

**Trail Class** (Click one)

1 (Primitive/Undeveloped)

2 (Simple/Minor Development)

3 (Developed/Improved)

4 (Highly Developed)

5 (Fully Developed)

**ROS/WROS Class** (Click one)

**ROS**

Urban

Rural

Road Modified

Road Natural

Semi-Primitive Motorized

Semi-Primitive NonMotorized

Primitive

**WROS**

WROS 1

WROS 2

WROS 3

WROS 4

WROS 5

WROS 6

### Designed Use

(Click 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' height)

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 \_\_\_\_\_

<sup>1</sup> 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/yy)	To Date (m/m/yy)
<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/yy)	To Date (m/m/yy)
<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"/> _____		
<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 Example 1 (Excel Form)



## TRACS Trail Management Objectives

Region:  Forest:  District:

Trail Name: <input type="text" value="Sweet Grass Trail"/>	Trail Number: <input type="text" value="122"/>
Trail Beginning Termini: <input type="text" value="West Boulder Trailhead"/>	Beg. Milepost: <input type="text" value="0.0000"/>
Trail Ending Termini: <input type="text" value="Continental Divide NST"/>	End. Milepost: <input type="text" value="10.7000"/>
Trail Inventory Length: <input type="text" value="10.7000"/> Miles	Trail Mileage Source: <input checked="" type="checkbox"/> Wheel <input type="checkbox"/> GPS <input type="checkbox"/> Map <input type="checkbox"/> 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

<p>(Check one)</p> <p>Trail Type</p> <p><input checked="" type="checkbox"/> Standard Terra Trail</p> <p><input type="checkbox"/> Snow Trail</p> <p><input type="checkbox"/> Water Trail</p> <p>(Check one)</p> <p>Trail Class</p> <p><input type="checkbox"/> 1 (Primitive/Undeveloped)</p> <p><input type="checkbox"/> 2 (Simple/Minor Development)</p> <p><input type="checkbox"/> 3 (Developed/Improved)</p> <p><input checked="" type="checkbox"/> 4 (Highly Developed)</p> <p><input type="checkbox"/> 5 (Fully Developed)</p>	<p><b>ROS/WROS Class</b> (Check one)</p> <table border="0"> <tr> <td><b>ROS</b></td> <td><b>WROS</b></td> </tr> <tr> <td><input type="checkbox"/> Urban</td> <td><input type="checkbox"/> WROS 1</td> </tr> <tr> <td><input type="checkbox"/> Rural</td> <td><input type="checkbox"/> WROS 2</td> </tr> <tr> <td><input type="checkbox"/> Roaded Modified</td> <td><input type="checkbox"/> WROS 3</td> </tr> <tr> <td><input checked="" type="checkbox"/> Roaded Natural</td> <td><input type="checkbox"/> WROS 4</td> </tr> <tr> <td><input type="checkbox"/> Semi-Primitive Motorized</td> <td><input type="checkbox"/> WROS 5</td> </tr> <tr> <td><input type="checkbox"/> Semi-Primitive NonMotorized</td> <td><input type="checkbox"/> WROS 6</td> </tr> <tr> <td><input type="checkbox"/> Primitive</td> <td></td> </tr> </table>	<b>ROS</b>	<b>WROS</b>	<input type="checkbox"/> Urban	<input type="checkbox"/> WROS 1	<input type="checkbox"/> Rural	<input type="checkbox"/> WROS 2	<input type="checkbox"/> Roaded Modified	<input type="checkbox"/> WROS 3	<input checked="" 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	
<b>ROS</b>	<b>WROS</b>																
<input type="checkbox"/> Urban	<input type="checkbox"/> WROS 1																
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<input type="checkbox"/> Semi-Primitive NonMotorized	<input type="checkbox"/> WROS 6																
<input type="checkbox"/> Primitive																	

<p><b>Designed Use</b></p> <p>(Check one)</p> <p><input type="checkbox"/> Hiker / Pedestrian</p> <p><input checked="" type="checkbox"/> Pack &amp; Saddle</p> <p><input type="checkbox"/> Bicycle</p> <p><input type="checkbox"/> Motorcycle</p> <p><input type="checkbox"/> All Terrain Vehicle (ATV)</p> <p><input type="checkbox"/> Four-Wheel Drive Vehicle &gt; 50"</p> <p><input type="checkbox"/> _____</p> <p><input type="checkbox"/> Cross-Country Ski</p> <p><input type="checkbox"/> Snowshoe</p> <p><input type="checkbox"/> Snowmobile</p> <p><input type="checkbox"/> _____</p> <p><input type="checkbox"/> Watercraft - NonMotorized</p> <p><input type="checkbox"/> Watercraft - Motorized</p>	<p><b>Design Parameters</b></p> <p>(Fill in all that apply)</p> <p><input type="text" value="48"/> Tread Width (inches)</p> <p><input type="text" value="10"/> Target Grade (%)</p> <p><input type="text" value="15"/> Short Pitch Maximum (%) (up to 200' lengths)</p> <p><input type="text" value="5"/> Target Cross-Slope (%)</p> <p><input type="text" value="8"/> Clearing Width (feet)</p> <p><input type="text" value="10"/> Clearing Height (feet)</p> <p><input type="text" value="6"/> Switchback Radius (feet)</p> <p><input type="text"/> _____</p>	<p><b>Target Frequency Per Year</b></p> <p>(Fill in all that apply)</p> <p><input type="text" value="1"/> Trail Opening</p> <p><input type="text" value="0.5"/> Tread Repair</p> <p><input type="text" value="0.5"/> Drainage Cleanout</p> <p><input type="text" value="0.5"/> Logging Out</p> <p><input type="text" value="0.5"/> Brushing</p> <p><input type="text" value="NA"/> Snow Trail Grooming</p> <p><input type="text" value="0.2"/> Condition Survey</p> <p><input type="text"/> _____</p>
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# 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"/> _____		
<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 (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"/>	<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"/> _____	<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)



## 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

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)

**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.*

### Travel Management Strategies

#### ATM Managed Use

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	

### Designed Use Objectives

#### ROS/WROS Class

BMP (mi)	EMP (mi)	Length	Value	Comments
0.0000	10.7000	10.7000	RN - ROADED NATURAL	

#### Trail Class

BMP (mi)	EMP (mi)	Length	Value	Comments
0.0000	10.7000	10.7000	TC4 - HIGHLY DEVELOPED	

#### Designed Use

BMP (mi)	EMP (mi)	Length	Value	Comments
0.0000	10.7000	10.7000	PACK - PACK AND SADDLE	



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

TMO Status : APPROVED 10/18/2008

Region : 01

Forest : Gallatin National Forest

District : 011101 - Big Timber Ranger District

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

<b>TMO</b>	<b>BMP (mi): 0.0000</b>	<b>EMP (mi): 10.7000</b>
------------	-------------------------	--------------------------

### Design Parameter Segment

BMP (mi)	EMP (mi)	Length	Trail Class - Designated Use
0.0000	10.7000	10.7000	TC4 - PACK AND SADDLE

Design Parameter	Trail DP Value	Exceptions
Design Tread Width - Wilderness (Single Lane)	24" May be up to 48" along steep side slopes 48" - 60" or greater along predrioes	N/A
Design Tread Width - Non-Wilderness 1 (Single Lane)	48" 48" - 60" or greater along predrioes	
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	96"	
Design Clearing - Shoulder Clearance	12"	
Design Turn - Radius	Pack clearance: 36" x 36" 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

<b>TMO</b>	<b>BMP (mi): 0.0000</b>	<b>EMP (mi): 10.7000</b>
------------	-------------------------	--------------------------

<b>TMO Status : APPROVED</b>	
<b>Line Officer : Name :</b> Grant Mamler	<b>Signature :</b> <input type="text"/>
<b>Title :</b> District Ranger	<b>Date :</b> 10/16/2008



# TMO Example 2 (Excel Form)



## TRACS Trail Management Objectives

Region:  Forest:  District:

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

### TMO Trail Section

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

### Designed Use Objectives

<p>(Check one)</p> <p><b>Trail Type</b></p> <p><input type="checkbox"/> Standard Terra Trail</p> <p><input checked="" type="checkbox"/> Snow Trail</p> <p><input type="checkbox"/> Water Trail</p> <p>(Check one)</p> <p><b>Trail Class</b></p> <p><input type="checkbox"/> 1 (Primitive/Undeveloped)</p> <p><input type="checkbox"/> 2 (Simple/Minor Development)</p> <p><input checked="" type="checkbox"/> 3 (Developed/Improved)</p> <p><input type="checkbox"/> 4 (Highly Developed)</p> <p><input type="checkbox"/> 5 (Fully Developed)</p>	<p><b>ROS/WROS Class</b> (Check one)</p> <table border="0"> <tr> <td><b>ROS</b></td> <td><b>WROS</b></td> </tr> <tr> <td><input type="checkbox"/> Urban</td> <td><input type="checkbox"/> WROS 1</td> </tr> <tr> <td><input type="checkbox"/> Rural</td> <td><input type="checkbox"/> WROS 2</td> </tr> <tr> <td><input type="checkbox"/> Roaded Modified</td> <td><input type="checkbox"/> WROS 3</td> </tr> <tr> <td><input checked="" type="checkbox"/> Roaded Natural</td> <td><input type="checkbox"/> WROS 4</td> </tr> <tr> <td><input type="checkbox"/> Semi-Primitive Motorized</td> <td><input type="checkbox"/> WROS 5</td> </tr> <tr> <td><input type="checkbox"/> Semi-Primitive NonMotorized</td> <td><input type="checkbox"/> WROS 6</td> </tr> <tr> <td><input type="checkbox"/> Primitive</td> <td></td> </tr> </table>	<b>ROS</b>	<b>WROS</b>	<input type="checkbox"/> Urban	<input type="checkbox"/> WROS 1	<input type="checkbox"/> Rural	<input type="checkbox"/> WROS 2	<input type="checkbox"/> Roaded Modified	<input type="checkbox"/> WROS 3	<input checked="" 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	
<b>ROS</b>	<b>WROS</b>																
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<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)

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 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)

	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"/> 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

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

Line Officer: Name **Grant Marnier**

Title **District Ranger**

Signature *Grant Marnier*

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 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"/> _____		
<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 (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

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

<sup>2</sup> Primitive tools only.

Line Officer: Name **Grant Marnier**

Signature *Grant Marnier*

Title **District Ranger**

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  
Ending Milepost : 2.8700  
Trail Length : 2.8700

Beginning Termini : West Boulder Trailhead (#12905)  
Ending Termini : Dead End

<b>TMO</b>	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	2.8700	2.8700	0.2000	01/01	12/31	PROTECT WILDERNESS ENVIRONMENT/VALUES
Prohibit	1	MOTOR VEHICLE	2.8700	2.8700	0.2000	01/01	12/31	PROTECT WILDERNESS ENVIRONMENT/VALUES
Prohibit	3.1	MTR OVER-SNOW VEHICLE	2.8700	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

<b>TMO</b>	<b>BMP (mi): 0.0000</b>	<b>EMP (mi): 2.8700</b>
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**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	8' (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
<b>Design Parameter</b>	<b>Trail DP Value</b>	<b>Exceptions</b>
Design Groomed Width - Single Lane	3" Typically not groomed	
Design Groomed Width - Double Lane	Not applicable	
Design Groomed Width - Structures (Minimum Width)	38"	
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	2.2800	2.2800	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	2.2800	2.2800	Special Use permit with Big Timber Cross Country Ski Club to maintain the trail for x-skiing



# 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.

# Trail CASM Matrix

## 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
<b>Survey Method</b> <sup>1</sup>	Walk-through & Make Notes on Map or GPS <sup>2</sup>	Cyclometer or GPS <sup>2</sup>	Cyclometer or GPS <sup>2</sup>	Cyclometer	Tape or Cyclometer & Hand Level with Digital Readout
<b>Recommended Survey Accuracy &amp; Specificity</b>					
<b>Measurement Interval</b> <sup>3</sup>	Major Physiographic Changes	Minor Physiographic Changes or ½ Mile	Typical Grade Changes of 10% or 500 Feet	Typical Grade Changes of 10% or 500 Feet	Inter-visible Alignment Changes, 2% Grade Changes, or 25 Feet
Typical Grade <sup>4</sup>	+/- 10%	+/- 10%	+/- 5%	+/- 5%	+/- 1%
Typical Width <sup>5</sup>	Not Measured	Optional +/- 6"	+/- 6"	+/- 6"	+/- 3"
Obstacles <sup>6</sup>	Not Measured	Not Measured	Optional	Formidable Obstacles (e.g. narrow width with steep drop off)	All those defined as Obstacles
Typical Cross Slope <sup>7</sup>	Not Measured	Not Measured	+/- 1%	+/- 1%	+/- 0.1%
Features & Tasks <sup>8</sup>	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

<sup>1</sup> **Survey Method:** Most efficient method that accomplishes identified CASM accuracies.

<sup>2</sup> **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.

<sup>3</sup> **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.

<sup>4</sup> **Typical Grade:** Initiate new survey segment when Typical Grade changes by this amount.

<sup>5</sup> **Typical Width:** Initiate new survey segment when Typical Width changes by this amount.

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

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

<sup>8</sup> **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 relatively recent 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 in such poor condition.

GPS has the potential for changing all that. Folks with fairly inexpensive GPS units have the capability to re-map their trails to well within geotronic 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:

<b>Data Dictionary Item</b>	<b>Example</b> (based on Trail Feature: Standard Puncheon)
<b>Trail Feature</b>	<b>Standard Puncheon</b>
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 Improvement<sup>1</sup>.

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
<b>1</b>	<b>Routine Maintenance</b>	Feature is <b>functioning within standard</b> as designed and is within normal maintenance cycle (generally at a cost of less than 20% of replacement)	●		
<b>2</b>	<b>Repair/Rehab</b>	Feature is in <b>disrepair</b> , 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)		●	
<b>3</b>	<b>Replace in-kind</b>	Feature is <b>dysfunctional</b> 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)		●	
<b>4</b>	<b>Decommission</b>	Feature is <b>not needed</b> for the operation of the trail or is inappropriate for the setting and should be removed from system with no replacement planned.		●	
<b>5</b>	<b>Expansion</b>	Feature is basically functioning as designed but is <b>undersized</b> . Would typically be lengthened or widened, but in some cases size may be reduced.			●
<b>6</b>	<b>Alter Function</b>	Modify feature to <b>change function</b> to increase capacity, change function, or change durability.			●
<b>7</b>	<b>Install New</b>	<b>New feature</b> is needed.			●

<sup>1</sup> These task types reflect the Forest Service's Common Definitions for Maintenance and Construction Terms (Appendix A).

## TRACS Data Dictionary: Features





Trail Data Dictionary: Features, Dimensions, Material Type (updated 1/24/2007)

Feature / Tasks					Basic Inventory & Dimensions										Materials																					
Feature / Task Code	Feature <sup>1</sup>	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)					
<b>TRAILWAY</b>																																				
TW-CHTR	CHARTER / RENTAL		LS																																	
TW-OPS	OPERATIONS		LF	(NA)																																
TW-CDR	CORRIDOR MAINTENANCE		LF	(NA)																																
TW-S&D	SURVEY, PREP & ADMIN		LF	(NA)																																
TW-TRD	TREAD & PRISM	L	SF	912-1, 912-2	R	R <sup>lgh</sup>	R <sup>1</sup>	R	R																											
TW-CLR	CLEARING LIMITS	L	CF	911-1	R	R <sup>lgh</sup>	R <sup>1</sup>	R	R		R																									
TW-SRF	SURFACING	L																																		
TW-SRF-AGG	Aggregate Surfacing	L	SF	942-1	R	O	R <sup>1</sup>	R	R	O			R	R																						
TW-SRF-ASP	Asphalt Surfacing	L	SF	942-2	R	O	R <sup>1</sup>	R	R	O			R	R																						
TW-SRF-GD1	Grid-Unit Surfacing Type I	L	SF	944-1	R	O	R <sup>1</sup>	R	R	O			R	R																						
TW-SRF-RRP	RipRap Surfacing	L	SF	(needed) (R5 SPS?)	R	O	R <sup>1</sup>	R	R	O			R	R																						
TW-SRF-CHK	Chunk Wood Surfacing	L	SF	(needed)	R	O	R <sup>1</sup>	R	R	O			R	R																						
TW-SRF-CON	Concrete Surfacing	L	SF	(needed)	R	O	R <sup>1</sup>	R	R	O			R	R																						
TW-SRF-CLY	Imported Clay Surfacing	L	SF	(needed)	R	O	R <sup>1</sup>	R	R	O			R	R																						
TW-SRF-OTH	Other Surfacing	L	SF	(needed)	R	O	R <sup>1</sup>	R	R	O			R	R																						
TW-CTN	CLIMBING TURN (inventory item only)	P	EA	912-9,912-10	R		O					O																								
TW-TAL	TALUS SECTION	L	SF	912-3	R	O	R <sup>1</sup>	R	R				R	R																						
TW-TOT	TURNOUT	L	LF	912-6	R	O	R <sup>1</sup>	R	O																											
TW-PSS	PASSING SECTION	L	LF	912-6	R	O	R <sup>1</sup>	R	O																											
TW-FRD	FORD	L	LF		R	O	R <sup>1</sup>	R	R																											
TW-FRD-NFD	Natural Ford	L	SF	(needed)	R	O	R <sup>1</sup>	R	R																											
TW-FRD-CFD	Constructed Ford	L	SF	912-7,912-8	R	O	R <sup>1</sup>	R	R				R																							
TW-SST	Stepping Stones	P	EA	912-7,912-8	R		O	R					R	R																						
<b>TRAIL STRUCTURES</b>																																				
TS-SBK	SWITCHBACK	P			R		R <sup>1</sup>	O	O			R																								
TS-SBK-RAD	Type I - Radiused Switchback	P	EA	914-1	R		R <sup>1</sup>	O	O			R																								
TS-SBK-CIR	Type II - Circular Landing Switchback	P	EA	914-2	R		R <sup>1</sup>	O	O			R																								
TS-SBK-REC	Type III - Rectangular Landing Switchback	P	EA	914-3	R		R <sup>1</sup>	O	O			R																								

Trail Data Dictionary: Features, Dimensions, Material Type (updated 1/24/2007)

Feature / Tasks					Basic Inventory & Dimensions									Materials																					
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<b>TS-RET</b>	<b>RETAINING WALL</b>	L																																	
TS-RET-LOG	Log Crib	L	SF	934-1	R	O	R <sup>1</sup>	R		O	R			R	R		•	•	•	•													•		
TS-RET-PLK	Post & Plank (w/ Tie-backs) Retaining Wall	L	SF	(needed)	R	O	R <sup>1</sup>	R		O	R			R	R				•	•	•												•		
TS-RET-RCK	Stacked Rock Retaining Wall	L	SF	935-1	R	O	R <sup>1</sup>	R		O	R			R	R		•					•													
TS-RET-MAS	Masonry Rock Retaining Wall	L	SF		R	O	R <sup>1</sup>	R		O	R			R	R		•					•													
TS-RET-CON	Cast-in-place Concrete Retaining Wall	L	SF	(needed)	R	O	R <sup>1</sup>	R		O	R			R	R							•													
TS-RET-GAB	Wire Basket Retaining Wall	L	SF	(needed)	R	O	R <sup>1</sup>	R		O	R			R	R		•																		
<b>TS-SWY</b>	<b>STAIRWAY</b>	L / P																																	
TS-SWY-STP	Individual Steps	P	EA	933-3,933-4,933-5	R	R+	R+	O	O					R	R		•	•	•	•	•												•		
TS-SWY-OST	Overlapping Steps	L	SF	(needed)	R	O	R <sup>1</sup>	R	R					R	R		•		•	•		•											•		
TS-SWY-CRB	Crib Ladder (partially manufactured materials)	L	SF	933-1,933-2	R	O	R <sup>1</sup>	R	R					R	R		•	•	•	•	•	•	•										•		
TS-SWY-CAS	Staircase (completely manufactured materials)	L	SF	(needed)	R	O	R <sup>1</sup>	R	R					R	R			•	•	•	•	•	•										•		
TS-SWY-LAD	Ladder (Rigid, Rope, or Cable)	L	SF	(needed)	R	O	R <sup>1</sup>	R	R					R	R		•	•	•	•	•	•											•		
<b>TS-HND</b>	<b>HANDRAIL</b>	L	EA																																
TS-HND-BLT	Site-built Handrail	L	LF	(needed)	R	O	R <sup>1</sup>	R			O			R	R		•	•	•	•	•	•		•										•	
TS-HND-MOD	Modular Handrail	L	LF	(needed)	R	O	R <sup>1</sup>	R			O			R	R		•	•	•	•	•	•		•										•	
<b>TS-BAR</b>	<b>SIDE BARRIER</b>	L																																	
TS-BAR-RCK	Stacked Rock Barrier	L	LF	953-5	R	O	R <sup>1</sup>	R		O	O			R	R		•																		
TS-BAR-MAS	Masonry Rock Barrier	L	LF	(needed)	R	O	R <sup>1</sup>	R		O	R			R	R		•					•													
TS-BAR-GRD	Guardrail	L	LF	953-2,953-4	R	O	R <sup>1</sup>	R					O	R	R		•	•	•	•	•	•												•	
TS-BAR-PST	Barrier Rail On-Posts	L	LF	953-2,953-4	R	O	R <sup>1</sup>	R			O		O	R	R		•	•	•	•	•	•												•	
TS-BAR-GRD	Guardrail	L	LF	953-2,953-4	R	O	R <sup>1</sup>	R			R		O	R	R		•	•	•	•	•	•												•	
TS-BAR-CRB	Curb	L	LF	953-2,953-4	R	O	R <sup>1</sup>	R	O		R			R	R		•	•	•	•	•	•	•	•					•					•	
<b>TS-CGD</b>	<b>CATTLEGUARD</b>	P																																	
TS-CGD-STD	Standard Cattleguard	P	SF	(needed)	R		R <sup>1</sup>	R	R					R	R		•	•	•	•	•	•												•	
TS-CGD-BRG	Fence-Bridge Cattleguard	P	SF	(needed)	R		R <sup>1</sup>	R	R		O			R	R					•	•													•	
<b>TS-SAR</b>	<b>SLOPE ARMORING</b>	L																																	
TS-SAR-RIP	Rip Rap Rock Slope Armoring	L	SF	(needed)	R	O	R <sup>1</sup>	R		O	R			R	R		•																		•
TS-SAR-MSA	Miscellaneous Slope Armoring	L	SF	(needed)	R	O	R <sup>1</sup>	R		O	R			R	R		•	•				•	•											•	

Trail Data Dictionary: Features, Dimensions, Material Type (updated 1/24/2007)

Feature / Tasks					Basic Inventory & Dimensions										Materials																	
Feature / Task Code	Feature <sup>1</sup>	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)	
<b>TS-TPK</b>	<b>TURNPIKE</b> (a.k.a. Causeway)	L																														
TS-TPK-STD	Type I - Standard Turnpike	L	SF	913-1	R	O	R <sup>1</sup>	R	R	O				R	R	•	•	•	•	•												•
TS-TPK-FDN	Type II - Standard Turnpike w/ Foundation	L	SF	913-2	R	O	R <sup>1</sup>	R	R	O				R	R	•	•	•	•	•												•
<b>TS-PUN</b>	<b>PUNCHEON</b>	L																														
TS-PUN-STD	Standard Puncheon	L	SF	932-2	R	O	R <sup>1</sup>	R	R					R	R		•	•	•	•												•
TS-PUN-NOD	No-Deck Puncheon	L	SF	932-1	R	O	R <sup>1</sup>	R	R					R	R		•	•	•	•												•
<b>TS-BWK</b>	<b>BOARDWALK</b>	L																														
TS-BWK-STD	Standard Boardwalk	L	SF	(needed)	R	O	R <sup>1</sup>	R	R					R	R		•	•	•	•	•	•	•									•
TS-BWK-SNR	Step and Run	L	SF	(needed)	R	O	R <sup>1</sup>	R	R					R	R				•	•												•
<b>TS-CDY</b>	<b>CORDUROY</b>	L																														
TS-CDY-STD	Corduroy	L	SF	(needed)	R	O	R <sup>1</sup>	R	R					R	R		•	•	•	•												•
<b>TS-TUN</b>	<b>TUNNEL</b>	L																														
TS-TUN-STD	Standard Tunnel	L	CF	(needed)	R	O	R <sup>1</sup>	R	R		R			R	R	•			•	•	•	•										•
<b>TS-SHD</b>	<b>SNOW SHED</b>	L																														
TS-SHD-STD	Standard Snow Shed	L	CF	(needed)	R	O	R <sup>1</sup>	R	R		R			R	R	•			•	•	•	•										•
<b>TS-OVL</b>	<b>OVERLOOK</b>	P		(needed)																												
TS-OVL-GRD	On-Grade Overlook	P	SF	(needed)	R		R <sup>1</sup>	R	R					R	R	•	•	•	•	•	•	•	•				•	•				•
TS-OVL-ELV	Elevated Overlook	P	SF	needed	R		R <sup>1</sup>	R	R					R	R	•	•	•	•	•	•	•	•									•
<b>TS-CUS</b>	<b>CUSTOM TRAIL FEATURE</b>	L / P																														
TS-CUS-TS1	Custom Trail Structure 1	P	EA		R		R <sup>1</sup>	R	R					R	R	•	•	•	•	•	•	•	•									•
TS-CUS-TS2	Custom Trail Structure 2	L	LF		R	O	R <sup>1</sup>	R	O					R	R	•	•	•	•	•	•	•	•									•
TS-CUS-TS3	Custom Trail Structure 3	L	SF		R	O	R <sup>1</sup>	R	R					R	R	•	•	•	•	•	•	•	•									•
<b>TRAIL BRIDGES</b>																																
<b>TB</b>	<b>TRAIL BRIDGE</b>	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															•	•	•	•	•									•

Trail Data Dictionary: Features, Dimensions, Material Type (updated 1/24/2007)

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TB-SUB	Single Unit	L	SF	Special													•	•	•	•	•	•									•			
<b>DRAINAGE STRUCTURES</b>																																		
<b>TD-DIP</b>	<b>DRAIN DIP</b>	P																																
TD-DIP-STD	Standard Drain Dip	P	EA	912-4,912-5	R	R+	R+									•										•		•						
<b>TD-WBR</b>	<b>WATERBARS</b>	P																																
TD-WBR-RCK	Rock Waterbar	P	EA	922-1	R	R+	R+	O						R	R	•						•												
TD-WBR-LOG	Log Waterbar	P	EA	922-2	R	R+	R+	O						O	R	R		•	•	•	•												•	
TD-WBR-BLT	Belted Waterbar	P	EA	922-3	R	R+	R+	O							R	R									•								•	
<b>TD-CVT</b>	<b>CULVERTS</b>	P																																
TD-CVT-STD	Standard Culvert	P	EA	921-2	R	R+	R+	R						R	R	R						•	•		•								•	
TD-CVT-HDW	Standard Culvert w/ Headwalls	P	EA	921-1	R	R+	R+	R						R	R	R						•	•		•								•	
TD-CVT-RCK	Rock Culvert	P	EA	921-3	R	R+	R+	R	O		O			R	R	•																		
TD-CVT-BOX	Box Culvert	P	EA	921-4a,b	R	R+	R+	R	O		O			R	R				•	•		•											•	
TD-CVT-ACH	Bottomless Arch Culvert	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	•	•	•	•	•	•	•	•										•	
<b>TD-SPY</b>	<b>SPILLWAYS</b>	P																																
TD-SPY-RCK	Rock Spillway	P	SF	923-1	R	R+	R+		R		R			R	R	•						•												•
<b>TD-DAM</b>	<b>CHECK DAM</b>	P																																
TD-DAM-STD	Standard Check Dam	P	EA	915-2	R	R+	R+	O		O			O	R	R	•	•	•	•	•		•												•
<b>TD-DIT</b>	<b>DITCHES</b>	L																																
TD-DIT-SID	Side Ditch	L	LF	(needed)	R	R+	R+	R	O	O						•									•									
TD-DIT-LED	Leadoff Ditch	L	LF	(needed)	R	R+	R+	R	O	O						•									•									
<b>TD-BRM</b>	<b>BERM</b>	L																																
TD-BRM-STD	Standard Earth Berm	L	LF	(needed)	R	R+	R+	R	O		O														•									
<b>TD-UDN</b>	<b>UNDERDRAINS (a.k.a. French Drains)</b>	L																																
TD-UDN-RCK	Rock Underdrains	L	SF	924-1	R	O	R+	R	R	O				R	R	•																		
TD-UDN-GEO	Geotextile Underdrains	L	SF	(needed)	R	O	R+	R	R	O				R	R									•										•
<b>TD-CUS</b>	<b>CUSTOM DRAINAGE STRUCTURES</b>	L / P																																
TD-CUS-DS1	Custom Drainage Structure 1	P	EA		R	O	R+	R	R	O				R	R	•	•	•	•	•	•	•	•	•							•		•	
TD-CUS-DS2	Custom Drainage Structure 2	L	LF		R	O	R+	R	R	O				R	R	•	•	•	•	•	•	•	•	•							•		•	
TD-CUS-DS3	Custom Drainage Structure 3	L	SF		R	O	R+	R	R	O				R	R	•	•	•	•	•	•	•	•	•							•		•	



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<b>TRAILSIDE STRUCTURES</b>																																						
<b>SS-CNT</b>	<b>TRAFFIC COUNTERS</b>	P																																				
SS-CNT-BRD	Buried Counter	P	EA	(needed)	R	R <sup>1</sup>									R																							
SS-CNT-TRE	Tree-Mounted Counter	P	EA	(needed)	R	R <sup>1</sup>									R																							
<b>SS-RBX</b>	<b>REGISTRATION BOX</b>	P																																				
SS-RBX-RBG	Ground-Mounted Registration Box	P	EA	(needed)	R	R <sup>1</sup>								R	R																							
SS-RBX-RBE	Post-Mounted Registration Box	P	EA	(needed)	R	R <sup>1</sup>								R	R																							
<b>SS-DOK</b>	<b>DOCKS</b>	P																																				
SS-DOK-STA	Stationary Dock	P	SF	(needed)	R	R <sup>1</sup>	R	R			O			R	R																							
SS-DOK-FLT	Floating Dock (simple)	P	SF	(needed)	R	R <sup>1</sup>	R	R			O			R	R																							
<b>SS-BNH</b>	<b>BENCHES</b>	P																																				
SS-BNH-PRM	Primitive Bench	P	EA	(needed)	R	R+	R+	O	O		O			R	R																							
SS-BNH-MNF	Manufactured Bench	P	EA	(needed)	R	R+	R+	O	O		O			R	R																							
<b>SS-INF</b>	<b>INFORMATION BOARD</b>	P																																				
SS-INF-PAN	Flat-Panel Information Board	P	SF	(needed)	R	R <sup>1</sup>		R			R			R	R																							
SS-INF-KSK	Information Kiosk	P	SF	(needed)	R	R <sup>1</sup>		R			R			R	R																							
<b>SS-GAR</b>	<b>GARBAGE CONTAINERS</b>																																					
SS-GAR-CAN	Residential-Style Garbage Can	P	EA	(needed)	R	R <sup>1</sup>	R	R						R	R																							
SS-GAR-BIN	Commercial Bin	P	EA	(needed)	R	R <sup>1</sup>	R	R						R	R																							
<b>SS-CUS</b>	<b>CUSTOM TRAILSIDE STRUCTURE</b>	L / P																																				
SS-CUS-SS1	Custom Trailside Structure 1	P	EA		R	R <sup>1</sup>	R	R						R	R																							
SS-CUS-SS2	Custom Trailside Structure 2	L	LF		R	O	R <sup>1</sup>	R	O					R	R																							
<b>RESTRICTION DEVICES</b>																																						
<b>RD-BCD</b>	<b>BARRICADE</b>	P																																				
RD-BCD-BDR	Boulder Barricade	P	EA	(needed)	R	R <sup>1</sup>		O		O				R	R																							
SS-BCD-BOL	Single Post Bollard	P	EA	(needed)	R	R		O	O	R			O	R	R																							
RD-BCD-MNF	Manufactured Barricade	P	EA	(needed)	R	R <sup>1</sup>		O		O				R	R																							
<b>RD-STL</b>	<b>STILE</b>	P																																				
RD-STL-STD	Standard Stile	P	EA	(needed)	R	R <sup>1</sup>		O		O				R	R																							
<b>RD-FNC</b>	<b>FENCE</b>	L																																				
RD-FNC-WIR	Post and Wire Fence	L	LF	(needed)	R	R <sup>1</sup>	R			O				R	R																							
RD-FNC-RAL	Post and Rail Fence	L	LF	(needed)	R	R <sup>1</sup>	R			O				R	R																							
RD-FNC-WOV	Woven Wire Fence	L	LF	(needed)	R	R <sup>1</sup>	R			O				R	R																							

Trail Data Dictionary: Features, Dimensions, Material Type (updated 1/24/2007)

Feature / Tasks					Basic Inventory & Dimensions										Materials																	
Feature / Task Code	Feature <sup>1</sup>	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)	
RD-FNC-JAC	Jackleg Fence	L	LF	(needed)	R		R <sup>1</sup>	R			O			R	R		•	•	•	•	•											•
RD-FNC-STK	Stacked Rail Fence (Worm)	L	LF	(needed)	R		R <sup>1</sup>	R			O			R	R		•	•	•	•	•											•
<b>RD-GAT</b>	<b>GATE</b>	P																														
RD-GAT-WIR	Wire Gate	P	EA	(needed)	R		R <sup>1</sup>	R			O			R	R						•											•
RD-GAT-SWG	Swinging Gate	P	EA	(needed)	R		R <sup>1</sup>	R			O			R	R		•	•	•	•	•		•	•								•
RD-GAT-RAL	Loose-Rail Gate	P	EA	(needed)	R		R <sup>1</sup>	R			O			R	R		•	•	•	•	•		•	•								•
<b>RD-CUS</b>	<b>CUSTOM RESTRICTION DEVICE</b>	L / P																														
RD-CUS-RD1	Custom Restriction Device 1	P	EA		R		R <sup>1</sup>	R			O			R	R	•	•	•	•	•	•	•	•	•								•
RD-CUS-RD2	Custom Restriction Device 2	L	LF		R		R <sup>1</sup>	R			O			R	R	•	•	•	•	•	•	•	•	•								•
<b>ROUTE MARKERS &amp; SIGNS</b>																																
<b>RM-CRN</b>	<b>CAIRN</b>	P																														
RM-CRN-SMP	Simple Rock Cairn	P	EA	952-1	R	R+	R+				O		O	R	R	•																•
RM-CRN-RCK	Rock Cairn	P	EA	952-1	R	R+	R+				O		O	R	R	•																•
RM-CRN-SHP	Shepherders Cairn	P	EA	(needed)	R	R+	R+				O		O	R	R	•																•
<b>RM-PST</b>	<b>ROUTE MARKER POST</b>	P		(needed)																												
RM-PST-STD	Standard Post	P	EA	952-1	R	R+	R+				O		O	R	R		•	•	•	•	•	•	•	•								•
<b>RM-BLZ</b>	<b>TREE BLAZE</b>	P		(needed)																												
RM-BLZ-NFS	Standard FS Blaze	P	EA	952-1	R	R+	R+																									•
<b>RM-BZR</b>	<b>ROUTE BLAZER</b>	P		(needed)																												
RM-BZR-MNF	Manufactured Blazer	P	EA	952-1	R	R+	R+						R						•	•	•		•	•								•
<b>RM-BOY</b>	<b>BUOY</b>	P																														
RM-BOY-REG	Regulatory Buoy	P	EA	(needed)	R	R+	R+						R	R							•			•							•	
RM-BOY-ANC	Anchor Buoy	P	EA	(needed)	R	R+	R+						R	R							•			•							•	
<b>RM-MMK</b>	<b>MILEAGE MARKER</b>	P		952-1																												
RM-MMK-STD	Tree-Mounted Mile-Marker	P	EA	952-1	R	R+	R+				O		R	R					•		•		•	•							•	
RM-MMK-PST	Post-Mounted Mile-Marker	P	EA	952-1	R	R+	R+				O		R	R					•		•		•	•							•	
RM-MMK-SCR	Scribed Mile-Marker	P	EA	952-1	R	R+	R+				O																		•			•
<b>RM-SGN</b>	<b>SIGN</b>	P																														
RM-SGN-GUI	Guide or Destination Sign	P	EA	952-1	R		R <sup>1</sup>	R	R	R	R	R	R	R	R						•	•	•		•	•						•
RM-SGN-BDY	Boundary	P	EA	952-1	R		R <sup>1</sup>	R	R		O		R	R							•	•	•		•	•						•
RM-SGN-WRN	Warning	P	EA	952-1	R		R <sup>1</sup>	R	R		O		R	R							•	•	•		•	•						•
RM-SGN-REG	Regulatory	P	EA	952-1	R		R <sup>1</sup>	R	R		O		R	R																		•
RM-SGN-INF	Informational	P	EA	(needed)	R		R <sup>1</sup>	R	R		O		R	R							•	•	•		•	•						•



**Trail Data Dictionary: Features, Dimensions, Material Type** (updated 1/24/2007)

Feature / Tasks					Basic Inventory & Dimensions										Materials																
<b>Feature / Task Code</b>	<b>Feature<sup>1</sup></b>	<b>Line or Point Feature</b>	<b>Task UoM</b> (Unit of Measure)	<b>Standard Drawing</b>	<b>BMP: mi, ft (km, m)</b>	<b>EMP: mi, ft (km, m)</b>	<b>Quantity: ea</b>	<b>Length: ft (m)</b>	<b>Width in (mm)</b>	<b>Depth: in (mm)</b>	<b>Height: in (mm)</b>	<b>Radius: ft (m)</b>	<b>Diameter: in (mm)</b>	<b>Material Type</b> (primary)	<b>Distance to Material Source or Nearest Trailhead: ft (m)</b>	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)

**Footnotes:**

Note<sup>1</sup> 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.

Note<sup>2</sup> Adjacent Reference Points (ARP) cannot currently be recorded in Infra Trails. ARP's are a TRACS survey item, and intended only to create mile-posted trail logs. ARP data fields cannot be used for recording required inventory or cost data for Buildings, Trailheads, CUAs, Roads, Trails, etc (see applicable Infra modules). When available in Infra Trails, however, any ARP data recorded must be entered by BMP and/or EMP.

**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

R<sup>1</sup> = 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 direction on grouping by feature type and Trail Class.)

R<sup>length</sup> = EMP may be used to determine feature length, instead of calculating length during field surveys.

O = Measurement is optional.

O<sup>RP</sup> = If recording an Adjacent Reference Point, the BMP must be recorded. (see Note<sup>2</sup> above.)

## TRACS Data Dictionary: Tasks





**Trails Data Dictionary: Tasks** (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
<b>TRAILWAY</b>									
<b>TW-CHTR</b>	<b>CHARTER / RENTAL</b>		LS						
TW-CHTR-OPS	Charter/Rentals for Operation Crews		LS	Operations					
TW-CHTR-AM	Charter/Rentals for Annual Maintenance Crews		LS	Annual Mtce					
TW-CHTR-DM	Charter/Rentals for Deferred Maintenance Crews		LS	Defered Maintenance					
TW-CHTR-CI	Charter/Rentals for Capital Improvement Crews		LS	Capital Imprvmt					
<b>TW-OPS</b>	<b>OPERATIONS</b>		LF						
TW-OPS-SET-01.01	Mitigate trail use / environmental law conflicts through signing, patrol, closure (operations crew)		Mi	Operations	Custom Severity				
TW-OPS-SET-01.02	Identify appropriate mitigation of trail use / environmental law conflicts (management crew)		Mi	Operations	Custom Severity				
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 Severity				
TW-OPS-SS-01.02	Identify and prescribe hazard mitigation along trail (management crew)		Mi	Operations	Custom Severity				
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				
<b>TW-CDR</b>	<b>CORRIDOR MAINTENANCE</b>		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				

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
<b>TW-S&amp;D</b>	<b>SURVEY, PREP&amp; ADMIN</b>		LF						
TW-S&D-01a	Routine TRACS Survey		Mi	Annual	Over 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	Up to 3 miles per day in field
TW-S&D-01b	Administration of Operations Tasks		EA	Annual	5% of all operations costs				
TW-S&D-01c	Administration of Routine Maintenance Tasks		EA	Annual	10% of all annual mtce costs				
TW-S&D-02a	Survey, Design, and Administration of DM Tasks		EA	Repair	30% of all deferred mtce costs				
TW-S&D-02b	Trail Specific NEPA and/or Clearances for DM Projects		EA	All DM	Produce Letter to File	Produce CE	Produce Simple EA & Decision		
TW-S&D-07a	Survey, Design, and Administration of CI Tasks		EA	Install New	30% of all improvement costs				
TW-S&D-07b	Trail Specific NEPA and/or Clearances for CI Projects		EA	All CI	Produce Letter to File	Produce CE	Produce Simple EA & Decision	Produce Complex EA & Decision	Produce EIS & Decision
<b>TW-TRD</b>	<b>TREAD &amp; PRISM</b>	L	SF						
TW-TRD-01a	Routine Tread Maintenance		Mi	Annual Mtce	AutoCalculated				
TW-TRD-01b	Routine Tread Drainage		Mi	Annual Mtce	AutoCalculated				
TW-TRD-01c	Snow Grooming - Large Dual-Track class		Mi	Annual Mtce	6-8 mph	4-6 mph	2-4 mph	< 2 mph	
TW-TRD-01d	Snow Grooming -Track-Setting with Snowmobile		Mi	Annual Mtce	15-20 mph	10-15 mph	5-10 mph		
TW-TRD-02a	Reestablish original native tread		LF	Repair	Recut < 10% of original prism dimensions	Recut between 10 & 25% of original prism	Recut between 25 & 50% of original prism	Recut between 50 & 100% of original prism	Recut 100% of original prism
			MI	Repair	Recut < 10% of original prism dimensions	Recut between 10 & 25% of original prism	Recut between 25 & 50% of original prism	Recut between 50 & 100% of original prism	Recut 100% of original prism
TW-TRD-02b	Stump removal		EA	Repair	Less than 6-in diameter	Between 6-in and 12-in diameter	Between 12-in and 24-in diameter	Between 24-in and 48-in diameter	Over 48-in diameter
			Mi	Repair	1-3 per mile	3-5 per mile	5-10 per mile	Over 10 per mile	
TW-TRD-02c	Flatten steep backslope		LF	Repair	Flatten by an additional 1/4:1	by 1/2:1	by 3/4:1		
TW-TRD-02d	Repair trenched tread		LF	Repair	Cut slope edges	Combo: slope edges & 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 Ammendment/Stabilizers		SY	Repair	Generic Type				



Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
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-in deep	1-in deep	2-in deep		
TW-TRD-02i	Berm Removal		LF	Repair	<12-in above tread in common soils	<12-in above tread in compact rocky soils	>15-in above tread in common soils	>15-in above tread in compact rocky soils	
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 one foot	Widen 2 feet	Widen 3-5 feet	Widen 5-10 feet	Widen over 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 & 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	
<b>TW-CLR</b>	<b>CLEARING LIMITS</b>	L	CF						
TW-CLR-01a	Routine Logging Out		Mi	Annual Mtce	AutoCalculated				
TW-CLR-01b	Routine Brushing or Mowing		Mi	Annual Mtce	AutoCalculated				
TW-CLR-01c	Spray for noxious weeds inside 20-ft trail corridor, single pass		LF	Annual Mtce	Production of over 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 less than 1 mile per day per person
TW-CLR-01d	Hand-pull noxious weeds inside 20-ft trail corridor		LF	Annual Mtce	Production of over 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 miles per day per person	Production of less than 1/4 mile per day per person
TW-CLR-01e	Remove hazard tree		EA	Annual Mtce	Less than 6-in diameter	Between 6-in and 12-in diameter	Between 12-in and 24-in diameter	Between 24-in and 48-in diameter	Over 48-in diameter
TW-CLR-01f	Trail Opening (first-of-season opening by 2-persons)		Mi	Annual Mtce	Over 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		

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TW-CLR-02b	Reestablish total cleared opening (deferred logging and brushing)		LF	Repair	Production of over 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 less than 1 mile per day per person
			Mi	Repair	Production of over 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 less than 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 up to 3-foot tall	Stock between 3 & 5-foot tall	Stock above 5 foot tall (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
<b>TW-SRF</b>	<b>SURFACING</b>	L							
<b>TW-SRF-AGG</b>	<b>Aggregate Surfacing</b>	L	SF						
TW-SRF-AGG-01a	Basic Maintenance		LF	Annual Mtce	Basic Mtce				
TW-SRF-AGG-01b	Surface grading		LF	Annual Mtce	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 Ammendment/Stabilizers or Dust Abatement		SY	Install New	Generic Type				
<b>TW-SRF-ASP</b>	<b>Asphalt Surfacing</b>	L	SF						
TW-SRF-ASP-01a	Basic Maintenance		LF	Annual Mtce	Basic Maintenance				
TW-SRF-ASP-02a	Patch potholes & Edge		SF	Repair	Intermittent	Frequent	Continuous		
TW-SRF-ASP-02b	Seal cracks		SF	Repair	0-10-ft per sta.	10-20-ft per sta.	over 20- per sta.		

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TW-SRF-ASP-02c	Apply Sealcoat		SF	Repair	Fog Seal	Chip Seal			
TW-SRF-ASP-02d	1" 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 demolish and dispose)		CY	Replace in-kind	Cold Mix	Hot Mix			
TW-SRF-ASP-04a	Demolish & Dispose		SF	Decom	Cold mix 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			
<b>TW-SRF-GD1</b>	<b>Grid-Unit Surfacing Type I</b>	<b>L</b>	<b>SF</b>						
TW-SRF-GD1-01a	Basic Maintenance		LF	Annual Mtce	Basic Maintenance				
TW-SRF-GD1-02a	Replace units		SF	Repair	1-2 units/10-ft	2-4 units/10-ft	4-6 units/10-ft	over 6 units/10-ft	
TW-SRF-GD1-03a	Replace in-kind		SF	Replace in-kind	Replace				
TW-SRF-GD1-04a	Demolish & Dispose		SF	Decom	Demolish & Dispose				
TW-SRF-GD1-05a	Increase Width		SF	Expan	Increase Width				
TW-SRF-GD1-07a	Install New		SF	Install New	Install New				
<b>TW-SRF-RRP</b>	<b>RipRap Surfacing</b>	<b>L</b>	<b>SF</b>						
TW-SRF-RRP-01a	Basic Maintenance		LF	Annual Mtce	Basic Maintenance				
TW-SRF-RRP-02a	Replace rocks		LF	Repair	1-2 rocks/10-ft	2-4 rocks/10-ft	4-6 rocks/10-ft	over 6 rocks/10-ft	
TW-SRF-RRP-03a	Replace in-kind		SF	Replace in-kind	Replace				
TW-SRF-RRP-04a	Demolish & Dispose		SF	Decom	Demolish				
TW-SRF-RRP-05a	Increase Width		LF	Expan	Increase width				
TW-SRF-RRP-07a	Install New		SF	Install New	Install New				
<b>TW-SRF-CHK</b>	<b>Chunk Wood Surfacing</b>	<b>L</b>	<b>SF</b>						
TW-SRF-CHK-01a	Basic Maintenance		LF	Annual Mtce	Basic Maintenance				

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TW-SRF-CHK-02a	Resurface		SF	Repair	1-in Loose	2-in Loose	3-in Loose		
TW-SRF-CHK-02b	Replace Retainers		LF	Repair	One side	Both sides			
TW-SRF-CHK-03a	Replace in-kind		CY	Replace in-kind	Replace				
TW-SRF-CHK-04a	Demolish & Dispose		SF	Decom	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			
<b>TW-SRF-CON</b>	<b>Concrete Surfacing</b>	L	SF						
TW-SRF-CON-01a	Basic Maintenance		LF	Annual Mtce	Basic Maintenance				
TW-SRF-CON-02a	Patch spalling		SF	Repair	up to 5% of area	5-10% of area	over 10% of area		
TW-SRF-CON-02b	Seal cracks		SF	Repair	0-10 ft of cracks per station	10-20 ft of cracks per station	over 20 ft of cracks per station		
TW-SRF-CON-03a	Replace in-kind		CY	Replace in-kind	Replace				
TW-SRF-CON-04a	Demolish & 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	New				
<b>TW-SRF-CLY</b>	<b>Imported Clay Surfacing</b>	L	SF						
TW-SRF-CLY-01a	Basic Maintenance		LF	Annual Mtce	Basic Maintenance				
TW-SRF-CLY-02a	Grade and compact		SF	Repair	Grade and compact				
TW-SRF-CLY-02b	Overlay		SF	Repair	1-in Compacted	2-in Compacted			
TW-SRF-CLY-02c	Repair/replace retainers		LF	Repair	One side	Both sides			
TW-SRF-CLY-03a	Replace in-kind		CY	Replace in-kind	Machine compaction				
TW-SRF-CLY-04a	Demolish & Dispose		SF	Decom	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			

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
<b>TW-SRF-OTH</b>	<b>Other Surfacing</b>	L	SF						
TW-SRF-OTH-01a	Basic Maintenance		LF	Annual Mtce	Custom Severity				
TW-SRF-OTH-02a	Overlay		SF	Repair	Custom Severity				
TW-SRF-OTH-02b	Repair/replace retainers		LF	Repair	One side	Both sides			
TW-SRF-OTH-03a	Replace in-kind		CY	Replace in-kind	Custom Severity				
TW-SRF-OTH-04a	Demolish & Dispose		SF	Decom	Custom Severity				
TW-SRF-OTH-05a	Increase Width		CY	Expan	Custom Severity				
TW-SRF-OTH-07a	Install New		CY	Install New	Custom Severity				
TW-SRF-OTH-07b	Install Retainers		LF	Install New	One side	Both sides			
<b>TW-CTN</b>	<b>CLIMBING TURN (inventory item only)</b>	P	EA						
<b>TW-TAL</b>	<b>TALUS SECTION</b>	L	SF						
TW-TAL-01a	Basic Maintenance		LF	Annual Mtce	Basic Maintenance				
TW-TAL-02a	Add cushion material		SF	Repair	1-in	2-in	3-in	4-in	5-in
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				
<b>TW-TOT</b>	<b>TURNOUT</b>	L	LF						
TW-TOT-01a	Basic Maintenance		LF	Annual Mtce	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			
<b>TW-PSS</b>	<b>PASSING SECTION</b>	L	LF						
TW-PSS-01a	Basic Maintenance		LF	Annual Mtce	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			

**Trails Data Dictionary: Tasks** (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TW-PSS-07a	Construct new (composite construction)		LF	Install New	Light	Heavy			
<b>TW-FRD</b>	<b>FORD</b>	L	LF						
<b>TW-FRD-NFD</b>	<b>Natural Ford</b>	L	SF						
TW-FRD-NFD-01a	Basic Maintenance		LF	Annual Mtce	Basic Maintenance				
TW-FRD-NFD-07a	Construct New		LF	Install New	2-4 feet wide	4-8 feet wide	8-12 feet wide		
<b>TW-FRD-CFD</b>	<b>Constructed Ford</b>	L	SF						
TW-FRD-CFD-01a	Basic Maintenance		LF	Annual Mtce	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		
TW-FRD-CFD-04a	Decommision to Natural Ford		EA	Decom	Decom to natural ford				
TW-FRD-CFD-07a	Construct New		LF	Install New	2-4 feet wide	4-8 feet wide	8-12 feet wide		
<b>TW-SST</b>	<b>Stepping Stones</b>	P	EA						
TW-SST-01a	Basic Maintenance		LF	Annual Mtce	Basic Maintenance				
TW-SST-02a	Replace Lost Stones		EA	Repair	Replace stones				
TW-SST-07a	Install new stepping stone segment		LF	Install New	New				
<b>TRAIL STRUCTURES</b>									
<b>TS-SBK</b>	<b>SWITCHBACK</b>	P							
<b>TS-SBK-RAD</b>	<b>Type I - Radiused Switchback</b>	P	EA						
TS-SBK-RAD-01a	Basic Maintenance		EA	Annual Mtce	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	Up to 3-ft radius				

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-SBK-RAD-04a	Decommission		EA	Decom	Drain and slash	Recontour			
TS-SBK-RAD-05a	Increase Radius		EA	Expan	Add up to 2-ft	Add 2-ft to 4-ft	Add 4-ft to 6-ft	Add 6-ft to 8-ft	Add over 8-ft
TS-SBK-RAD-07a	Construct New		EA	Install New	Up to 3-ft radius	Between 3-ft and 5-ft radius	Between 5-ft and 7-ft radius	Between 7-ft and 13-ft radius	Over 13-radius
<a href="#">TS-SBK-CIR</a>	<a href="#">Type II - Circular Landing Switchback</a>	P	EA						
TS-SBK-CIR-01a	Basic Maintenance		EA	Annual Mtce	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	
TS-SBK-CIR-03a	Replace in-kind		EA	Replace in-kind	3-ft radius	4-ft radius	5-ft radius	6-ft radius	
TS-SBK-CIR-04a	Decommission		EA	Decom	Drain and slash	Recontour			
TS-SBK-CIR-05a	Increase Radius		EA	Expan	Add up to 2-ft	Add 3-ft	Add 4-ft	Add 5-ft	
TS-SBK-CIR-07a	Construct New		EA	Install New	3-ft radius	4-ft radius	5-ft radius	6-ft radius	
<a href="#">TS-SBK-REC</a>	<a href="#">Type III - Rectangular Landing Switchback</a>	P	EA						
TS-SBK-REC-01a	Basic Maintenance		EA	Annual Mtce	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				

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
<b>TS-RET</b>	<b>RETAINING WALL</b>	L							
TS-RET-LOG	Log Crib	L	SF						
TS-RET-LOG-01a	Basic Maintenance such as repinning cap logs, etc.		SF	Annual Mtce	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		SF	Replace in-kind	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights 4-6 feet	Wall heights above 8 feet	
TS-RET-LOG-04a	Demolish & 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 above 8 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 above 8 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 above 8 feet	
			CY	Install New	Any wall height				
<b>TS-RET-PLK</b>	<b>Post &amp; Plank (w/ Tie-backs) Retaining Wall</b>	L	SF						
TS-RET-PLK-01a	Basic Maintenance		SF	Annual Mtce	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	Only Severity				
TS-RET-PLK-03a	Replace in-kind		SF	Replace in-kind	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights 4-6 feet	Wall heights above 8 feet	
TS-RET-PLK-04a	Demolish & Dispose		SF	Decom	Let deteriorate, no imminent hazard	Completely remove			
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 above 8 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 above 8 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 above 8 feet	
<b>TS-RET-RCK</b>	<b>Stacked Rock Retaining Wall</b>	L	SF						
TS-RET-RCK-01a	Basic Maintenance minor work such as repositioning loose rock work		SF	Annual Mtce	Basic Maintenance				
TS-RET-RCK-02	Generic Repair		SF	Repair	Generic Repair				



Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-RET-RCK-02a	Rebuild small failed sections		SF	Repair	Restack				
TS-RET-RCK-02b	Replace 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 above 8 feet	
TS-RET-RCK-03a	Replace in-kind		SF	Replace in-kind	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights 4-6 feet	Wall heights above 8 feet	
TS-RET-RCK-04a	Demolish & Dispose		SF	Decom	Let deteriorate, no imminent hazard	Completely remove			
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 above 8 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 above 8 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 above 8 feet	
			CY	Install New	Any wall height				
<b>TS-RET-MAS</b>	<b>Masonry Rock Retaining Wall</b>	<b>L</b>	<b>SF</b>						
TS-RET-MAS-01a	Basic Maintenance such as replacing a couple of rocks or minor repointing grout		SF	Annual Mtce	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	Rebuilt section				
TS-RET-MAS-03a	Replace in-kind when major failures exist, reuse rock		SF	Replace in-kind	Wall heights up to 2 feet	Wall heights 2-4 feet	Wall heights 4-6 feet	Wall heights above 8 feet	
TS-RET-MAS-04a	Demolish & Dispose		SF	Decom	Let deteriorate, no imminent failure or hazard	Completely remove			
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 above 8 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 above 8 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 above 8 feet	
			CY	Install New	Any wall height				
<b>TS-RET-CON</b>	<b>Cast-in-place Concrete Retaining Wall</b>	<b>L</b>	<b>SF</b>						
TS-RET-CON-01a	Basic Maintenance such as replacing a couple of rocks or minor repointing grout		SF	Annual Mtce	Basic Maintenance				
TS-RET-CON-02	Generic Repair		SF	Repair	Generic Repair				

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-RET-CON-02a	Patch spalled sections		SF	Repair	Patch spalling				
TS-RET-CON-03a	Replace in-kind when major failures exist		SF	Replace in-kind	Wall heights up to 4 feet	Wall heights 4-8 feet	Wall heights above 8 feet		
TS-RET-CON-04a	Demolish & Dispose		SF	Decom	Let deteriorate, no imminent hazard	Completely remove			
TS-RET-CON-05a	Increase Height		SF	Expan	Wall heights up to 4 feet	Wall heights 4-8 feet	Wall heights above 8 feet		
TS-RET-CON-05b	Increase Length		SF	Expan	Wall heights up to 4 feet	Wall heights 4-8 feet	Wall heights above 8 feet		
TS-RET-CON-07a	Install New		SF	Install New	Wall heights up to 4 feet	Wall heights 4-8 feet	Wall heights above 8 feet		
			CY	Install New	Any wall height				
<b>TS-RET-GAB</b>	<b>Wire Basket Retaining Wall</b>	L	SF						
TS-RET-GAB-01a	Basic Maintenance		SF	Annual Mtce	Basic Maintenance				
TS-RET-GAB-02	Generic Repair		SF	Repair	Generic Repair				
TS-RET-GAB-02a	Repair Ruptured Basket		SF	Repair	Basket repair				
TS-RET-GAB-03a	Replace in-kind, reuse same fill rock		SF	Replace in-kind	Walls 3-ft thick, any height	Walls 6-ft thick, any height	Walls 9-ft thick, any height		
TS-RET-GAB-04a	Demolish & Dispose		SF	Decom	Let deteriorate, no imminent failure or	Completely Remove			
TS-RET-GAB-05a	Increase Height		SF	Expan	Walls 3-ft thick, any height	Walls 6-ft thick, any height	Walls 9-ft thick, any height		
TS-RET-GAB-05b	Increase Length		SF	Expan	Walls 3-ft thick, any height	Walls 6-ft thick, any height	Walls 9-ft thick, any height		
TS-RET-GAB-07a	Install New		SF	Install New	Walls 3-ft thick, any height	Walls 6-ft thick, any height	Walls 9-ft thick, any height		
			CY	Install New	Any wall height				
<b>TS-SWY</b>	<b>STAIRWAY</b>	L / P							
<b>TS-SWY-STP</b>	<b>Individual Steps</b>	P	EA						
TS-SWY-STP-01a	Basic Maintenance, such as minor resetting or repositioning individual steps		EA	Annual Mtce	Basic Maintenance				
TS-SWY-STP-02	Generic Repair		EA	Repair	Generic Repair				
TS-SWY-STP-03a	Replace in-kind, when over 50% needs repair		SF	Replace in-kind	Replace				
TS-SWY-STP-04a	Demolish & Dispose		EA	Decom	Demolish				

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-SWY-STP-07a	Construct New		EA	Install New	New step				
			LF	Install New	Every 100-LF	Every 75-LF	Every 50-LF	Every 12-LF	Every 6-LF
<b>TS-SWY-OST</b>	<b>Overlapping Steps</b>	L	SF						
TS-SWY-OST-01a	Basic Maintenance		SF	Annual Mtce	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 over 50% needs repair		SF	Replace in-kind	Replace				
TS-SWY-OST-04a	Demolish & Dispose		SF	Decom	Demolish				
TS-SWY-OST-05a	Increase Length		SF	Expan	Easy digging & fitting	Tough digging & fitting	Extreme digging & fitting		
TS-SWY-OST-05b	Increase Width		SF	Expan	Easy digging & fitting	Tough digging & fitting	Extreme digging & fitting		
TS-SWY-OST-07a	Construct New		SF	Install New	Easy digging & fitting	Tough digging & fitting	Extreme digging & fitting		
<b>TS-SWY-CRB</b>	<b>Crib Ladder (partially manufactured materials)</b>	L	SF						
TS-SWY-CRB-01a	Basic Maintenance such as refilling tread		SF	Annual Mtce	Basic Maintenance				
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 over 50% deterioration		SF	Replace in-kind	Replace				
TS-SWY-CRB-04a	Demolish & Dispose		SF	Decom	Demolish				
TS-SWY-CRB-05a	Increase Length		SF	Expan	Easy digging & fitting	Tough digging & fitting	Extreme digging & fitting		
TS-SWY-CRB-07a	Install New, no handrails		SF	Install New	Easy digging & fitting	Tough digging & fitting	Extreme digging & fitting		
<b>TS-SWY-CAS</b>	<b>Staircase (completely manufactured materials)</b>	L	SF						
TS-SWY-CAS-01a	Basic Maintenance such as refastening, etc.		SF	Annual Mtce	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 over 50% deterioration or loading capacity is less than 80% of design		SF	Replace in-kind	without Handrail	with single handrail	with double handrail		
TS-SWY-CAS-04a	Demolish & Dispose		SF	Decom	Demolish				

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
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		
<b>TS-SWY-LAD</b>	<b>Ladder (Rigid, Rope, or Cable)</b>	L	SF						
TS-SWY-LAD-01a	Basic Maintenance		SF	Annual Mtce	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 over 50% deterioration or loading capacity is less than 80% of design		SF	Replace in-kind	Replace				
TS-SWY-LAD-04a	Demolish & Dispose		SF	Decom	Demolish				
TS-SWY-LAD-05a	Increase Length		SF	Expan	Lengthen				
TS-SWY-LAD-07a	Fabricate New		SF	Install New	New				
<b>TS-HND</b>	<b>HANDRAIL</b>	L	EA						
<b>TS-HND-BLT</b>	<b>Site-built Handrail</b>	L	LF						
TS-HND-BLT-01a	Basic Maintenance such as painting		LF	Annual Mtce	Basic Maintenance				
TS-HND-BLT-01b	Seasonal Removal/Installation		LF	Annual Mtce	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-in	Increase 12-in	Increase 18-in	Increase 24-in	
TS-HND-BLT-02c	Reduce openings to standard		LF	Repair	Decrease 3-in	Decrease 6-in	Decrease 9-in	From wide open	
TS-HND-BLT-03a	Replace in-kind when not capable of supporting 200#/LF		LF	Replace in-kind	Replace entire structure				
TS-HND-BLT-04a	Demolish & Dispose		LF	Decom	Demolish				
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		
<b>TS-HND-MOD</b>	<b>Modular Handrail</b>	L	LF						
TS-HND-MOD-01a	Basic Maintenance such as straightening, etc.		LF	Annual Mtce	Basic Maintenance				
TS-HND-MOD-01b	Seasonal Removal/Installation		LF	Annual Mtce	Seasonal Installation				
TS-HND-MOD-02	Generic Repair		LF	Repair	Generic Repair				

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Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
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-in	Increase 12-in	Increase 18-in	Increase 24-in	
TS-HND-MOD-02c	Reduce openings to standard		LF	Repair	Decrease 3-in	Decrease 6-in	Decrease 9-in	From wide open	
TS-HND-MOD-03a	Replace in-kind when not capable of supporting 200#/LF		LF	Replace in-kind	Replace entire structure				
TS-HND-MOD-04a	Demolish & Dispose		LF	Decom	Demolish				
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		
<b>TS-BAR</b>	<b>SIDE BARRIER</b>	L							
<b>TS-BAR-RCK</b>	<b>Stacked Rock Barrier</b>	L	LF						
TS-BAR-RCK-01a	Basic Maintenance minor work such as repositioning loose rock work		LF	Annual Mtce	Basic Maintenance				
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-ft	Wall heights 2-ft to 4-ft	Wall heights over 4-ft		
TS-BAR-RCK-04a	Demolish & Dispose		LF	Decom	Let deteriorate, no imminent hazard	Completely remove			
TS-BAR-RCK-05a	Increase Height		LF	Expan	increase by 1-ft	increase by 2-ft	increase by 3-ft		
TS-BAR-RCK-05b	Increase Length		LF	Expan	Wall heights up to 2-ft	Wall heights 2-ft to 4-ft	Wall heights over 4-ft		
TS-BAR-RCK-07a	Install New		LF	Install New	Wall heights up to 2-ft	Wall heights 2-ft to 4-ft	Wall heights over 4-ft		
			CY	Install New	Any wall height				
<b>TS-BAR-MAS</b>	<b>Masonry Rock Barrier</b>	L	LF						
TS-BAR-MAS-01a	Basic Maintenance		LF	Annual Mtce	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		LF	Replace in-kind	Wall heights up to 2-ft	Wall heights 2-ft to 4-ft	Wall heights over 4-ft		

**Trails Data Dictionary: Tasks** (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-BAR-MAS-04a	Demolish & Dispose		LF	Decom	Let deteriorate, no imminent hazard	Completely Remove			
TS-BAR-MAS-05a	Increase Height		LF	Expan	increase by 1-ft	increase by 2-ft	increase by 3-ft		
TS-BAR-MAS-05b	Increase Length		LF	Expan	Wall heights up to 2-ft	Wall heights 2-ft to 4-ft	Wall heights over 4-ft		
TS-BAR-MAS-07a	Install New		LF	Install New	Wall heights up to 2-ft	Wall heights 2-ft to 4-ft	Wall heights over 4-ft		
			CY	Install New	Any wall height				
<b>TS-BAR-OGR</b>	<b>Barrier Rail On-Grade</b>	L	LF						
TS-BAR-OGR-01a	Basic Maintenance		LF	Annual Mtce	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 where over 50% deterioration		LF	Replace in-kind	Replace				
TS-BAR-OGR-04a	Demolish & Dispose		LF	Decom	Let deteriorate, no imminent hazard	Completely remove			
TS-BAR-OGR-05a	Increase Length		LF	Expan	Lengthen				
TS-BAR-OGR-07a	Install New		LF	Install New	New				
<b>TS-BAR-PST</b>	<b>Barrier Rail On-Posts</b>	L	LF						
TS-BAR-PST-01a	Basic Maintenance		LF	Annual Mtce	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		LF	Replace in-kind	Replace				
TS-BAR-PST-04a	Demolish & Dispose		LF	Decom	Let deteriorate, no imminent hazard	Completely Remove			
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		
<b>TS-BAR-GRD</b>	<b>Guardrail</b>	L	LF						
TS-BAR-GRD-01a	Basic Maintenance		LF	Annual Mtce	Basic Maintenance				
TS-BAR-GRD-02	Generic Repair		LF	Repair	Generic Repair				

**Trails Data Dictionary: Tasks** (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
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		LF	Replace in-kind	Replace				
TS-BAR-GRD-04a	Demolish & Dispose		LF	Decom	Let deteriorate, no imminent hazard	Completely remove			
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-ft				
TS-BAR-GRD-07a	Install New		LF	Install New	Easy digging	Tough Digging	Solid rock drilling		
<b>TS-BAR-CRB</b>	<b>Curb</b>	L	LF						
TS-BAR-CRB-01a	Basic Maintenance		LF	Annual Mtce	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				
TS-BAR-CRB-03a	Replace in-kind		LF	Replace in-kind	Replace				
TS-BAR-CRB-04a	Demolish & Dispose		LF	Decom	Let deteriorate, no imminent hazard	Completely Remove			
TS-BAR-CRB-05a	Increase Length		LF	Expan	Lengthen				
TS-BAR-CRB-07a	Install New		LF	Install New	New				
<b>TS-CGD</b>	<b>CATTLEGUARD</b>	P							
<b>TS-CGD-STD</b>	<b>Standard Cattleguard</b>	P	SF						
TS-CGD-STD-01a	Basic Maintenance		SF	Annual Mtce	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		SF	Replace in-kind	Easy digging				
TS-CGD-STD-04a	Demolish & Dispose		EA	Decom	Demolish				
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			
<b>TS-CGD-BRG</b>	<b>Fence-Bridge Cattleguard</b>	P	SF						
TS-CGD-BRG-01a	Basic Maintenance		SF	Annual Mtce	Basic Maintenance				

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
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		SF	Replace in-kind	Replace				
TS-CGD-BRG-04a	Demolish & Dispose		EA	Decom	Demolish				
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			
<b>TS-SAR</b>	<b>SLOPE ARMORING</b>	L							
<b>TS-SAR-RIP</b>	<b>Rip Rap Rock Slope Armoring</b>	L	SF						
TS-SAR-RIP-01a	Basic Maintenance		SF	Annual Mtce	Basic Maintenance				
TS-SAR-RIP-02	Generic Repair		SF	Repair	Generic Repair				
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 & 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			
<b>TS-SAR-MSA</b>	<b>Miscellaneous Slope Armoring</b>	L	SF						
TS-SAR-MSA-01a	Basic Maintenance		SF	Annual Mtce	Basic Maintenance				
TS-SAR-MSA-02	Generic Repair		SF	Repair	Generic Repair				
TS-SAR-MSA-02a	Rebuild damaged/undermined sections		SF	Repair	Minor repair				
TS-SAR-MSA-03a	Replace in-kind		SF	Replace in-kind	Replace				
TS-SAR-MSA-04a	Demolish & Dispose		SF	Decom	Let deteriorate, no imminent hazard	Completely Remove			
TS-SAR-MSA-05a	Increase area		SF	Expan	Increase size				
TS-SAR-MSA-07a	Install New		SF	Install New	New				
<b>TS-TPK</b>	<b>TURNPIKE (a.k.a. Causeway)</b>	L							
<b>TS-TPK-STD</b>	<b>Type I - Standard Turnpike</b>	L	SF						



Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-TPK-STD-01a	Basic Maintenance such as replacing routine fill material, repinning logs, resetting rocks, etc		SF	Annual Mtce	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		SF	Replace in-kind	Replace				
TS-TPK-STD-04a	Demolish & 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				
TS-TPK-STD-07a	Construct New		SF	Install New	New				
<b>TS-TPK-FDN</b>	<b>Type II - Standard Turnpike w/ Foundation</b>	L	SF						
TS-TPK-FDN-01a	Basic Maintenance such as replacing fill material, repinning logs, resetting rocks, etc		SF	Annual Mtce	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 over 50% of retainers are deteriorated		SF	Replace in-kind	Replace				
TS-TPK-FDN-04a	Demolish & 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				
<b>TS-PUN</b>	<b>PUNCHEON</b>	L							
<b>TS-PUN-STD</b>	<b>Standard Punccheon</b>	L	SF						
TS-PUN-STD-01a	Basic Maintenance such as refastening loose components, replacing minor non-structural components, etc.		SF	Annual Mtce	Basic Maintenance				

**Trails Data Dictionary: Tasks** (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
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 replacement 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		
TS-PUN-STD-03a	Replace in-kind when failing (loading capacity is diminished to less than 80% or deterioration) of components is greater than 50%		SF	Replace in-kind	Replace				
TS-PUN-STD-04a	Demolish & 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 (modification 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		
<a href="#">TS-PUN-NOD</a>	<a href="#">No-Deck Puncheon</a>	L	SF						
TS-PUN-NOD-01a	Basic Maintenance such as refastening loose components, replacing minor non-structural components, etc.		SF	Annual Mtce	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				

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-PUN-NOD-03a	Replace in-kind when loading capacity is diminished to less than 80% or deterioration of components is greater than 50%		SF	Replace in-kind	Replace				
TS-PUN-NOD-04a	Demolish & 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		
<b>TS-BWK</b>	<b>BOARDWALK</b>	L							
<b>TS-BWK-STD</b>	<b>Standard Boardwalk</b>	L	SF						
TS-BWK-STD-01a	Basic Maintenance such as refastening loose components, replacing minor non-structural components, etc.		SF	Annual Mtce	Basic Maintenance				
TS-BWK-STD-01b	Technical Inspection/Assessment (2-person crew)		EA	Annual Mtce	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				

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-BWK-STD-03a	Replace in kind without handrails		SF	Replace	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
TS-BWK-STD-03b	Replace in kind with handrails		SF	Replace	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
TS-BWK-STD-04a	Demolish & 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 (modification 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		
<a href="#">TS-BWK-SNR</a>	<a href="#">Step and Run</a>	L	SF						
TS-BWK-SNR-01a	Basic Maintenance such as refastening loose components, replacing minor non-structural components, etc.		SF	Annual Mtce	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 plank		SF	Repair	Replace running planks				
TS-BWK-SNR-02c	Repair or replace mudsills or steps		EA	Repair	Replace mudsill				
TS-BWK-SNR-03a	Replace in-kind without netting		SF	Replace in-kind	less than 5% grade	5-10% grade	Over 10% grade		
TS-BWK-SNR-03b	Replace in-kind with netting		SF	Replace in-kind	less than 5% grade	5-10% grade	Over 10% grade		

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-BWK-SNR-04a	Demolish & Dispose		SF	Decom	Ride and Rot	Completely Remove			
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		
<b>TS-CDY</b>	<b>CORDUROY</b>	L							
<b>TS-CDY-STD</b>	<b>Corduroy</b>	L	SF						
TS-CDY-STD-01a	Basic Maintenance		SF	Annual Mtce	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		SF	Replace in-kind	Replace entire structure				
TS-CDY-STD-04a	Dispose		SF	Decom	Leave in-place, for building over	Completely Remove			
TS-CDY-STD-05a	Increase length		SF	Expan	Lengthen				
TS-CDY-STD-07a	Install New		SF	Install New	New				
<b>TS-TUN</b>	<b>TUNNEL</b>	L							
<b>TS-TUN-STD</b>	<b>Standard Tunnel</b>	L	CF						
TS-TUN-STD-01a	Basic Maintenance		EA	Annual Mtce	Custom Severity				
TS-TUN-STD-01b	Technical Inspection/Assessment		EA	Annual Mtce	Annual Safety Assessment	Technical Structural Inspection			
TS-TUN-STD-02	Generic Repair		EA	Repair	Generic Repair				
TS-TUN-STD-02a	Repair		EA	Repair	Custom Severity				
TS-TUN-STD-03a	Replace in-kind		EA	Replace in-kind	Custom Severity				
TS-TUN-STD-04a	Decommission		EA	Decom	Custom Severity				
TS-TUN-STD-05a	Expand		EA	Expan	Custom Severity				
TS-TUN-STD-07a	Install New		EA	Install New	Custom Severity				

**Trails Data Dictionary: Tasks** (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
<b>TS-SHD</b>	<b>SNOW SHED</b>	L							
<b>TS-SHD-STD</b>	<b>Standard Snow Shed</b>	L	CF						
TS-SHD-STD-01a	Basic Maintenance		EA	Annual Mtce	Custom Severity				
TS-SHD-STD-01b	Technical Inspection/Assessment		EA	Annual Mtce	Annual Safety Assessment	Technical Structural Inspection			
TS-SHD-STD-02	Generic Repair		EA	Repair	Generic Repair				
TS-SHD-STD-02a	Repair		EA	Repair	Custom Severity				
TS-SHD-STD-03a	Replace in-kind		EA	Replace in-kind	Custom Severity				
TS-SHD-STD-04a	Decommission		EA	Decom	Custom Severity				
TS-SHD-STD-05a	Expand		EA	Expan	Custom Severity				
TS-SHD-STD-07a	Install New		EA	Install New	Custom Severity				
<b>TS-OVL</b>	<b>OVERLOOK</b>	P							
<b>TS-OVL-GRD</b>	<b>On-Grade Overlook</b>	P	SF						
TS-OVL-GRD-01a	Basic Maintenance such as refastening loose components, replacing minor non-structural components, etc.		LF	Annual Mtce	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				
TS-OVL-GRD-03a	Replace in-kind when loading capacity is diminished to less than 80% or deterioration of components is greater than 50%		SF	Replace in-kind	Replace entire structure				
TS-OVL-GRD-04a	Demolish & 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				

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-OVL-ELV	Elevated Overlook	P	SF						
TS-OVL-ELV-01a	Basic Maintenance such as refastening loose componets, replacing minor non-structural componets, etc.		SF	Annual Mtce	Basic Maintenance				
TS-OVL-ELV-01b	Technical Inspection/Assessment (2-person crew)		EA	Annual Mtce	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	Replcae 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		SF	Replace	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
TS-OVL-ELV-03b	Replace in kind with handrails		SF	Replace	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
TS-OVL-ELV-04a	Demolish & 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		
TS-OVL-ELV-07a	Fabricate New without handrails		SF	Install New	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		

**Trails Data Dictionary: Tasks** (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-OVL-ELV-07b	Fabricate New with handrails		SF	Install New	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
<b>TS-CUS</b>	<b>CUSTOM TRAIL FEATURE</b>	L / P							
<b>TS-CUS-TS1</b>	<b>Custom Trail Structure 1</b>	P	EA						
TS-CUS-TS1-01a	Basic Maintenance		EA	Annual Mtce	Custom Severity				
TS-CUS-TS1-02a	Repair		EA	Repair	Custom Severity				
TS-CUS-TS1-03a	Replace in-kind		EA	Replace in-kind	Custom Severity				
TS-CUS-TS1-04a	Decommission		EA	Decom	Custom Severity				
TS-CUS-TS1-05a	Expand		EA	Expan	Custom Severity				
TS-CUS-TS1-06a	Alter		EA	Alter Function	Custom Severity				
TS-CUS-TS1-07a	Install New		EA	Install New	Custom Severity				
<b>TS-CUS-TS2</b>	<b>Custom Trail Structure 2</b>	L	LF						
TS-CUS-TS2-01a	Basic Maintenance		LF	Annual Mtce	Custom Severity				
TS-CUS-TS2-02a	Repair		LF	Repair	Custom Severity				
TS-CUS-TS2-03a	Replace in-kind		LF	Replace in-kind	Custom Severity				
TS-CUS-TS2-04a	Decommission		LF	Decom	Custom Severity				
TS-CUS-TS2-05a	Expand		LF	Expan	Custom Severity				
TS-CUS-TS2-06a	Alter		LF	Alter Function	Custom Severity				
TS-CUS-TS2-07a	Install New		LF	Install New	Custom Severity				
<b>TS-CUS-TS3</b>	<b>Custom Trail Structure 3</b>	L	SF						
TS-CUS-TS3-01a	Basic Maintenance		SF	Annual Mtce	Custom Severity				
TS-CUS-TS3-02a	Repair		SF	Repair	Custom Severity				
TS-CUS-TS3-03a	Replace in-kind		SF	Replace in-kind	Custom Severity				
TS-CUS-TS3-04a	Decommission		SF	Decom	Custom Severity				
TS-CUS-TS3-05a	Expand		SF	Expan	Custom Severity				



**Trails Data Dictionary: Tasks** (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TS-CUS-TS3-06a	Alter		SF	Alter Function	Custom Severity				
TS-CUS-TS3-07a	Install New		SF	Install New	Custom Severity				

**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				

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description

**DRAINAGE STRUCTURES**

<b>TD-DIP</b>	<b>DRAIN DIP</b>	P							
TD-DIP-STD	Standard Drain Dip	P	EA						
TD-DIP-STD-01a	Basic Maintenance		EA	Annual Mtce	Basic Maintenance				
TD-DIP-STD-02	Generic Repair		EA	Repair	Generic Repair				
TD-DIP-STD-02a	Reestablish original lines and grades		EA	Repair	Native soils				
TD-DIP-STD-03a	Install on existing tread to meet standard		EA	Replace in-kind	Native soils	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 soils	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
<b>TD-WBR</b>	<b>WATERBARS</b>	P							
TD-WBR-RCK	Rock Waterbar	P	EA						
TD-WBR-RCK-01a	Basic Maintenance		EA	Annual Mtce	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 extensions, ...		EA	Repair	Common soils	Rocky soils			
TD-WBR-RCK-03a	Replace in-kind		EA	Replace in-kind	Common soils	Rocky soils			
			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 soils	Rocky soils			
			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 soils	Rocky soils			
			LF	Install New	Every 500 LF	Every 300 LF	Every 200 LF	Every 100 LF	Every 50 LF
<b>TD-WBR-LOG</b>	<b>Log Waterbar</b>	P	EA						
TD-WBR-LOG-01a	Basic Maintenance		EA	Annual Mtce	Basic Maintenance				

**Trails Data Dictionary: Tasks** (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / 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 soils	Rocky soils			
TD-WBR-LOG-03a	Replace in-kind		EA	Replace in-kind	Common soils	Rocky soils			
			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 soils	Rocky soils			
			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 soils	Rocky soils			
			LF	Install New	Every 500 LF	Every 300 LF	Every 200 LF	Every 100 LF	Every 50 LF
<b>TD-WBR-BLT</b>	<b>Belted Waterbar</b>	P	EA						
TD-WBR-BLT-01a	Basic Maintenance		EA	Annual Mtce	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 soils	Rocky soils			
TD-WBR-BLT-03a	Replace in-kind		EA	Replace in-kind	Common soils	Rocky soils			
			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 soils	Rocky soils			
			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 soils	Rocky soils			
			LF	Install New	Every 500 LF	Every 300 LF	Every 200 LF	Every 100 LF	Every 50 LF
<b>TD-CVT</b>	<b>CULVERTS</b>	P							
<b>TD-CVT-STD</b>	<b>Standard Culvert</b>	P	EA						
TD-CVT-STD-01a	Basic Maintenance		EA	Annual Mtce	Basic Maintenance				
TD-CVT-STD-02	Generic Repair		EA	Repair	Generic Repair				

**Trails Data Dictionary: Tasks** (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / 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 apertures		EA	Repair	24-in diameter or smaller	30-in diameter or greater			
TD-CVT-STD-03a	Replace in-kind		LF	Replace in-kind	Less than 15-in diameter	18-in diameter	24-30-in diameter	36-48-in diameter	Custom Entry
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 Entry
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 Entry
<b>TD-CVT-HDW</b>	<b>Standard Culvert w/ Headwalls</b>	P	EA						
TD-CVT-HDW-01a	Basic Maintenance		EA	Annual Mtce	Basic Maintenance				
TD-CVT-HDW-02	Generic Repair		LF	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		LF	Replace in-kind	Less than 15-in diameter	18-in diameter	24-30-in diameter	36-48-in diameter	Custom Entry
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 Entry
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 Entry
<b>TD-CVT-RCK</b>	<b>Rock Culvert</b>	P	EA						
TD-CVT-RCK-01a	Basic Maintenance		EA	Annual Mtce	Basic Maintenance				
TD-CVT-RCK-02	Generic Repair		LF	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		LF	Replace in-kind	Less than 15-in diameter	18-in diameter	24-in diameter	Custom Entry	
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 Entry	
TD-CVT-RCK-07a	Install New		LF	Install New	Less than 15-in diameter	18-in diameter	24-in diameter	Custom Entry	
<b>TD-CVT-BOX</b>	<b>Box Culvert</b>	P	EA						
TD-CVT-BOX-01a	Basic Maintenance		EA	Annual Mtce	Basic Maintenance				
TD-CVT-BOX-02	Generic Repair		LF	Repair	Generic Repair				

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TD-CVT-BOX-02a	Normal repairs		EA	Repair	Remove and reset at new depth or skew	Repair or replace broken member, reset structure			
TD-CVT-BOX-03a	Replace in-kind		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 Entry
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 Entry
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 Entry
<b>TD-CVT-ACH</b>	<b>Bottomless Arch Culvert</b>	P	EA						
TD-CVT-ACH-01a	Basic Maintenance		EA	Annual Mtce	Basic Maintenance				
TD-CVT-ACH-02	Generic Repair		LF	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		LF	Replace in-kind	30-48-in dia. with footings	48-72-in dia. with footings	Over 72-in diameter with footings	Custom Entry	
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 Entry	
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 Entry	
<b>TD-CVT-OPT</b>	<b>Open-Top Drain</b>	P	EA						
TD-CVT-OPT-01a	Basic Maintenance		EA	Annual Mtce	Basic Maintenance				
TD-CVT-OPT-02	Generic Repair		LF	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		LF	Replace in-kind	Less than 12-in opening	12-18-in opening			

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TD-CVT-OPT-04a	Demolish and Dispose		EA	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			
<b>TD-SPY</b>	<b>SPILLWAYS</b>	P							
<b>TD-SPY-RCK</b>	<b>Rock Spillway</b>	P	SF						
TD-SPY-RCK-01a	Basic Maintenance		SF	Annual Mtce	Basic Maintenance				
TD-SPY-RCK-02	Generic Repair		SF	Repair	Generic Repair				
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		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			
<b>TD-DAM</b>	<b>CHECK DAM</b>	P							
<b>TD-DAM-STD</b>	<b>Standard Check Dam</b>	P	EA						
TD-DAM-STD-01a	Basic Maintenance		EA	Annual Mtce	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	under 24-in tread width	24-36-in tread width	36-48-in tread width	48-72-in tread width	Custom Entry
TD-DAM-STD-03b	Replace in-kind with select borrow		EA	Replace in-kind	under 24-in tread width	24-36-in tread width	36-48-in tread width	48-72-in tread width	Custom Entry
TD-DAM-STD-03c	Install new on existing tread to reduce excessive erosion with common borrow		EA	Replace in-kind	under 24-in tread width	24-36-in tread width	36-48-in tread width	48-72-in tread width	Custom Entry
TD-DAM-STD-03d	Install new on existing tread to reduce excessive erosion with select borrow		EA	Replace in-kind	under 24-in tread width	24-36-in tread width	36-48-in tread width	48-72-in tread width	Custom Entry
TD-DAM-STD-04a	Demolish and dispose		EA	Decom	Let deteriorate	Completely remove			
TD-DAM-STD-05a	Lengthen		EA	Expan	Lengthen				

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TD-DAM-STD-07a	Install new with common borrow		EA	Install New	under 24-in tread width	24-36-in tread width	36-48-in tread width	48-72-in tread width	Custom Entry
TD-DAM-STD-07b	Install new with select borrow		EA	Install New	under 24-in tread width	24-36-in tread width	36-48-in tread width	48-72-in tread width	Custom Entry
<b>TD-DIT</b>	<b>DITCHES</b>	L							
<b>TD-DIT-SID</b>	<b>Side Ditch</b>	L	LF						
TD-DIT-SID-01a	Basic Maintenance		LF	Annual Mtce	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			
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			
<b>TD-DIT-LED</b>	<b>Leadoff Ditch</b>	L	LF						
TD-DIT-LED-01a	Basic Maintenance		LF	Annual Mtce	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 length 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			

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
<b>TD-BRM</b>	<b>BERM</b>	L							
<b>TD-BRM-STD</b>	<b>Standard Earth Berm</b>	L	LF						
TD-BRM-STD-01a	Basic Maintenance		LF	Annual Mtce	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 Soils	Common Soils	Talus		
TD-BRM-STD-04a	Remove and Dispose		LF	Decom	Fine/Organic Soils	Common Soils	Talus	Solid Rock	
TD-BRM-STD-05a	Expansion		CY	Expan	Fine/Organic Soils	Common Soils	Talus		
TD-BRM-STD-07a	Install New		LF	Install New	Fine/Organic Soils	Common Soils	Talus		
			CY	Install New	Fine/Organic Soils	Common Soils	Talus		
<b>TD-UDN</b>	<b>UNDERDRAINS (a.k.a. French Drains)</b>	L							
<b>TD-UDN-RCK</b>	<b>Rock Underdrains</b>	L	SF						
TD-UDN-RCK-01a	Basic Maintenance		SF	Annual Mtce	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		SF	Replace in-kind	Replace				
TD-UDN-RCK-04a	Remove and Dispose		SF	Decom	Remove competely				
TD-UDN-RCK-05a	Lengthen		SF	Expan	Fine/Organic Soils	Common Soils	Common soil with larger rock		
TD-UDN-RCK-07a	Install New		SF	Install New	Fine/Organic Soils	Common Soils	Common soil with larger rock		
			CY	Install New	Fine/Organic Soils	Common Soils	Common soil with larger rock		
<b>TD-UDN-GEO</b>	<b>Geotextile Underdrains</b>	L	SF						
TD-UDN-GEO-01a	Basic Maintenance		SF	Annual Mtce	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		SF	Replace in-kind	Replace				



**Trails Data Dictionary: Tasks** (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TD-UDN-GEO-04a	Remove and Dispose		SF	Decom	Remove completely				
TD-UDN-GEO-05a	Expansion		SF	Expan	Fine/Organic Soils	Common Soils	Common soil with larger rock		
TD-UDN-GEO-07a	Install New		SF	Install New	Fine/Organic Soils	Common Soils	Common soil with larger rock		
<b>TD-CUS</b>	<b>CUSTOM DRAINAGE STRUCTURES</b>	L / P							
<b>TD-CUS-DS1</b>	<b>Custom Drainage Structure 1</b>	P	EA						
TD-CUS-DS1-01a	Basic Maintenance		EA	Annual Mtce	Custom Severity				
TD-CUS-DS1-02a	Repair		EA	Repair	Custom Severity				
TD-CUS-DS1-03a	Replace in-kind		EA	Replace in-kind	Custom Severity				
TD-CUS-DS1-04a	Decommission		EA	Decom	Custom Severity				
TD-CUS-DS1-05a	Expand		EA	Expan	Custom Severity				
TD-CUS-DS1-06a	Alter		EA	Alter Function	Custom Severity				
TD-CUS-DS1-07a	Install New		EA	Install New	Custom Severity				
<b>TD-CUS-DS2</b>	<b>Custom Drainage Structure 2</b>	L	LF						
TD-CUS-DS2-01a	Basic Maintenance		LF	Annual Mtce	Custom Severity				
TD-CUS-DS2-02a	Repair		LF	Repair	Custom Severity				
TD-CUS-DS2-03a	Replace in-kind		LF	Replace in-kind	Custom Severity				
TD-CUS-DS2-04a	Decommission		LF	Decom	Custom Severity				
TD-CUS-DS2-05a	Expand		LF	Expan	Custom Severity				
TD-CUS-DS2-06a	Alter		LF	Alter Function	Custom Severity				
TD-CUS-DS2-07a	Install New		LF	Install New	Custom Severity				
<b>TD-CUS-DS3</b>	<b>Custom Drainage Structure 3</b>	L	SF						
TD-CUS-DS3-01a	Basic Maintenance		SF	Annual Mtce	Custom Severity				
TD-CUS-DS3-02a	Repair		SF	Repair	Custom Severity				
TD-CUS-DS3-03a	Replace in-kind		SF	Replace in-kind	Custom Severity				
TD-CUS-DS3-04a	Decommission		SF	Decom	Custom Severity				

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
TD-CUS-DS3-05a	Expand		SF	Expan	Custom Severity				
TD-CUS-DS3-06a	Alter		SF	Alter Function	Custom Severity				
TD-CUS-DS3-07a	Install New		SF	Install New	Custom Severity				

**TRAILSIDE STRUCTURES**

<b>SS-CNT</b>	<b>TRAFFIC COUNTERS</b>	P							
<b>SS-CNT-BRD</b>	<b>Buried Counter</b>	P	EA						
SS-CNT-BRD-01a	Basic Maintenance		EA	Annual Mtce	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				
SS-CNT-BRD-07b	Purchase counter		EA	Install New	Type1	Type 2	Type 3		
<b>SS-CNT-TRE</b>	<b>Tree-Mounted Counter</b>	P	EA						
SS-CNT-TRE-01a	Basic Maintenance		EA	Annual Mtce	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		
<b>SS-RBX</b>	<b>REGISTRATION BOX</b>	P							
<b>SS-RBX-RBG</b>	<b>Ground-Mounted Registration Box</b>	P	EA						
SS-RBX-RBG-01a	Basic Maintenance		EA	Annual Mtce	Basic Maintenance				
SS-RBX-RBG-02	Generic Repair		EA	Repair	Generic Repair				
SS-RBX-RBG-03a	Replace in-kind		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		

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
<b>SS-RBX-RBE</b>	<b>Post-Mounted Registration Box</b>	P	EA						
SS-RBX-RBE-01a	Basic Maintenance		EA	Annual Mtce	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		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		
<b>SS-DOK</b>	<b>DOCKS</b>	P							
<b>SS-DOK-STA</b>	<b>Stationary Dock</b>	P	SF						
SS-DOK-STA-01a	Basic Maintenance		SF	Annual Mtce	Basic Maintenance				
SS-DOK-STA-01b	Technical Inspection/Assessment		EA	Annual Mtce	One Day for 2 Inspectors				
SS-DOK-STA-02	Generic Repair		SF	Repair	Generic Repair				
SS-DOK-STA-02a	Repair or replace decking and hardware		SF	Repair	per SF of 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 curbing				
SS-DOK-STA-03a	Replace in kind without handrails		SF	Replace	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
SS-DOK-STA-03b	Replace in kind with handrails		SF	Replace	Simple spread footings	simple pilings, complex spread footings	Driven pile or screw footings		
SS-DOK-STA-04a	Demolish & 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		

**Trails Data Dictionary: Tasks** (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
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		
<b>SS-DOK-FLT</b>	<b>Floating Dock (simple)</b>	P	SF						
SS-DOK-FLT-01a	Basic Maintenance		SF	Annual Mtce	Basic Maintenance				
SS-DOK-FLT-02	Generic Repair		SF	Repair	Generic Repair				
SS-DOK-FLT-02a	Repair or replace decking and hardware		SF	Repair	per SF of 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 floatation		
SS-DOK-FLT-02d	Repair or replace shore anchorage		EA	Repair	One anchor				
SS-DOK-FLT-02e	Repair or replace curbing		LF	Repair	LF of curbing				
SS-DOK-FLT-03a	Replace in kind		SF	Replace	Type 1 - 55-gal drums	Type 2 - foam floatation	Type 3 - Air-bladder floatation		
SS-DOK-FLT-04a	Demolish & 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 floatation		
SS-DOK-FLT-07a	Fabricate New (without handrails)		SF	Install New	Type 1 - 55-gal drums	Type 2 - foam floatation	Type 3 - Air-bladder floatation		
<b>SS-BNH</b>	<b>BENCHES</b>	P							
<b>SS-BNH-PRM</b>	<b>Primitive Bench</b>	P	EA						
SS-BNH-PRM-01a	Basic Maintenance		EA	Annual Mtce	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		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		

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
<b>SS-BNH-MNF</b>	<b>Manufactured Bench</b>	P	EA						
SS-BNH-MNF-01a	Basic Maintenance		EA	Annual Mtce	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)		EA	Replace in-kind	Style 1	Style 2	Style 3		
SS-BNH-MNF-03b	replace in kind (moveable)		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		
<b>SS-INF</b>	<b>INFORMATION BOARD</b>	P							
<b>SS-INF-PAN</b>	<b>Flat-Panel Information Board</b>	P	SF						
SS-INF-PAN-01a	Basic Maintenance (reset, paint,tighten)		EA	Annual Mtce	Small (<32 SF)	Medium (33-64 SF)	Large (>64 SF)		
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				
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		EA	Replace in-kind	Small (<32 SF)	Medium (33-64 SF)	Large (>64 SF)		
SS-INF-PAN-04a	Remove and Dispose		EA	Decom	Remove competely				
SS-INF-PAN-05a	Expand with new panel		EA	Expan	Small (<32 SF)	Medium (33-64 SF)	Large (>64 SF)		
SS-INF-PAN-07a	Install New		EA	Install New	Small (<32 SF)	Medium (33-64 SF)	Large (>64 SF)		
<b>SS-INF-KSK</b>	<b>Information Kiosk</b>	P	SF						
SS-INF-KSK-01a	Basic Maintenance (reset, paint,tighten)		EA	Annual Mtce	Basic Maintenance				
SS-INF-KSK-02	Generic Repair		EA	Repair	Generic Repair				

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Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
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		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		
<b>SS-GAR</b>	<b>Garbage Containers</b>								
<b>SS-GAR-CAN</b>	<b>Residential-Style Garbage Can</b>	P	EA						
SS-GAR-CAN-01a	Basic Maintenance		EA	Annual Mtce	Basic Maintenance				
SS-GAR-CAN-02a	Repair		EA	Repair	Minor repairs to the mounting structure				
SS-GAR-CAN-03a	Replace in-kind		EA	Replace in-kind	Replace can and mounting post	Anchored to complex assembly and foundation			
SS-GAR-CAN-04a	Decommission		EA	Decom	Completely remove	Completely remove			
SS-GAR-CAN-07a	Install New		EA	Install New	Anchored to simple post	Anchored to complex assembly and foundation			
<b>SS-GAR-BIN</b>	<b>Commercial Bin</b>	P	EA						
SS-GAR-BIN-01a	Basic Maintenance		EA	Annual Mtce	Basic Maintenance				
SS-GAR-BIN-02a	Repair		EA	Repair	Minor repairs such as latch replacement, new foundation, or vandalism				
SS-GAR-BIN-03a	Replace in-kind		EA	Replace in-kind	Replace in same Hole	Replace in same Hole			
SS-GAR-BIN-04a	Decommission		EA	Decom	Completely remove				
SS-GAR-BIN-07a	Install New		EA	Install New	Non-Bear Proof bin on concrete foundation	Bear Proof bin on concrete foundation			

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
<b>SS-CUS</b>	<b>CUSTOM TRAILSIDE STRUCTURE</b>	L / P							
SS-CUS-SS1	Custom Trailside Structure 1	P	EA						
SS-CUS-SS1-01a	Basic Maintenance		EA	Annual Mtce	Custom Severity				
SS-CUS-SS1-02a	Repair		EA	Repair	Custom Severity				
SS-CUS-SS1-03a	Replace in-kind		EA	Replace in-kind	Custom Severity				
SS-CUS-SS1-04a	Decommission		EA	Decom	Custom Severity				
SS-CUS-SS1-05a	Expand		EA	Expan	Custom Severity				
SS-CUS-SS1-06a	Alter		EA	Alter Function	Custom Severity				
SS-CUS-SS1-07a	Install New		EA	Install New	Custom Severity				
<b>SS-CUS-SS2</b>	<b>Custom Trailside Structure 2</b>	L	LF						
SS-CUS-SS2-01a	Basic Maintenance		LF	Annual Mtce	Custom Severity				
SS-CUS-SS2-02a	Repair		LF	Repair	Custom Severity				
SS-CUS-SS2-03a	Replace in-kind		LF	Replace in-kind	Custom Severity				
SS-CUS-SS2-04a	Decommission		LF	Decom	Custom Severity				
SS-CUS-SS2-05a	Expand		LF	Expan	Custom Severity				
SS-CUS-SS2-06a	Alter		LF	Alter Function	Custom Severity				
SS-CUS-SS2-07a	Install New		LF	Install New	Custom Severity				
<b>RESTRICTION DEVICES</b>									
<b>RD-BCD</b>	<b>BARRICADE</b>	P							
RD-BCD-BDR	Boulder Barricade	P	EA						
RD-BCD-BDR-01a	Basic Maintenance		EA	Annual Mtce	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				

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
<b>SS-BCD-BOL</b>	<b>Single Post Bollard</b>	P	EA						
SS-BCD-BOL-01a	Basic Maintenance		EA	Annual Mtce	Basic Maintenance				
RD-BCD-BOL-02	Generic Repair		EA	Repair	Generic Repair				
SS-BCD-BOL-02a	Repair		EA	Repair	Minor repairs				
SS-BCD-BOL-03a	Replace in-kind		EA	Replace in-kind	Replace in same Hole				
SS-BCD-BOL-04a	Decommission		EA	Decom	Completely remove				
SS-BCD-BOL-07a	Install New		EA	Install New	Common soils	Rocky Soils			
<b>RD-BCD-MNF</b>	<b>Manufactured Barricade</b>	P	EA						
RD-BCD-MNF-01a	Basic Maintenance		EA	Annual Mtce	Basic Maintenance				
RD-BCD-BDR-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		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		
<b>RD-STL</b>	<b>STILE</b>	P							
<b>RD-STL-STD</b>	<b>Standard Stile</b>	P	EA						
RD-STL-STD-01a	Basic Maintenance		EA	Annual Mtce	Basic Maintenance				
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		EA	Replace in-kind	Common soils	Rocky Soils			
RD-STL-STD-04a	Remove and Dispose		EA	Decom	Remove competely				
RD-STL-STD-07a	Install New		EA	Install New	Common soils	Rocky Soils			
<b>RD-FNC</b>	<b>FENCE</b>	L							
<b>RD-FNC-WIR</b>	<b>Post and Wire Fence</b>	L	LF						
RD-FNC-WIR-01a	Basic Maintenance		LF	Annual Mtce	Basic Maintenance				
RD-STL-STD-02	Generic Repair		SF	Repair	Generic Repair				



Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
RD-FNC-WIR-02a	Normal Scheduled Repairs		LF	Repair	Common damage				
RD-FNC-WIR-03a	Replace in-kind		LF	Replace in-kind	Common soils	Rocky soils			
RD-FNC-WIR-04a	Remove and Dispose		LF	Decom	Remove competely				
RD-FNC-WIR-05a	Lengthen		LF	Expan	Common soils	Rocky soils			
RD-FNC-WIR-07a	Install New		LF	Install New	Common soils	Rocky soils			
<b>RD-FNC-RAL</b>	<b>Post and Rail Fence</b>	L	LF						
RD-FNC-RAL-01a	Basic Maintenance		LF	Annual Mtce	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		LF	Replace in-kind	Common soils	Rocky soils			
RD-FNC-RAL-04a	Remove and Dispose		LF	Decom	Remove competely				
RD-FNC-RAL-05a	Lengthen		LF	Expan	Common soils	Rocky soils			
RD-FNC-RAL-07a	Install New		LF	Install New	Common soils	Rocky soils			
<b>RD-FNC-WOV</b>	<b>Woven Wire Fence</b>	L	LF						
RD-FNC-WOV-01a	Basic Maintenance		LF	Annual Mtce	Basic Maintenance				
RD-FNC-WOV-02	Generic Repair		LF	Repair	Generic Repair				
RD-FNC-WOV-02a	Normal Scheduled Repairs		LF	Repair	Common damage				
RD-FNC-WOV-03a	Replace in-kind		LF	Replace in-kind	Common soils	Rocky soils			
RD-FNC-WOV-04a	Remove and Dispose		LF	Decom	Remove competely				
RD-FNC-WOV-05a	Expansion		LF	Expan	Common soils	Rocky soils			
RD-FNC-WOV-07a	Install New		LF	Install New	Common soils	Rocky soils			
<b>RD-FNC-JAC</b>	<b>Jackleg Fence</b>	L	LF						
RD-FNC-JAC-01a	Basic Maintenance		LF	Annual Mtce	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		LF	Replace in-kind	Replace				

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
RD-FNC-JAC-04a	Remove and Dispose		LF	Decom	Remove competely				
RD-FNC-JAC-05a	Lengthen		LF	Expan	Lengthen				
RD-FNC-JAC-07a	Install New		LF	Install New	New				
<b>RD-FNC-STK</b>	<b>Stacked Rail Fence (Worm)</b>	L	LF						
RD-FNC-STK-01a	Basic Maintenance		LF	Annual Mtce	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		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				
<b>RD-GAT</b>	<b>GATE</b>	P							
<b>RD-GAT-WIR</b>	<b>Wire Gate</b>	P	EA						
RD-GAT-WIR-01a	Basic Maintenance		EA	Annual Mtce	Basic Maintenance				
RD-GAT-WIR-02	Generic Repair		EA	Repair	Generic Repair				
RD-GAT-WIR-02a	Normal Scheduled Repairs		EA	Repair	Typical Repairs				
RD-GAT-WIR-03a	Replace in-kind		EA	Replace in-kind	Common soils	Rocky soils			
RD-GAT-WIR-04a	Demolish and Dispose		EA	Decom	Completely Remove				
RD-GAT-WIR-07a	Install New		EA	Install New	Common soils	Rocky soils			
<b>RD-GAT-SWG</b>	<b>Swinging Gate</b>	P	EA						
RD-GAT-SWG-01a	Basic Maintenance		EA	Annual Mtce	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		EA	Replace in-kind	Common soils	Rocky soils			
RD-GAT-SWG-04a	Demolish and Dispose		EA	Decom	Completely Remove				
RD-GAT-SWG-07a	Install New		EA	Install New	Common soils	Rocky soils			

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
<b>RD-GAT-RAL</b>	<b>Loose-Rail Gate</b>	P	EA						
RD-GAT-RAL-01a	Basic Maintenance		EA	Annual Mtce	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		EA	Replace in-kind	Common soils	Rocky soils			
RD-GAT-RAL-04a	Demolish and Dispose		EA	Decom	Completely Remove				
RD-GAT-RAL-07a	Install New		EA	Install New	Common soils	Rocky soils			
<b>RD-CUS</b>	<b>CUSTOM RESTRICTION DEVICE</b>	L / P							
<b>RD-CUS-RD1</b>	<b>Custom Restriction Device 1</b>	P	EA						
RD-CUS-RD1-01a	Basic Maintenance		EA	Annual Mtce	Custom Severity				
RD-CUS-RD1-02a	Repair		EA	Repair	Custom Severity				
RD-CUS-RD1-03a	Replace in-kind		EA	Replace in-kind	Custom Severity				
RD-CUS-RD1-04a	Decommission		EA	Decom	Custom Severity				
RD-CUS-RD1-05a	Expand		EA	Expan	Custom Severity				
RD-CUS-RD1-06a	Alter		EA	Alter Function	Custom Severity				
RD-CUS-RD1-07a	Install New		EA	Install New	Custom Severity				
<b>RD-CUS-RD2</b>	<b>Custom Restriction Device 2</b>	L	LF						
RD-CUS-RD2-01a	Basic Maintenance		LF	Annual Mtce	Custom Severity				
RD-CUS-RD2-02a	Repair		LF	Repair	Custom Severity				
RD-CUS-RD2-03a	Replace in-kind		LF	Replace in-kind	Custom Severity				
RD-CUS-RD2-04a	Decommission		LF	Decom	Custom Severity				
RD-CUS-RD2-05a	Expand		LF	Expan	Custom Severity				
RD-CUS-RD2-06a	Alter		LF	Alter Function	Custom Severity				
RD-CUS-RD2-07a	Install New		LF	Install New	Custom Severity				

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description

**ROUTE MARKERS & SIGNS**

<b>RM-CRN</b>	<b>CAIRN</b>	P							
RM-CRN-SMP	Simple Rock Cairn	P	EA						
RM-CRN-SMP-01a	Basic Maintenance		EA	Annual Mtce	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		EA	Replace in-kind	Replace				
RM-CRN-SMP-04a	Demolish and Dispose		EA	Decom	Completely Remove				
RM-CRN-SMP-07a	Install New		EA	Install New	New				
			LF	Install New	Spacing up to 300 ft	Spacing between 300ft-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	
<b>RM-CRN-RCK</b>	<b>Rock Cairn</b>	P	EA						
RM-CRN-RCK-01a	Basic Maintenance		EA	Annual Mtce	Basic Maintenance				
RM-CRN-RCK-02	Generic Repair		EA	Repair	Generic Repair				
RM-CRN-RCK-02a	Restack major collapse		EA	Repair	Restack				
RM-CRN-RCK-03a	Replace in-kind		EA	Replace in-kind	Replace				
RM-CRN-RCK-04a	Demolish and Dispose		EA	Decom	Completely Remove				
RM-CRN-RCK-07a	Install New		EA	Install New	New				
			LF	Install New	Spacing up to 300 ft	Spacing between 300ft-1000ft	Spacing over 1000 ft		
			MI	Install New	Up to 5 per mile	5-10 per mile	10-20 per mile	> 20 per mile	
<b>RM-CRN-SHP</b>	<b>Shepherders Cairn</b>	P	EA						
RM-CRN-SHP-01a	Basic Maintenance		EA	Annual Mtce	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	Completely Remove				
RM-CRN-SHP-07a	Install New		EA	Install New	New				

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
<b>RM-PST</b>	<b>ROUTE MARKER POST</b>	P							
RM-PST-STD	Standard Post	P	EA						
RM-PST-STD-01a	Basic Maintenance		EA	Annual Mtce	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		EA	Replace in-kind	Replace				
RM-PST-STD-04a	Demolish and dispose		EA	Decom	Completely remove				
RM-PST-STD-07a	Install New		EA	Install New	Common soils	Rocky soils	Above ground install		
<b>RM-BLZ</b>	<b>TREE BLAZE</b>	P							
RM-BLZ-NFS	Standard FS Blaze	P	EA						
RM-BLZ-NFS-01a	Basic Maintenance		EA	Annual Mtce	Basic Maintenance				
RM-BLZ-NFS-07a	Install New		EA	Install New	New				
			Mi	Install New	per mile				
<b>RM-BZR</b>	<b>ROUTE BLAZER</b>	P							
RM-BZR-MNF	Manufactured Blazer	P	EA						
RM-BZR-MNF-01a	Basic Maintenance		EA	Annual Mtce	Basic Maintenance				
RM-BZR-MNF-03a	Replace in-kind		EA	Replace in-kind	Replace				
RM-BZR-MNF-04a	Demolish and dispose		EA	Decom	Completely remove				
			Mi	Decom	per mile				
RM-BZR-MNF-07a	Install New		EA	Install New	New				
			Mi	Install New	per mile				
<b>RM-BOY</b>	<b>BUOY</b>	P							
RM-BOY-REG	Regulatory Buoy	P	EA						
RM-BOY-REG-01a	Basic Maintenance		EA	Annual Mtce	Basic Maintenance				
RM-BOY-REG-02a	Normal Repairs		EA	Repair	Normal Repair				
RM-BOY-REG-03a	Replace in-kind		EA	Replace in-kind	Replace				

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
			Mi	Replace in-kind	per mile				
RM-BOY-REG-04a	Demolish and dispose		EA	Decom	Completely remove				
RM-BOY-REG-07a	Install New		EA	Install New	New				
			Mi	Install New	per mile				
<b>RM-BOY-ANC</b>	<b>Anchor Buoy</b>	P	EA						
RM-BOY-ANC-01a	Basic Maintenance		EA	Annual Mtce	Basic Maintenance				
RM-BOY-ANC-02a	Normal Repairs		EA	Repair	Normal Repair				
RM-BOY-ANC-03a	Replace in-kind		EA	Replace in-kind	Replace				
RM-BOY-ANC-04a	Demolish and dispose		EA	Decom	Completely remove				
RM-BOY-ANC-07a	Install New		EA	Install New	New				
<b>RM-MMK</b>	<b>MILEAGE MARKER</b>	P							
<b>RM-MMK-STD</b>	<b>Tree-Mounted Mile-Marker</b>	P	EA						
RM-MMK-STD-01a	Basic Maintenance		EA	Annual Mtce	Basic Maintenance				
RM-MMK-STD-02a	Normal Repairs		EA	Repair	Normal Repair				
RM-MMK-STD-03a	Replace in-kind		EA	Replace in-kind	Replace				
RM-MMK-STD-04a	Demolish and dispose		EA	Decom	Completely remove				
RM-MMK-STD-07a	Install New		EA	Install New	New				
<b>RM-MMK-PST</b>	<b>Post-Mounted Mile-Marker</b>	P	EA						
RM-MMK-PST-01a	Basic Maintenance		EA	Annual Mtce	Basic Maintenance				
RM-MMK-PST-02a	Minor repairs such as reset, etc		EA	Repair	Minor repairs				
RM-MMK-PST-03a	Replace in-kind		EA	Replace in-kind	Replace				
RM-MMK-PST-04a	Demolish and dispose		EA	Decom	Completely remove				
RM-MMK-PST-07a	Install New		EA	Install New	Common soils	Rocky soils	Above ground install		
<b>RM-MMK-SCR</b>	<b>Scribed Mile-Marker</b>	P	EA						
RM-MMK-SCR-01a	Basic Maintenance		EA	Annual Mtce	Basic Maintenance				
RM-MMK-SCR-07a	Install New		EA	Install New	New				

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
			Mi	Install New	New				
<b>RM-SGN</b>	<b>SIGN</b>	P							
RM-SGN-GUI	Guide or Destination Sign	P	EA						
RM-SGN-GUI-01a	Basic Maintenance		EA	Annual Mtce	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		EA	Replace in-kind	Replace				
RM-SGN-GUI-04a	Demolish and dispose		EA	Decom	Completely remove				
RM-SGN-GUI-07a	Install New		EA	Install New	Common soils	Rocky soils	Above ground install		
<b>RM-SGN-BDY</b>	<b>Boundary</b>	P	EA						
RM-SGN-BDY-01a	Basic Maintenance		EA	Annual Mtce	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		EA	Replace in-kind	Replace				
RM-SGN-BDY-04a	Demolish and dispose		EA	Decom	Completely remove				
RM-SGN-BDY-07a	Install New		EA	Install New	Common soils	Rocky soils	Above ground install		
<b>RM-SGN-WRN</b>	<b>Warning</b>	P	EA						
RM-SGN-WRN-01a	Basic Maintenance		EA	Annual Mtce	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	Completely remove				
RM-SGN-WRN-07a	Install New		EA	Install New	Common soils	Rocky soils	Above ground install		
<b>RM-SGN-REG</b>	<b>Regulatory</b>	P	EA						
RM-SGN-REG-01a	Basic Maintenance		EA	Annual Mtce	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		EA	Replace in-kind	Replace				
RM-SGN-REG-04a	Demolish and dispose		EA	Decom	Completely remove				

Trails Data Dictionary: Tasks (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
RM-SGN-REG-07a	Install New		EA	Install New	Common soils	Rocky soils	Above ground install		
<b>RM-SGN-INF</b>	<b>Informational</b>	P	EA						
RM-SGN-INF-01a	Basic Maintenance		EA	Annual Mtce	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		EA	Replace in-kind	Replace				
RM-SGN-INF-04a	Demolish and dispose		EA	Decom	Completely remove				
RM-SGN-INF-07a	Install New		EA	Install New	Common soils	Rocky soils	Above ground install		
<b>RM-SGN-INT</b>	<b>Interperative</b>	P	EA						
RM-SGN-INT-01a	Basic Maintenance		EA	Annual Mtce	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		EA	Replace in-kind	Replace				
RM-SGN-INT-04a	Demolish and dispose		EA	Decom	Completely remove				
RM-SGN-INT-07a	Install New		EA	Install New	Common soils	Rocky soils	Above ground install		
<b>RM-SGN-OTH</b>	<b>Other</b>	P	EA						
RM-SGN-OTH-01a	Basic Maintenance		EA	Annual Mtce	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		EA	Replace in-kind	Replace				
RM-SGN-OTH-04a	Demolish and dispose		EA	Decom	Completely remove				
RM-SGN-OTH-07a	Install New		EA	Install New	Common soils	Rocky soils	Above ground install		
<b>RM-CUS</b>	<b>CUSTOM ROUTE MARKER</b>	P / L							
<b>RM-CUS-RM1</b>	<b>Custom Route Marker 1</b>	P	EA						
RM-CUS-RM1-01a	Basic Maintenance		EA	Annual Mtce	Custom Severity				
RM-CUS-RM1-02a	Repair		EA	Repair	Custom Severity				
RM-CUS-RM1-03a	Replace in-kind		EA	Replace in-kind	Custom Severity				
RM-CUS-RM1-04a	Decommission		EA	Decom	Custom Severity				



**Trails Data Dictionary: Tasks** (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description
RM-CUS-RM1-05a	Expand		EA	Expan	Custom Severity				
RM-CUS-RM1-06a	Alter		EA	Alter Function	Custom Severity				
RM-CUS-RM1-07a	Install New		EA	Install New	Custom Severity				
<a href="#">RM-CUS-RM2</a>	<a href="#">Custom Route Marker 2</a>	L	LF						
RM-CUS-RM2-01a	Basic Maintenance		LF	Annual Mtce	Custom Severity				
RM-CUS-RM2-02a	Repair		LF	Repair	Custom Severity				
RM-CUS-RM2-03a	Replace in-kind		LF	Replace in-kind	Custom Severity				
RM-CUS-RM2-04a	Decommission		LF	Decom	Custom Severity				
RM-CUS-RM2-05a	Expand		LF	Expan	Custom Severity				
RM-CUS-RM2-06a	Alter		LF	Alter Function	Custom Severity				
RM-CUS-RM2-07a	Install New		LF	Install New	Custom Severity				

**Trails Data Dictionary: Tasks** (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description

**ADJACENT REFERENCE POINTS<sup>2</sup>**

<b>RP-CON</b>	<b>ADJACENT REFERENCE PTS (Constr)</b>								
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							
<b>RP-ADM</b>	<b>ADJACENT REFERENCE PTS (Constr)</b>	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							
<b>RP-NAT</b>	<b>ADJACENT REFERENCE PTS (Natural)</b>	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							

**Trails Data Dictionary: Tasks** (updated 1/24/2007)

Feature / Tasks					Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
Feature / Task Code	Feature <sup>1</sup> / Task Description	Line or Point Feature	Task UoM (Unit of Measure)	Condition Class	Description	Description	Description	Description	Description

**Footnotes:**

Note<sup>1</sup> 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.

Note<sup>2</sup> Adjacent Reference Points (ARP) cannot currently be recorded in Infra Trails. ARP's are a TRACS survey item, and intended only to create mile-posted trail logs. ARP data fields cannot be used for recording required inventory or cost data for Buildings, Trailheads, CUAs, Roads, Trails, etc (see applicable Infra modules). When available in Infra Trails, however, any ARP data recorded must be entered by BMP and/or EMP.

**Required / Optional Indicators:**

(auto) = Automatically populated, unless created by user.

R = Measurement required to calculate feature unit of measure

R for inventory = Required for feature inventory & costing

R<sup>1</sup> = Record as individual feature (entry defaults to 1)

R+ = May be recorded as multiple features, grouped by quantity

R<sup>length</sup> = between segment BMP & EMP. (Refer to CASM for direction on grouping by feature type and Trail Class.)  
EMP may be used to determine feature length, instead of

O = calculating length during field surveys.  
Measurement is optional.

O<sup>RP</sup> = If recording an Adjacent Reference Point, the BMP must be recorded.  
(see Note<sup>2</sup> 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 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*.

### 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 Form

## TRACS Survey Form (version 4.0)

<b>Trail Name:</b>						<b>Trail No:</b>				<b>Survey Date:</b>				
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)								
<b>BMP</b>	<b>Feature</b>			<b>Condition</b>			<b>Task</b>			Critical	Non-Crit			
<b>EMP</b>	<b>Code</b>	<b>Comments</b>		<b>Code</b>	<b>Comments</b>		<b>Code</b>	<b>Comments</b>		<b>Freq</b>	<b>Sevty</b>			
Qty=	Lgth=	Width=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=						
Qty=	Lgth=	Width=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=						
Qty=	Lgth=	Width=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=						
Qty=	Lgth=	Width=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=						
Qty=	Lgth=	Width=	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=						
Qty=	Lgth=	Wdth=	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.		✓	
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=
1850 20,000	Tread Segment		On old road bed, generally meets TMO		generally self draining - except where added			
Qty=	Lgth=	Wdth= 60"	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=
2610 -	Stream X-ing, Natural <del>ford</del>		OK				Routine Mtc	✓
Qty=	Lgth= 16'	Wdth= 10'	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=
8904 8905	Clearing		Avalanche chute - heavy accumulation of brush + slash = DM				Remove slash - heavy slow work.	✓
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=
10,480 -	Switchback		existing radius to small				Increase radius to 6'	✓
Qty=	Lgth=	Wdth=	Dpth=	Hgth=	Rad= 4'	Dia=	DistToMtl=	Mtl=
10,485 10,496	Retaining Wall - Dry stack rock		New - retain new switchback cut slope after widening				Construct new - materials available close by	✓
Qty= calc	Lgth= calc	Wdth=	Dpth= 3'	Hgth= 5'	Rad=	Dia=	DistToMtl= 300'	Mtl= Rock
10,500 32,620	Clearing Segment		generally within TMO except where noted				mostly on old roadbed that's sloughed in after sta 20,000	
Qty=	Lgth=	Wdth= 12'	Dpth=	Hgth= 12'	Rad=	Dia=	DistToMtl=	Mtl=
12,923 -	Switchback - same		as sta 10,480					
Qty=	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				
Req 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					
Qty=	Lgth=	Width=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=
41,260 42,290	Turnpike - Type I Standard		severely eroded by stock use, fabric showing wt ok, DM		Add 4" fill on entire length, good material available locally			✓
Qty=	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			
Qty=	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			
Qty=	Lgth= 60'	Width= 7'	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=
61,028 -	Water bar - Rock		Water running onto bridge		Install new, drain left			✓
Qty=	Lgth= 5'	Width= 48"	Dpth= 6"	Hgth=	Rad=	Dia=	DistToMtl= 30'	Mtl= Rock
	etc.							
Qty=	Lgth=	Width=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=
Qty=	Lgth=	Width=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=
Qty=	Lgth=	Width=	Dpth=	Hgth=	Rad=	Dia=	DistToMtl=	Mtl=

# TRACS 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.



## TRACS 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
<b>Typical Trail Grade</b>		Percent gradient ahead measured along the tread centerline.
TG01	+ 0-5%	
<b>TG02</b>	<b>+ 5-8%</b>	
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%	
<b>Typical Side Slope</b>		Percent side slope of the surrounding ground measured along the slope fall line.
SS01	0-20%	
<b>SS02</b>	<b>20-40%</b>	
SS03	40-60%	
SS04	60-80%	
SS05	80-100%	
SS06	> 100%	

<b>Factor Code</b>	<b>Factor Value</b>	<b>Definition</b>
<b>Typical Soil Type</b>		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.
<b>ST04</b>	<b>Common</b>	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.
<b>Typical Vegetation: Brush &amp; Regeneration</b>		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.
<b>BR03</b>	<b>Light</b>	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.

<b>Factor Code</b>	<b>Factor Value</b>	<b>Definition</b>
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.
<b>Typical Vegetation: Timber</b>		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.
<b>TT04</b>	<b>Medium</b>	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.

## TRACS Productivity Factor 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 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 used.

# TRACS Sign Inventory Form

Trail Name:  Trail Number:  Milepost:

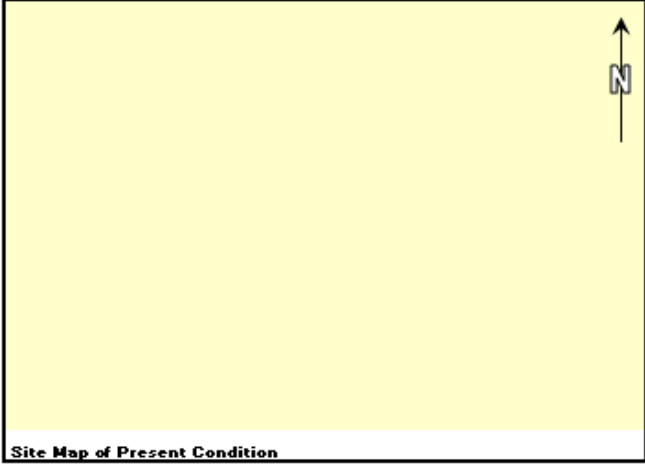
Surveyor:

Date:

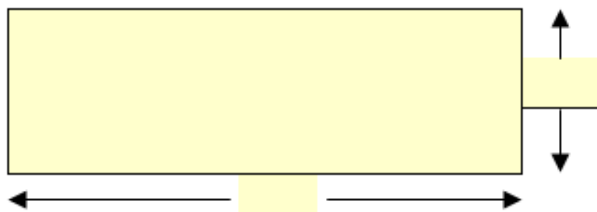
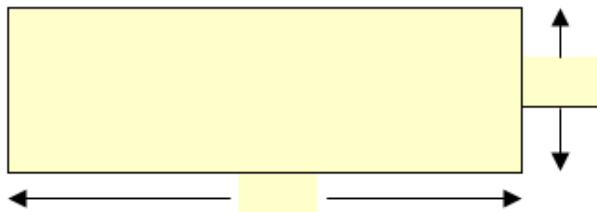
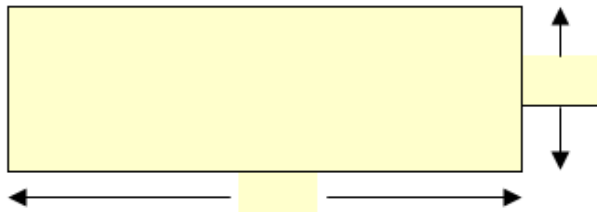
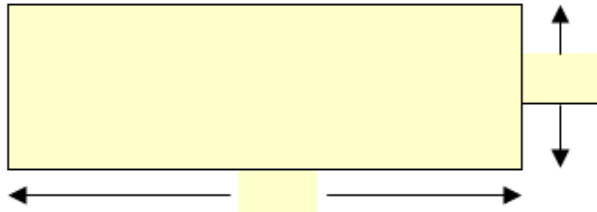
Photo ID:

Installation Comments:

N ↑

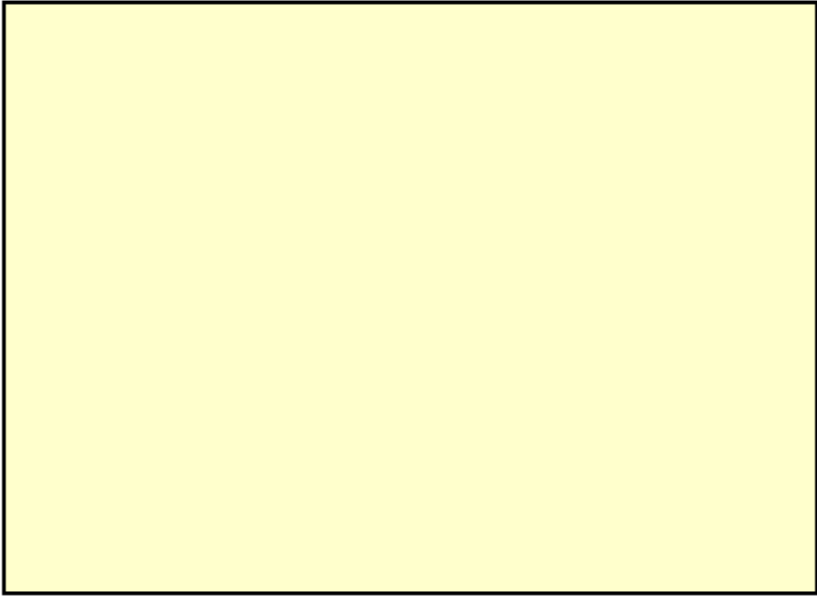
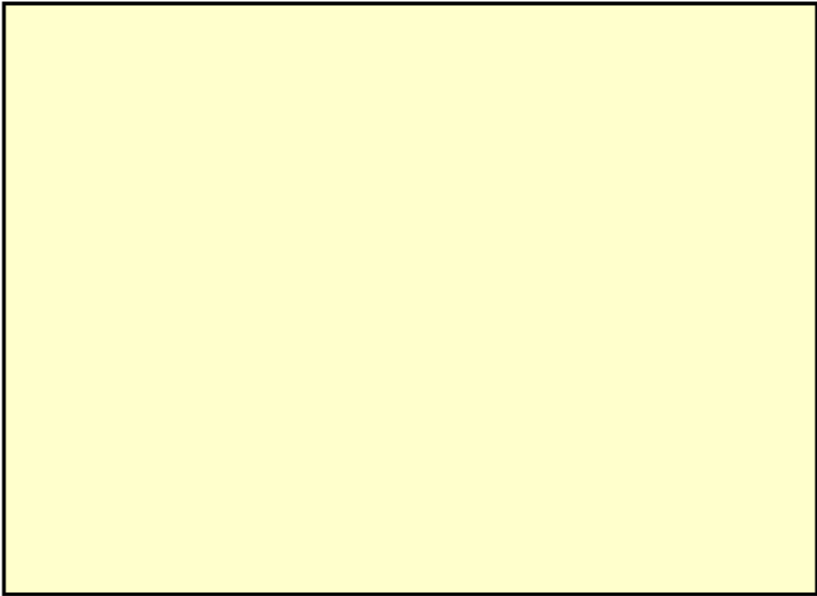


**Site Map of Present Condition**

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>A</td><td>B</td><td>C</td><td>D</td> <td>Destination/Guide</td> </tr> <tr> <td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td> <td>Travel Management</td> </tr> <tr> <td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></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"/>	Travel Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>															
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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>A</td><td>B</td><td>C</td><td>D</td> <td>Non-reflectORIZED</td> </tr> <tr> <td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td> <td>ReflectORIZED</td> </tr> <tr> <td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><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"/>															
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<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 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 @ replacemt 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

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 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 Form

Trail Name: <input style="width: 350px;" type="text"/>		Trail Number: <input style="width: 60px;" type="text"/>			
Film Roll number: <input style="width: 170px;" type="text"/>					
	Date	Location & Description		Date	Location & Description
<b>1</b>	<input style="width: 80px;" type="text"/>	<input style="width: 180px;" type="text"/>		<b>14</b>	<input style="width: 180px;" type="text"/>
<b>2</b>	<input style="width: 80px;" type="text"/>	<input style="width: 180px;" type="text"/>		<b>15</b>	<input style="width: 180px;" type="text"/>
<b>3</b>	<input style="width: 80px;" type="text"/>	<input style="width: 180px;" type="text"/>		<b>16</b>	<input style="width: 180px;" type="text"/>
<b>4</b>	<input style="width: 80px;" type="text"/>	<input style="width: 180px;" type="text"/>		<b>17</b>	<input style="width: 180px;" type="text"/>
<b>5</b>	<input style="width: 80px;" type="text"/>	<input style="width: 180px;" type="text"/>		<b>18</b>	<input style="width: 180px;" type="text"/>
<b>6</b>	<input style="width: 80px;" type="text"/>	<input style="width: 180px;" type="text"/>		<b>19</b>	<input style="width: 180px;" type="text"/>
<b>7</b>	<input style="width: 80px;" type="text"/>	<input style="width: 180px;" type="text"/>		<b>20</b>	<input style="width: 180px;" type="text"/>
<b>8</b>	<input style="width: 80px;" type="text"/>	<input style="width: 180px;" type="text"/>		<b>21</b>	<input style="width: 180px;" type="text"/>
<b>9</b>	<input style="width: 80px;" type="text"/>	<input style="width: 180px;" type="text"/>		<b>22</b>	<input style="width: 180px;" type="text"/>
<b>10</b>	<input style="width: 80px;" type="text"/>	<input style="width: 180px;" type="text"/>		<b>23</b>	<input style="width: 180px;" type="text"/>
<b>11</b>	<input style="width: 80px;" type="text"/>	<input style="width: 180px;" type="text"/>		<b>24</b>	<input style="width: 180px;" type="text"/>
<b>12</b>	<input style="width: 80px;" type="text"/>	<input style="width: 180px;" type="text"/>		<b>25</b>	<input style="width: 180px;" type="text"/>
<b>13</b>	<input style="width: 80px;" type="text"/>	<input style="width: 180px;" type="text"/>		<b>26</b>	<input style="width: 180px;" type="text"/>

TRACS Photo Record Form

Trail Name:  Trail Number:

Milepost:  Description:

Milepost:  Description:

# TRACS Photo Log Example

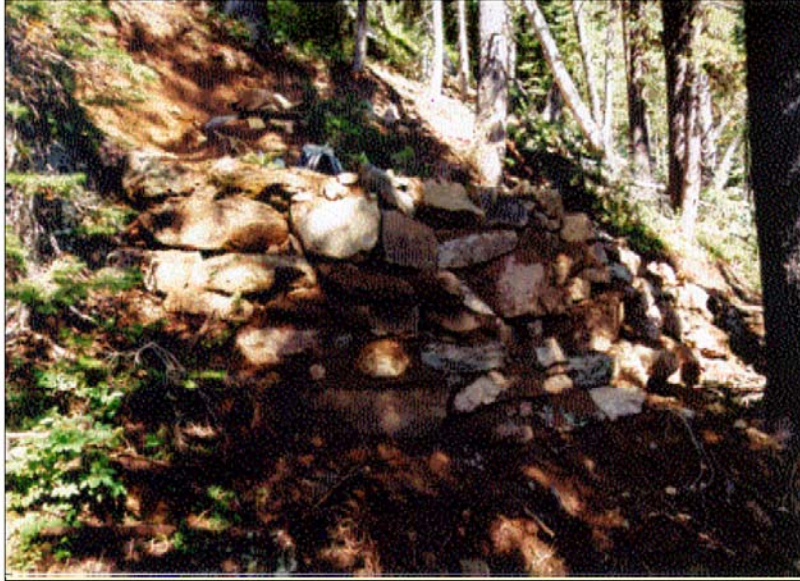
Trail Name: <b>North Fork Bear Basin</b>		Trail Number: <b>18</b>			
Film Roll number: <b>8-99a</b>					
	Date	Location & Description		Date	Location & Description
<b>1</b>			<b>14</b>		
<b>2</b>			<b>15</b>		
<b>3</b>			<b>16</b>	8/25/1999	MP 0.000 - Trailhead bulletin board and guide sign
<b>4</b>			<b>17</b>	8/25/1999	MP 0.000 - Trailhead bulletin board and guide sign
<b>5</b>			<b>18</b>	8/25/1999	MP 1.869 - Rotted out puncheon with user bypass trail being established
<b>6</b>			<b>19</b>	8/25/1999	MP 2.582 - Uprooted tree and stump blocking trail with bypsss trail
<b>7</b>			<b>20</b>	8/25/1999	MP 3.016 - Junction with Ridge trail and sign
<b>8</b>			<b>21</b>	8/25/1999	MP 3.259 - Rock retaining wall at switchback left
<b>9</b>			<b>22</b>	8/25/1999	MP 4.067 - Obliteration of old trail beyond climbing turn, growing in nicely
<b>10</b>			<b>23</b>		
<b>11</b>			<b>24</b>		
<b>12</b>			<b>25</b>		
<b>13</b>			<b>26</b>		

# TRACS Photo Record Example

## TRACS Photo Record

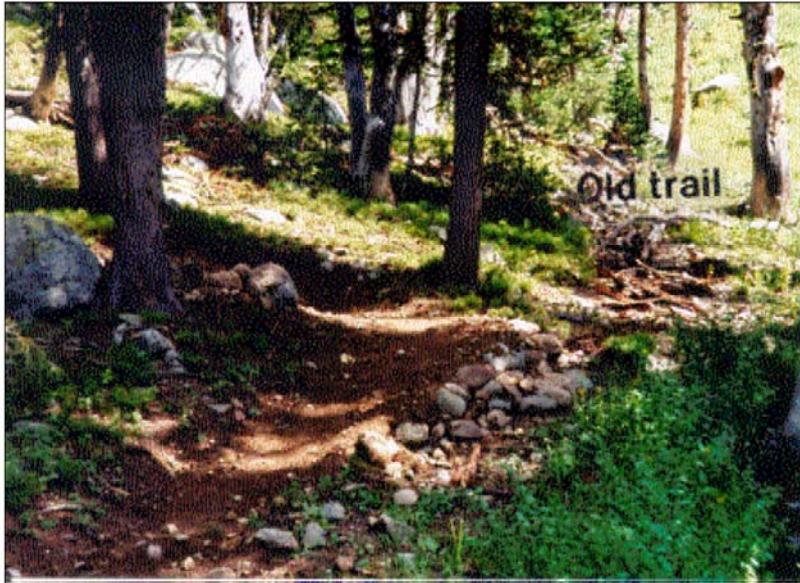
Trail Name: **North Fork Bear Basin**

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 <sup>1</sup>	
<p><b>Trail Bridge</b> 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><b>1. Complex Trail Bridges</b></p> <p><b>2. Major Trail Bridges</b></p> <p><b>3. Minor Trail Bridges</b></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.<sup>2</sup></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 <sup>1</sup>	
<b>1. Complex Trail Bridge</b>	<p><b>Complex Trail Bridges:</b> 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.<sup>2</sup></p> <p><b>Additionally:</b></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 <sup>3</sup>	5 years <sup>1</sup>	Infra Trail Bridges
<b>Major Trail Bridge</b>	<p><b>Major Trail Bridges:</b> All single-span timber/log trail bridges with a span greater than 20 feet <u>and</u> a vertical distance greater than 5 feet.<sup>2</sup></p> <p><b>Additionally:</b></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"> <li>1. Trained specifically for log and/or timber trail bridge inspections; and</li> <li>2. Deemed qualified, based on Regional or Forest policy, to perform this task under the general supervision of a certified road bridge inspector.</li> </ol>	Major Trail Bridge Inspection Form <sup>3</sup>	5 years <sup>1</sup>	Infra Trail Bridges
<b>3. Minor Trail Bridge</b>	<p><b>Minor Trail Bridges:</b> 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.<sup>2</sup></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 <sup>3</sup>	5 years <sup>1</sup>	Infra Trail Bridges

Structure Categories	Definitions	Inspection			Data Storage
		Inspector Requirements	Inspection Form	Inspection Interval <sup>1</sup>	
<b>4. Trail Structures</b>	<b>Trail Structures:</b> 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
<b>5. Other Structures Commonly Associated with Trails</b>	<b>Other Structures:</b> 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 <sup>1</sup>	Infra Trails or Infra RecSites

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

<sup>2</sup> 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.

<sup>3</sup> 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.
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**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 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.



# Appendix A: Trail Fundamentals, Standards & Definitions



Several key concepts are integrated throughout Forest Service trail management, assessment, budget allocation, and reporting processes and tools. Consistent interpretation and application of these concepts is essential for credible and efficient trail management agency-wide. Some of these concepts are applicable to multiple Forest Service programs and/or other agencies, while others are specific to Forest Service trail program management.

Several of these concepts are included on the following pages for future reference:

- Official Definitions
- Trail National Quality Standards
- Trail Fundamentals
- Interagency Trail Data Standards.





## Official Trail Definitions

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### **USFS Definitions:** (36 CFR 212.1)

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

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

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

### **USFS / NPS / BLM / FWS Interagency Definition:**

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

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

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

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





# Common Definitions for Maintenance and Construction Terms<sup>2</sup>

## Fixed Assets / Components

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

**Fixed Asset Component.** A subsystem, major item of equipment, or other portion of a fixed asset.

Examples of components include:

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

## Maintenance

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

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

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

- **Repair.** Work to restore a damaged, broken, or worn-out fixed asset, component, or item of equipment to normal operating condition. Repairs may be done as annual maintenance or deferred maintenance activities.
- **Preventive Maintenance.** Scheduled servicing, repairs, inspections, adjustments, and replacement of parts that result in fewer breakdowns and fewer premature replacements, and help achieve the expected life of the fixed asset. Inspections are a critical part of preventive maintenance as they provide the information for scheduling maintenance and evaluating its effectiveness.
- **Cyclic Maintenance.** Preventive maintenance activities that recur on a periodic and scheduled cycle.

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<sup>2</sup> Financial Health— Common Definitions for Maintenance and Construction Terms (Deputy Chief's letter, File Code: 6400/6500, September 28, 2998).

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

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

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

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

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

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

- **Repair.** Work to restore a damaged, broken, or worn-out fixed asset, component, or item of equipment to normal operating condition. Repairs may be done as annual maintenance or deferred maintenance activities.
- **Rehabilitation.** Renovation or restoration of an existing fixed asset or any of its components in order to restore the functionality or life of the asset. Because there is no significant expansion or change of purpose for the fixed asset, the work primarily addresses deferred maintenance.
- **Replacement.** Substitution or exchange of an existing fixed asset or component with one having essentially the same capacity and purpose.

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

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

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

## Capital Improvement

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

- **New Construction.** The erection, construction, installation, or assembly of a new fixed asset.
- **Alteration.** Work to change the function of an existing fixed asset. The capacity or size of the fixed asset is not significantly changed. Deferred maintenance of the original fixed asset may be reduced or eliminated by an alteration.
- **Expansion.** Increasing the capacity or size of an existing fixed asset to serve needs different from, or significantly greater than, those originally intended.

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

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

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

## Operations

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

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

## Units of Work

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

### Reasons:

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

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

### Priorities:

- **Emergency Need.** An urgent maintenance need that may result in injury, illness, or loss of life, natural resource, or property; and must be satisfied immediately. Emergency needs generally require a declaration of emergency or disaster, or a finding by a line officer that an emergency exists.
- **Critical Need.** A requirement that addresses a serious threat to public health or safety, a natural resource, or the ability to carry out the mission of the organization.
- **Noncritical Need.** A requirement that addresses potential risk to public or employee safety or health, compliance with codes, standards, regulations etc., or needs that address potential adverse consequences to natural resources or mission accomplishment.

Examples of needs include:

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

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

## Condition/Performance Indicators

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



## TRAIL National Quality Standards

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*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

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FSH 2353.15, Exhibit 01

## 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).<sup>3</sup>
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.<sup>1</sup>
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.<sup>1</sup>
2. Information is posted in a clear and professional manner.
3. Visitors are provided opportunities to communicate their expectations for and satisfaction with NFS trails.

## Key Measure: CONDITION OF FACILITIES

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

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<sup>3</sup> Indicates a Critical National Quality Standard. If it cannot be met, action must be taken as soon as practicable to correct or mitigate the problem. Refer to FSH 2309.18, section 15.



## Trail Fundamentals

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

## Design Parameters (FSH 2309.18, sec. 14.5)

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

1. Design Parameters reflect the design objectives for NFS trails and determine the dominant physical criteria that most define their geometric shape. These criteria include:
  - a. Design Tread Width. Design Tread Width is expressed in terms of single lane, double lane, and the minimum tread width on trail structures.
  - b. Design Surface. Design Surface is expressed in terms of surface type, protrusions, and obstacles.
  - c. Design Grade. Design Grade is expressed in terms of Target Grade, Short Pitch Maximum Grade, and Maximum Pitch Density.
  - d. Design Cross Slope. Design Cross Slope is expressed in terms of Target Cross Slope and Maximum Cross Slope.
  - e. Design Clearing. Design Clearing is expressed in terms of width, height, and shoulder clearance.
  - f. Design Turns. Design Turns are expressed in terms of the turning radius.
2. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, and other factors (for example, mitigation of site-specific safety concerns and adjustments to accommodate other Managed Uses), provided that the deviations are consistent with the general intent of the applicable Trail Class.
3. Identify the Design Parameters for a NFS trail or trail segment based on its Trail Class and Designed Use. For a Design Parameter such as Design Tread Width, Design Clearing Width, and Design Turns that is expressed as a range of values, identify a specific value for each trail or trail segment.

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

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

Trail Name • Trail Number • Trail Length • Trail Status

# ITDS

## Interagency Trail Data Standards

March 2008

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

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

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

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

**Status?** The ITDS underwent internal and external reviews in 2003 and 2004. The ITDS are currently being prepared for publication by the Federal Geographic Data Committee (FGDC) as federal trail data standards. Subsequent steps include identification of any additionally needed ITDS attributes specific to NSTs, followed by the potential expansion of the ITDS to reflect a core set of public information and trail use attributes.

**Info?** Access the ITDS and find out more at: <http://home.nps.gov/gis/trails/>

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

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

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

# ITDS

## Interagency Trail Data Standards

### Data Attributes

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

#### Basic Trail Information:

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

#### Trail Administrative Unit & Location:

Admin Org	Jurisdiction
Managing Org	Municipality
Congressional District	State
County	

#### Trail Management and Use:

Accessibility Status	Primary Trail Maintainer
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: Trail Classes







## 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.<sup>1</sup> 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
<b>Tread &amp; Traffic Flow</b>	<ul style="list-style-type: none"> <li>◆ Tread intermittent and often indistinct.</li> <li>◆ May require route finding.</li> <li>◆ Single lane, with no allowances constructed for passing.</li> <li>◆ Predominantly native materials.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Tread continuous and discernible, but narrow and rough.</li> <li>◆ Single lane, with minor allowances constructed for passing.</li> <li>◆ Typically native materials.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Tread continuous and obvious.</li> <li>◆ Single lane, with allowances constructed for passing where required by traffic volume in places where there is no reasonable opportunity to pass.</li> <li>◆ Native or imported materials.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Tread wide and relatively smooth, with few irregularities.</li> <li>◆ Single lane, with allowances constructed for passing where required by traffic volume in places where there is no reasonable opportunity to pass.</li> <li>◆ Double lane where traffic volume is high and passing is frequent.</li> <li>◆ Native or imported materials.</li> <li>◆ May be hardened.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Tread wide, firm, stable, and generally uniform.</li> <li>◆ Single lane, with frequent turnouts where traffic volume is low to moderate.</li> <li>◆ Double lane where traffic volume is moderate to high.</li> <li>◆ Commonly hardened with asphalt or other imported material.</li> </ul>
<b>Obstacles</b>	<ul style="list-style-type: none"> <li>◆ Obstacles common, naturally occurring, often substantial, and intended to provide increased challenge.</li> <li>◆ Narrow passages; brush, steep grades, rocks and logs present.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Obstacles may be common, substantial, and intended to provide increased challenge.</li> <li>◆ Blockages cleared to define route and protect resources.</li> <li>◆ Vegetation may encroach into trailway.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Obstacles may be common, but not substantial or intended to provide challenge.</li> <li>◆ Vegetation cleared outside of trailway.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Obstacles infrequent and insubstantial.</li> <li>◆ Vegetation cleared outside of trailway.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Obstacles not present.</li> <li>◆ Grades typically &lt; 8%.</li> </ul>

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<b>Trail Attributes</b>	<b>Trail Class 1 Minimally Developed</b>	<b>Trail Class 2 Moderately Developed</b>	<b>Trail Class 3 Developed</b>	<b>Trail Class 4 Highly Developed</b>	<b>Trail Class 5 Fully Developed</b>
<b>Constructed Features &amp; Trail Elements</b>	<ul style="list-style-type: none"> <li>Structures minimal to non-existent.</li> <li>Drainage typically provided without structures.</li> <li>Natural fords.</li> <li>Typically no bridges.</li> </ul>	<ul style="list-style-type: none"> <li>Structures of limited size, scale, and quantity; typically constructed of native materials.</li> <li>Structures adequate to protect trail infrastructure and resources.</li> <li>Natural fords.</li> <li>Bridges as needed for resource protection and appropriate access.</li> </ul>	<ul style="list-style-type: none"> <li>Structures may be common and substantial; constructed of imported or native materials.</li> <li>Natural or constructed fords.</li> <li>Bridges as needed for resource protection and appropriate access.</li> </ul>	<ul style="list-style-type: none"> <li>Structures frequent and substantial; typically constructed of imported materials.</li> <li>Constructed or natural fords.</li> <li>Bridges as needed for resource protection and user convenience.</li> <li>Trailside amenities may be present.</li> </ul>	<ul style="list-style-type: none"> <li>Structures frequent or continuous; typically constructed of imported materials.</li> <li>May include bridges, boardwalks, curbs, handrails, trailside amenities, and similar features.</li> </ul>
<b>Signs<sup>2</sup></b>	<ul style="list-style-type: none"> <li>Route identification signing limited to junctions.</li> <li>Route markers present when trail location is not evident.</li> <li>Regulatory and resource protection signing infrequent.</li> <li>Destination signing, unless required, generally not present.</li> <li>Information and interpretive signing generally not present.</li> </ul>	<ul style="list-style-type: none"> <li>Route identification signing limited to junctions.</li> <li>Route markers present when trail location is not evident.</li> <li>Regulatory and resource protection signing infrequent.</li> <li>Destination signing typically infrequent outside wilderness areas; generally not present in wilderness areas.</li> <li>Information and interpretive signing uncommon.</li> </ul>	<ul style="list-style-type: none"> <li>Route identification signing at junctions and as needed for user reassurance.</li> <li>Route markers as needed for user reassurance.</li> <li>Regulatory and resource protection signing may be common.</li> <li>Destination signing likely outside wilderness areas; generally not present in wilderness areas.</li> <li>Information and interpretive signs may be present outside wilderness areas.</li> </ul>	<ul style="list-style-type: none"> <li>Route identification signing at junctions and as needed for user reassurance.</li> <li>Route markers as needed for user reassurance.</li> <li>Regulatory and resource protection signing common.</li> <li>Destination signing common outside wilderness areas; generally not present in wilderness areas.</li> <li>Information and interpretive signs may be common outside wilderness areas.</li> <li>Accessibility information likely displayed at trailhead.</li> </ul>	<ul style="list-style-type: none"> <li>Route identification signing at junctions and for user reassurance.</li> <li>Route markers as needed for user reassurance.</li> <li>Regulatory and resource protection signing common.</li> <li>Destination signing common.</li> <li>Information and interpretive signs common.</li> <li>Accessibility information likely displayed at trailhead.</li> </ul>
<b>Typical Recreation Environments &amp; Experience<sup>3</sup></b>	<ul style="list-style-type: none"> <li>Natural and unmodified.</li> <li>ROS: Typically Primitive to Roaded Natural.</li> <li>WROS: Typically Primitive to Semi-Primitive.</li> </ul>	<ul style="list-style-type: none"> <li>Natural and essentially unmodified.</li> <li>ROS: Typically Primitive to Roaded Natural.</li> <li>WROS: Typically Primitive to Semi-Primitive.</li> </ul>	<ul style="list-style-type: none"> <li>Natural and primarily unmodified.</li> <li>ROS: Typically Primitive to Roaded Natural.</li> <li>WROS: Typically Semi-Primitive to Transition.</li> </ul>	<ul style="list-style-type: none"> <li>May be modified.</li> <li>ROS: Typically Semi-Primitive to Rural</li> <li>WROS: Typically Portal or Transition.</li> </ul>	<ul style="list-style-type: none"> <li>May be highly modified.</li> <li>Commonly associated with visitor centers or high-use recreation sites.</li> <li>ROS: Typically Roaded Natural to Urban.</li> <li>Generally not present in Wilderness areas.</li> </ul>

<sup>1</sup> 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.

<sup>2</sup> 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).

<sup>3</sup> 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.



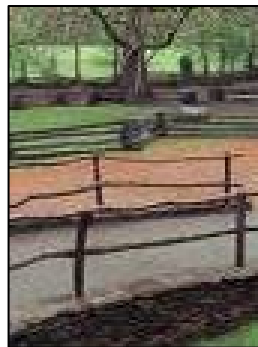
**TC5 – Obstacles:** Obstacles not present. Grades typically < 8%.



**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.

# Appendix C: Trail Design Parameters









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

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent<sup>1</sup>. 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		Trail Class 1	Trail Class 2	Trail Class 3 <sup>2</sup>	Trail Class 4 <sup>2</sup>	Trail Class 5 <sup>2</sup>
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"
Design Surface <sup>3</sup>	Structures (Minimum Width)	18"	18"	18"	36"	36"
	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	Native with improved sections of borrow or imported material, and routine grading	Likely imported material, and routine grading
Design Grade <sup>3</sup>	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"
	Target Grade	5% – 25%	5% – 18%	3% – 12%	2% – 10%	2% – 5%
Design Grade <sup>3</sup>	Short Pitch Maximum	40%	35%	25%	15%	5% FSTAG: 5% – 12% <sup>2</sup>
	Maximum Pitch Density	20% – 40% of trail	20% – 30% of trail	10% – 20% of trail	5% – 20% of trail	0% – 5% of trail

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Designed Use HIKER/PEDESTRIAN		Trail Class 1	Trail Class 2	Trail Class 3 <sup>2</sup>	Trail Class 4 <sup>2</sup>	Trail Class 5 <sup>2</sup>
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"	24" – 48"	36" – 60"	48" – 72"	60" – 72"
		Some vegetation may encroach into clearing area	Some light vegetation may encroach into clearing area			
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'

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

<sup>2</sup> 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).

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



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

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent<sup>1</sup>. 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		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
<b>Design Tread Width</b>	<b>Wilderness</b> (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
	<b>Non-Wilderness</b> (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	
	<b>Non-Wilderness</b> (Double Lane)		60"	60" – 84"	84" – 120"	
<b>Design Surface<sup>2</sup></b>	<b>Structures</b> (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	Other than bridges: 36" Bridges without handrails: 60" Bridges with handrails: 84" clear width	
	<b>Type</b>	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		
	<b>Protrusions</b>	≤ 6" May be common and continuous	≤ 3" May be common, not continuous	≤ 3" Uncommon, not continuous		
	<b>Obstacles</b> (Maximum Height)	12"	6"	3"		

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Designed Use <b>PACK AND SADDLE</b>		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
<b>Design Grade</b> <sup>2</sup>	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	
<b>Design Cross Slope</b>	Target Cross Slope		5% – 10%	3% – 5%	0% – 5%	
	Maximum Cross Slope		10%	8%	5%	
<b>Design Clearing</b>	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"	
<b>Design Turn</b>	Radius		4' – 5'	5' – 8'	6' – 10'	

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

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



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

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent<sup>1</sup>. 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 <b>BICYCLE</b>		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
<b>Design Tread Width</b>	<b>Single Lane</b>	6" – 12"	12" – 24"	18" – 36"	24" – 48"	36" – 60"
	<b>Double Lane</b>	36" – 48"	36" – 48"	36" – 48"	48" – 84"	72" – 120"
	<b>Structures</b> (Minimum Width)	18"	18"	36"	48"	60"
<b>Design Surface<sup>2</sup></b>	<b>Type</b>	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
	<b>Protrusions</b>	≤ 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
	<b>Obstacles</b> (Maximum Height)	24"	12"	10"	8"	No obstacles
<b>Design Grade<sup>2</sup></b>	<b>Target Grade</b>	5% – 20%	5% – 12%	3% – 10%	2% – 8%	2% – 5%
	<b>Short Pitch Maximum</b>	30%  50% on downhill segments only	25%  35% on downhill segments only	15%	10%	8%
	<b>Maximum Pitch Density</b>	20% – 30% of trail	10% – 30% of trail	10% – 20% of trail	5% – 10% of trail	0% – 5% of trail

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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'

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

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



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

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent<sup>1</sup>. 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 <b>MOTORCYCLE</b>		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
<b>Design Tread Width</b>	<b>Single Lane</b>	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
	<b>Double Lane</b>		48"	48" – 60"	60" – 72"	
	<b>Structures (Minimum Width)</b>		36"	48"	48"	
<b>Design Surface<sup>2</sup></b>	<b>Type</b>		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	
	<b>Protrusions</b>		≤ 6"  May be common and continuous	≤ 3"  May be common, but not continuous	≤ 3"  Uncommon and not continuous	
	<b>Obstacles (Maximum Height)</b>		18"  May be common or placed for increased challenge	12"  Common and left for increased challenge	3"  Uncommon	
<b>Design Grade<sup>2</sup></b>	<b>Target Grade</b>		10% – 25%	5% – 20%	3% – 10%	
	<b>Short Pitch Maximum</b>		40%	25%	15%	
	<b>Maximum Pitch Density</b>		20% – 40% of trail	15% – 30% of trail	10% – 20% of trail	

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

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

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



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

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent<sup>1</sup>. 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 <b>ALL-TERRAIN VEHICLE</b>		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
<b>Design Tread Width</b>	<b>Single Lane</b>	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
	<b>Double Lane</b>		96"	96" – 108"	96" – 120"	
	<b>Structures</b> (Minimum Width)		60"	60"	60"	
<b>Design Surface<sup>2</sup></b>	<b>Type</b>		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	
	<b>Protrusions</b>		≤ 6"  May be common and continuous	≤ 3"  May be common, but not continuous	≤ 3"  Uncommon and not continuous	
	<b>Obstacles</b> (Maximum Height)		12"  May be common or placed for increased challenge	6"  May be common and left for increased challenge	3"  Uncommon	
<b>Design Grade<sup>2</sup></b>	<b>Target Grade</b>		10% – 25%	5% – 15%	3% – 10%	
	<b>Short Pitch Maximum</b>		35%	25%	15%	
	<b>Maximum Pitch Density</b>		20% – 40% of trail	15% – 30% of trail	10% – 20% of trail	

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Designed Use <b>ALL-TERRAIN VEHICLE</b>		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
<b>Design Cross Slope</b>	<b>Target Cross Slope</b>		5% – 10%	3% – 8%	3% – 5%	
	<b>Maximum Cross Slope</b>		15%	10%	8%	
<b>Design Clearing</b>	<b>Height</b>		6' – 7'	6' – 8'	8' – 10'	
	<b>Width</b> (On steep side hills, increase clearing on uphill side by 6" – 12")		60"	60" – 72"	72" – 96"	
	<b>Shoulder Clearance</b>		0" – 6"	6" – 12"	12" – 18"	
<b>Design Turn</b>	<b>Radius</b>		6' – 8'	8' – 10'	8' – 12'	

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

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



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

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent<sup>1</sup>. 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
<b>Design Tread Width</b>	<b>Single Lane</b>	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
	<b>Double Lane</b>		16'	16'	16'	
	<b>Structures</b> (Minimum Width)		96"	96"	96"	
<b>Design Surface<sup>2</sup></b>	<b>Type</b>		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	
	<b>Protrusions</b>		≤ 12" May be common and continuous	≤ 8" May be common and continuous	≤ 4" May be common and continuous	
	<b>Obstacles</b> (Maximum Height)		36" May be common or placed for increased challenge	24" Common and left for increased challenge	12" Uncommon	
<b>Design Grade<sup>2</sup></b>	<b>Target Grade</b>		10% – 21%	5% – 18%	5% – 12%	
	<b>Short Pitch Maximum</b>		25%	20%	15%	
	<b>Maximum Pitch Density</b>		20% – 30% of trail	10% – 20% of trail	5% – 10% of trail	

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Designed Use FOUR WHEEL DRIVE VEHICLE > 50"		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
<b>Design Cross Slope</b>	Target Cross Slope		8% – 15%	5% – 12%	5% – 8%	
	Maximum Cross Slope		15%	12%	8%	
<b>Design Clearing</b>	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"	
<b>Design Turn</b>	Radius		10' – 15'	15' – 20'	20' – 30'	

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

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



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

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent<sup>1</sup>. 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			Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
<b>CROSS-COUNTRY SKI</b>							
<b>Design Groomed Width</b>	<b>Single Lane</b>	Typically not designed or actively managed for cross-country skiing, allow use may be allowed	2' – 4'	6' – 8'	8' – 10"	Typically not designed or actively managed for cross-country skiing, allow use may be allowed	
	<b>Double Lane</b>		Typically not groomed	Or width of grooming equipment	Or width of grooming equipment)		
	<b>Structures (Minimum Width)</b>		6' – 8'	8' – 12'	12' – 16'		
<b>Design Grooming and Surface<sup>2</sup></b>	<b>Type</b>		36"	36"	36"		
	<b>Protrusions</b>		Generally no machine grooming	May receive occasional machine grooming for snow compaction and track setting	Regular machine grooming for snow compaction and track setting		
	<b>Obstacles (Maximum Height)</b>		No protrusions	No protrusions	No protrusions		
<b>Design Grade<sup>2</sup></b>	<b>Target Grade</b>		12"	8"	No obstacles		
	<b>Short Pitch Maximum</b>		Uncommon	Uncommon (no obstacles if machine groomed)			
	<b>Maximum Pitch Density</b>		5% – 15%	2% – 10%	0% – 8%		
<b>Design Cross Slope</b>	<b>Target Cross Slope</b>		25%	20%	12%		
	<b>Maximum Cross Slope (For up to 50')</b>	10% – 20% of trail	5% – 15% of trail	0% – 10% of trail			
		0% – 10%	0% – 5%	0% – 5%			
		20%	15%	10%			

Designed Use <b>CROSS-COUNTRY SKI</b>		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
<b>Design Clearing</b>	<b>Height</b> (Above normal maximum snow level)		6' – 8'	8' Or height of grooming equipment	8' – 10'	
	<b>Width</b>		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	
	<b>Shoulder Clearance</b>		0" – 6"	0" – 12"	0" – 24"	
<b>Design Turn</b>	<b>Radius</b>		8' – 10'	15' – 20' Or to accommodate grooming equipment	≥ 25'	

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

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





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

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

Designed Use SNOWSHOE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Tread Width	Single Lane	Typically not designed or actively managed for snowshoe, although use may be allowed	36"	36" – 48"	36' – 60'	Typically not designed or actively managed for snowshoe, although use may be allowed
	Double Lane		60"	72"	72" – 96"	
	Structures (Minimum Width)		36"	48"	48"	
Design Surface <sup>2</sup>	Type		Generally no machine grooming	May receive occasional machine grooming for snow compaction	Likely to receive occasional machine grooming for snow compaction	
	Protrusions		No protrusions	No protrusions	No protrusions	
	Obstacles (Maximum Height)		12" Uncommon	8" Uncommon (no obstacles if machine groomed)	No obstacles	
Design Grade <sup>2</sup>	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%		

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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	

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

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



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

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent<sup>1</sup>. 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	Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5	
						Trail Class 1
<b>SNOWMOBILE</b>	Typically not designed or actively managed for snowmobiles, although use may be allowed	4' – 6'	6' – 8'	8' – 10'	Typically not designed or actively managed for snowmobiles, although use may be allowed	
		Typically not groomed	Or width of grooming equipment On turns with tight radius, increase groomed width to ≥ 10'	Or minimum width of grooming equipment On turns with tight radius, increase groomed width to ≥ 12'		
<b>Design Tread Width</b>	Double Lane	10'	10' – 12'	12' – 20'	Typically not designed or actively managed for snowmobiles, although use may be allowed	
		Typically not groomed				
<b>Design Surface<sup>1</sup></b>	Type	Structures (Minimum Width)	6'	12'	18'	Typically not designed or actively managed for snowmobiles, although use may be allowed
		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		
<b>Design Grade<sup>2</sup></b>	Obstacles (Maximum Height)	Protrusions	No protrusions	No protrusions	No protrusions	Typically not designed or actively managed for snowmobiles, although use may be allowed
		12"	6"	No obstacles		
		Uncommon	Uncommon (no obstacles if machine groomed)			
Target Grade	Short Pitch Maximum	0% – 12%	0% – 10%	0% – 8%	Typically not designed or actively managed for snowmobiles, although use may be allowed	
		35%	25%	20%		
		15% – 30% of trail	10% – 20% of trail	5% – 10% of trail		
Maximum Pitch Density					Typically not designed or actively managed for snowmobiles, although use may be allowed	

Designed Use <b>SNOWMOBILE</b>		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
<b>Design Cross Slope</b>	<b>Target Cross Slope</b>		0% – 10%	0% – 5%	0%	
	<b>Maximum Cross Slope</b>		15%	10%	5%	
<b>Design Clearing</b>	<b>Height</b> (Above normal maximum snow level)		6'	6' – 8' Provide sufficient clearance for grooming equipment	8' – 12' Provide sufficient clearance for grooming equipment	
	<b>Width</b>		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	
	<b>Shoulder Clearance</b>		6" – 12"	12" – 18"	12" – 24"	
<b>Design Turn</b>	<b>Radius</b>		8' – 10'	15' – 20' Or sufficient radius for grooming equipment	25' – 50'	

<sup>1</sup> For definitions of Design Parameter attributes (e.g., Design Tread Width and Short Pitch Maximum) see FSH 2309.18.

<sup>2</sup> 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

# 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](http://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.

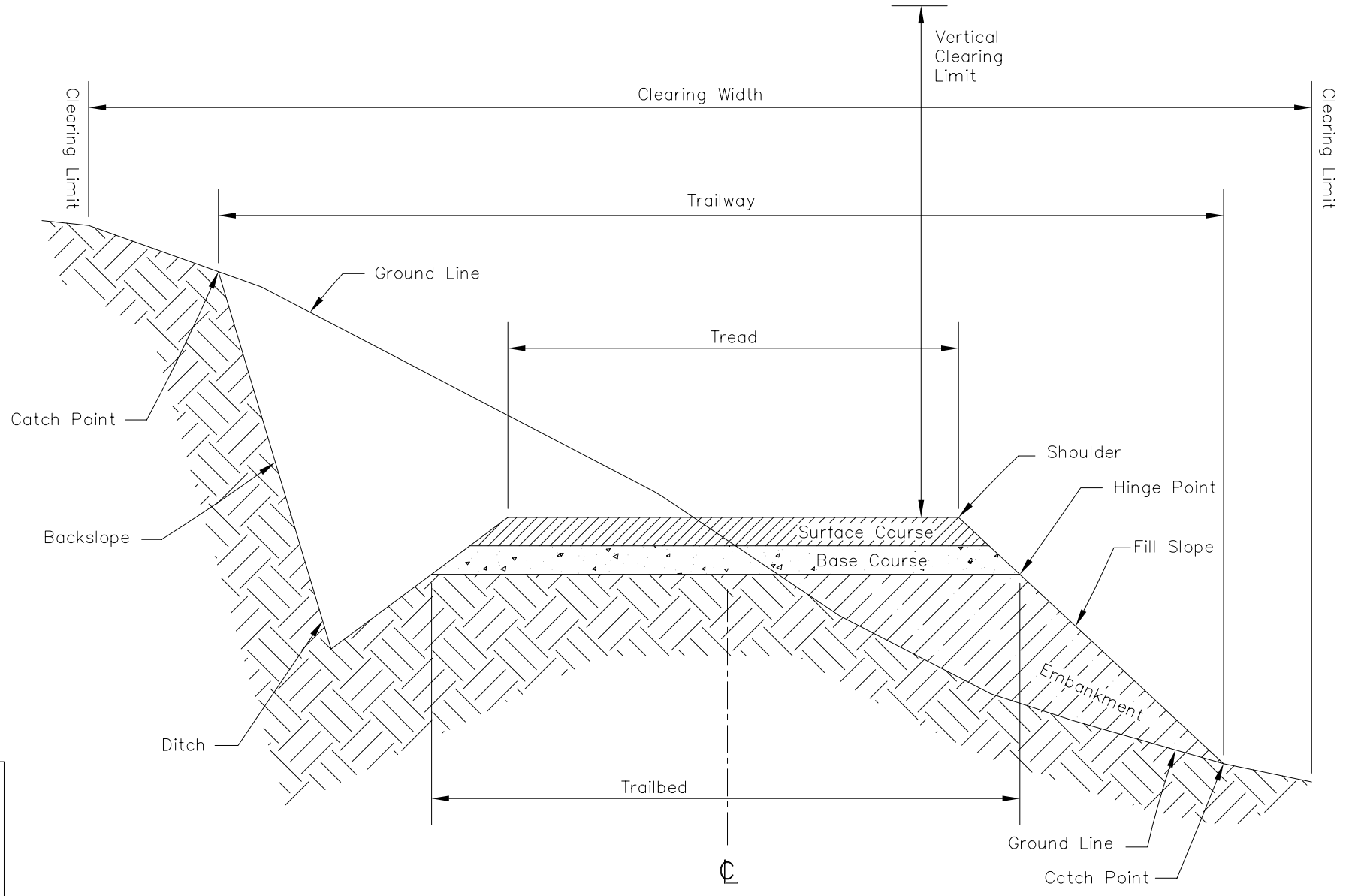
### List of Drawings

<b>Number</b>	<b>Drawing</b>
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
914-2	Switchback – Type II
914-3	Switchback – Type III
915-1	Existing Trail Restoration
915-2	Check Dams

<b>Number</b>	<b>Drawing</b>
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

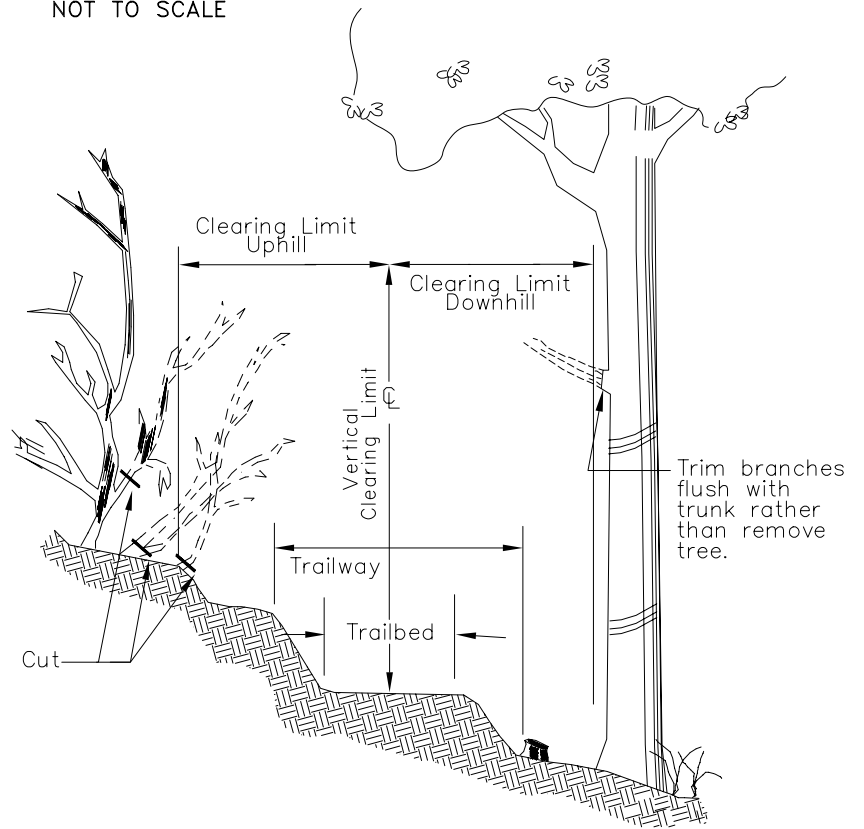
NOT TO SCALE

## Clearing Limits (mm)

Location	Uphill	Downhill	Height

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

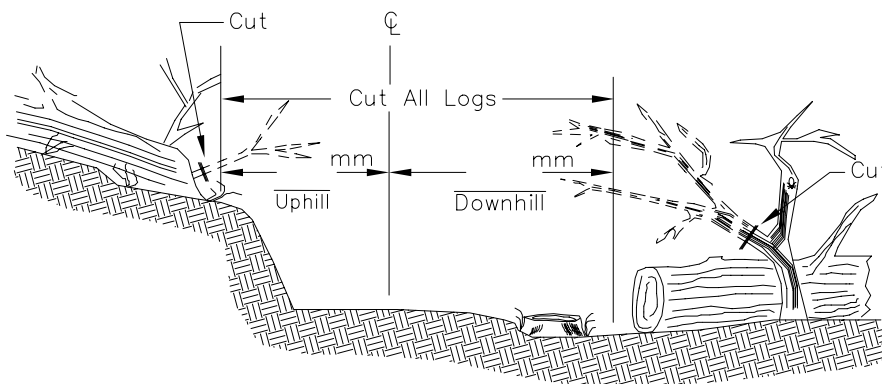
Remove all trees \_\_\_ mm or less in diameter if they are within \_\_\_ m of centerline (both sides).



## 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.

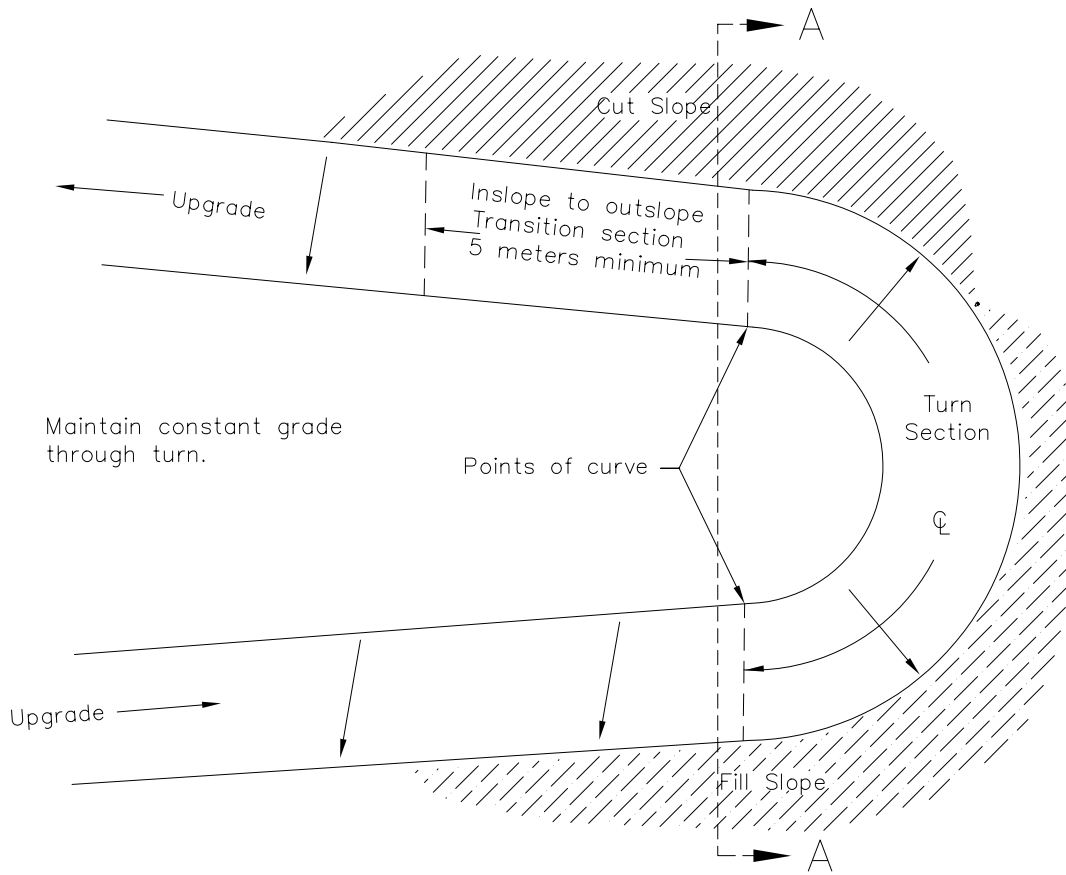






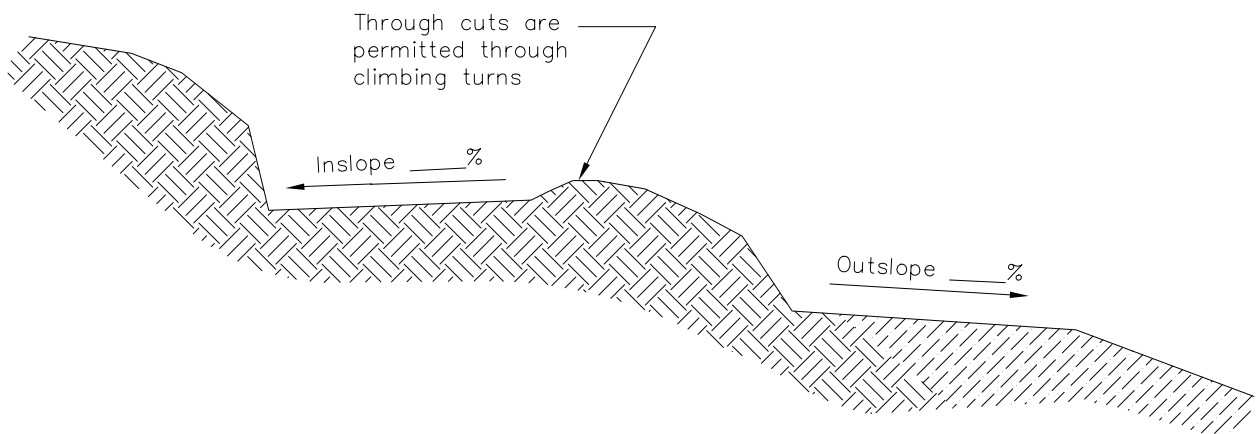
# OUTSLOPED CLIMBING TURN

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

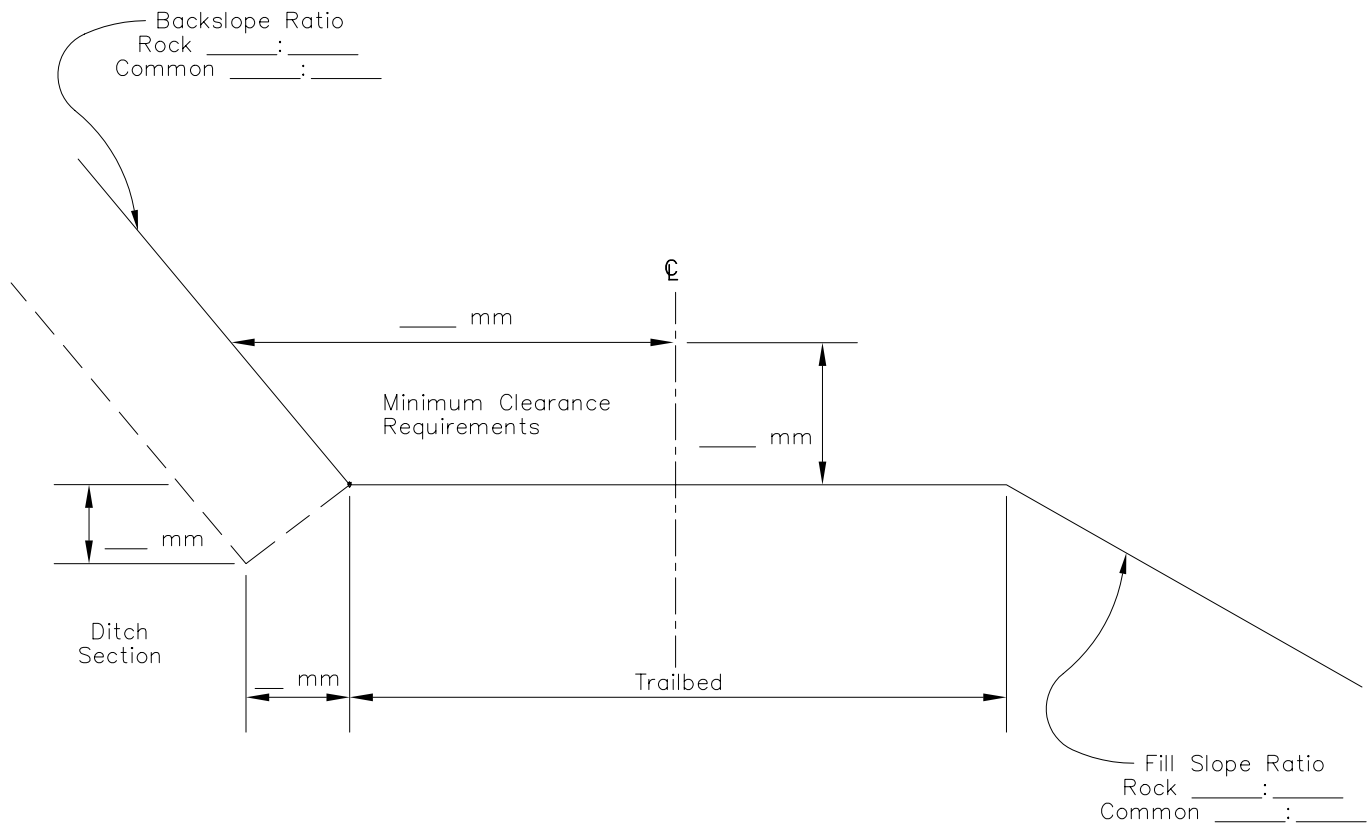
## Slope Finish

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

## Trailbed Finish

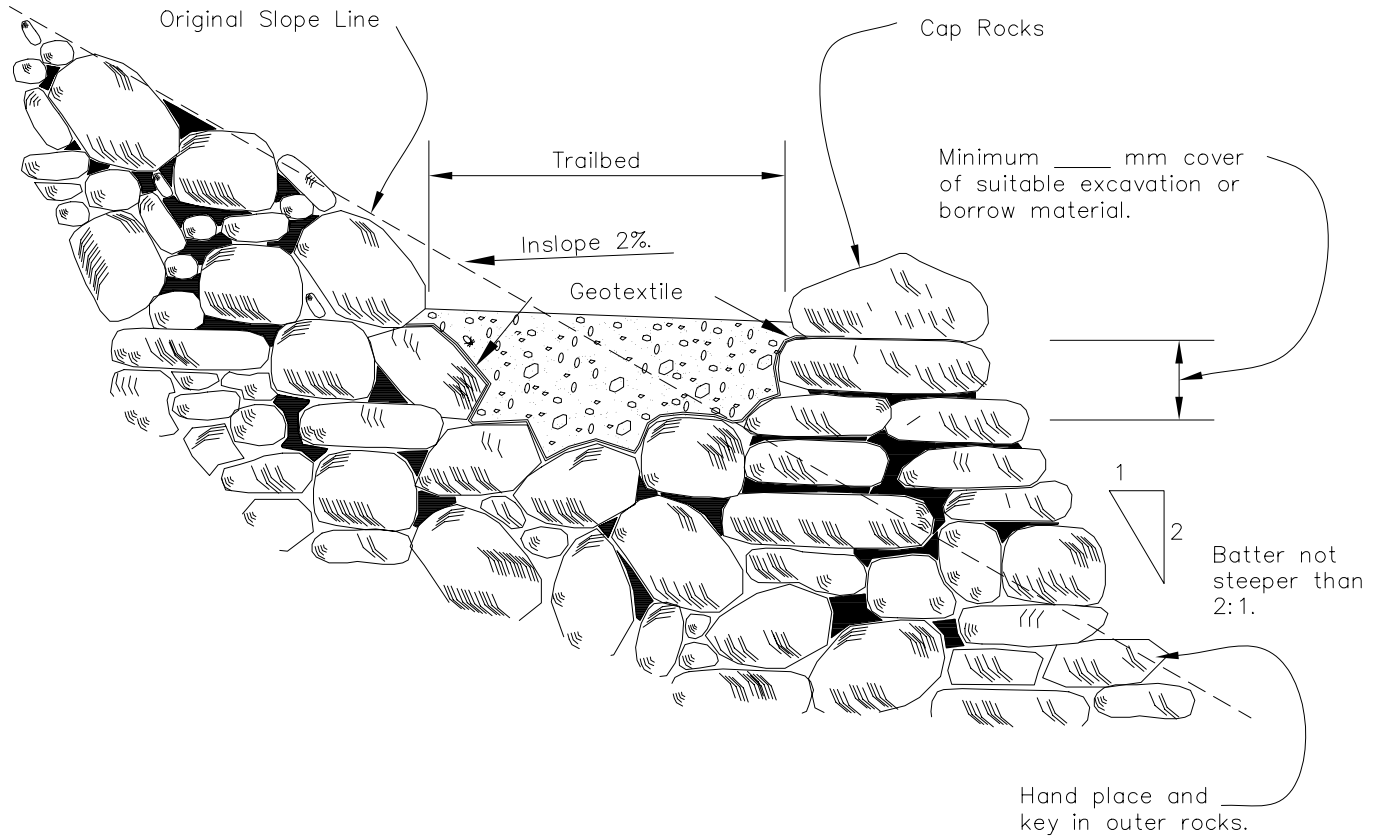
Remove loose rock on the trailbed surface over \_\_\_\_ mm in the smallest dimension.

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



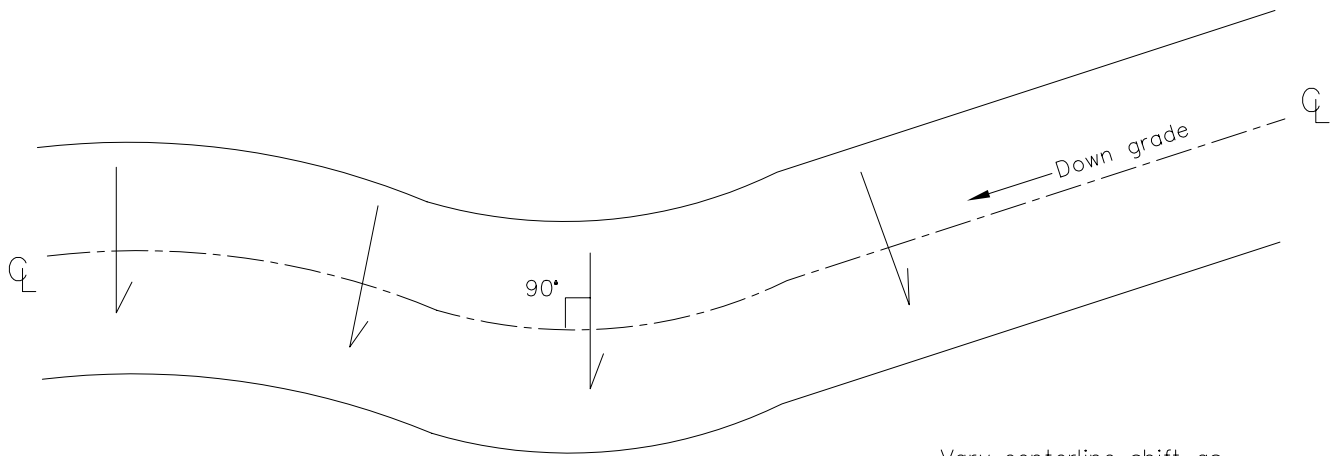
# TALUS AND RUBBLE ROCK SECTION

NOT TO SCALE



# GRADE DIP

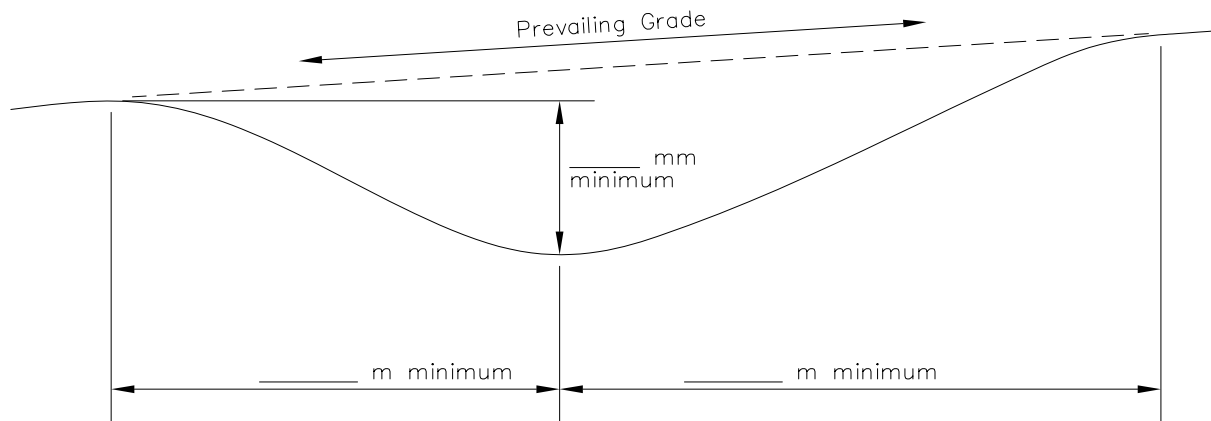
NOT TO SCALE



Maintain outslope  
and trailbed width.

Vary centerline shift as  
necessary to daylight  
spillway.

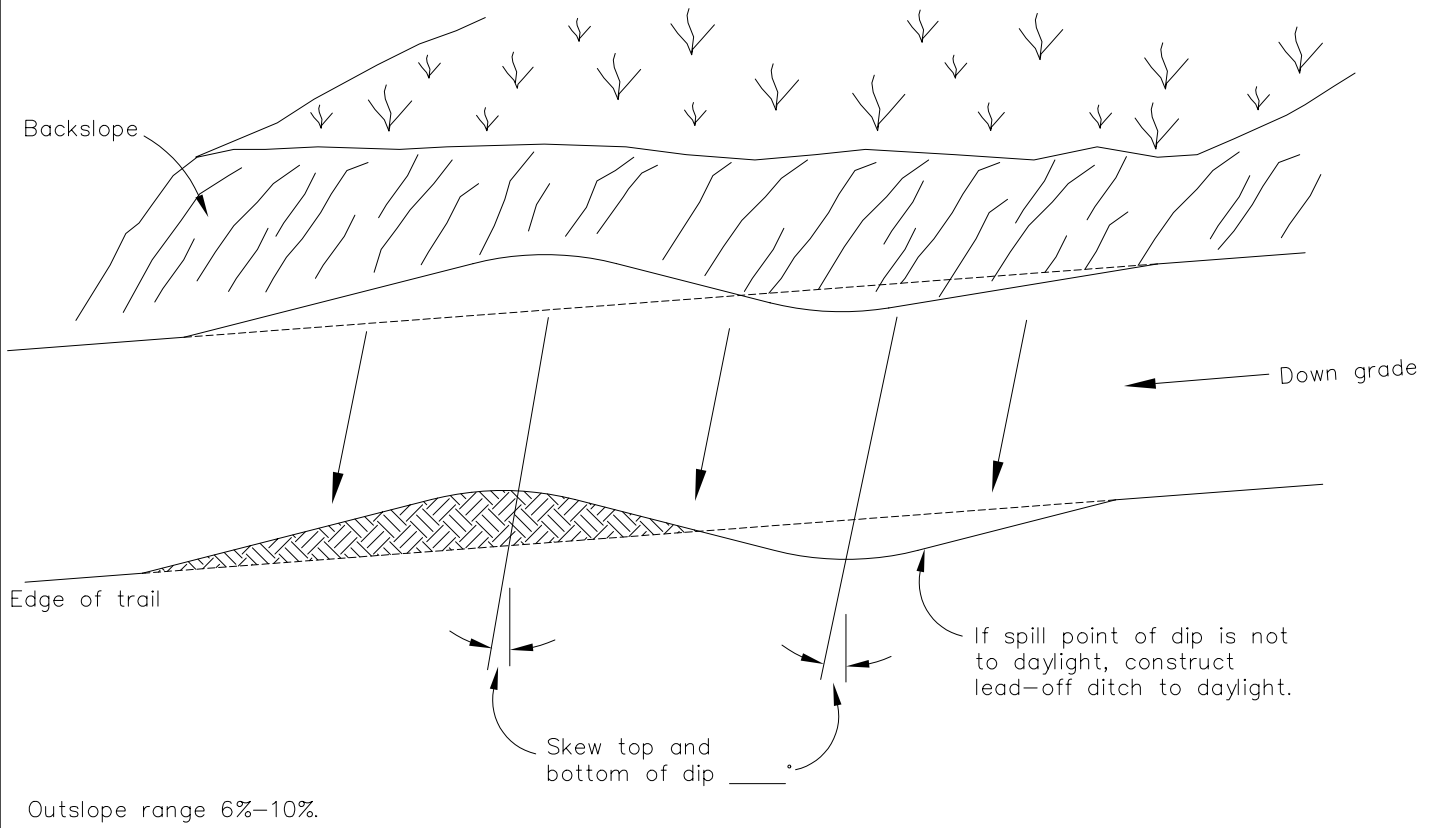
## PLAN VIEW



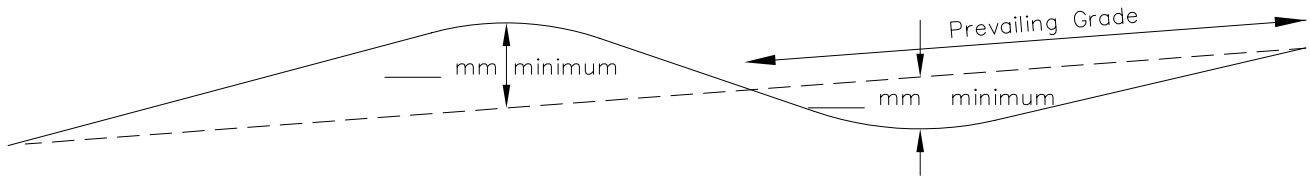
## PROFILE

# ROLLING DIP

NOT TO SCALE



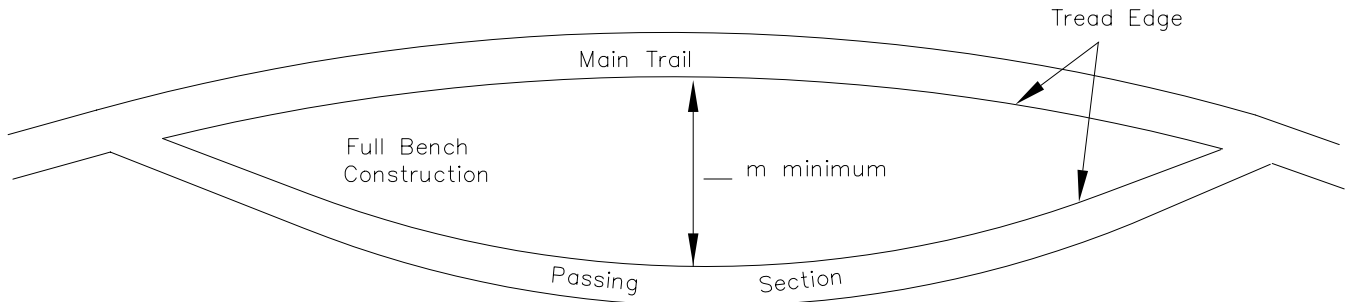
## PLAN VIEW



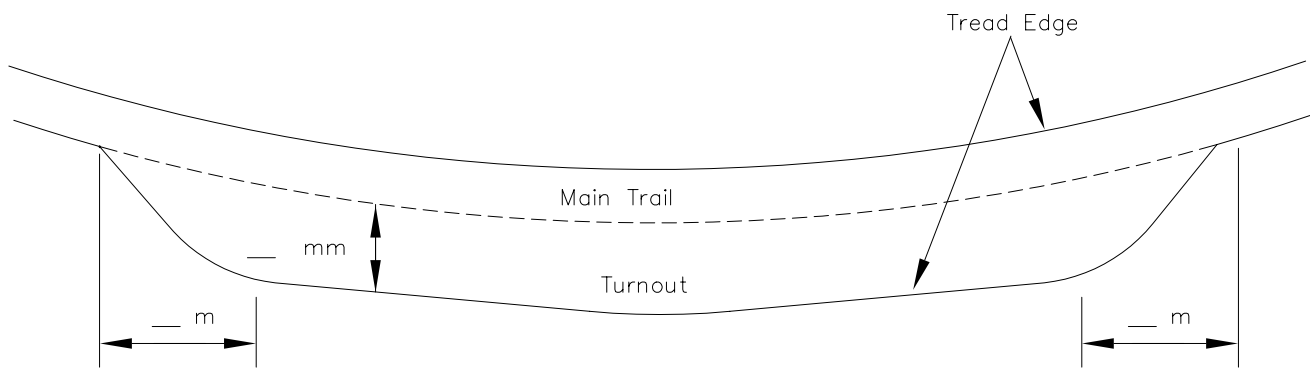
## PROFILE

# TURNOUT AND PASSING SECTIONS

NOT TO SCALE



## PASSING SECTION

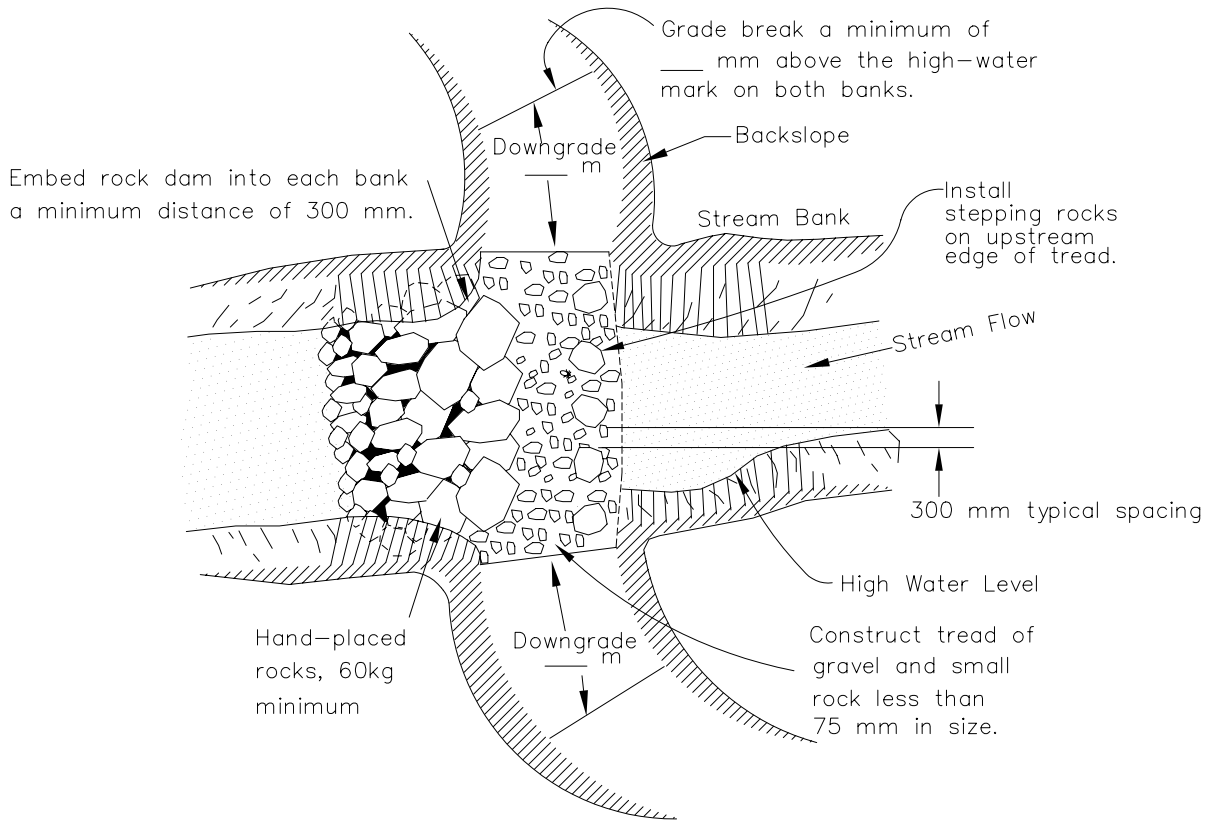


## TURNOUT SECTION

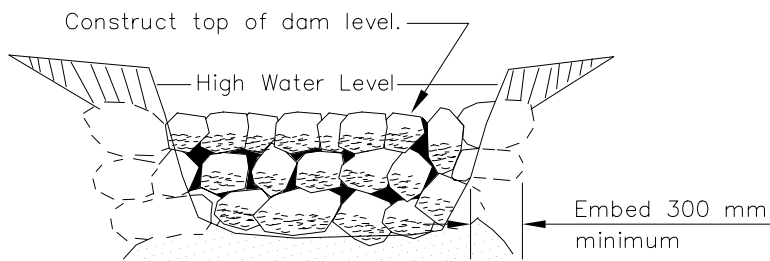
Passing Section Location	Turnout Section Location
to	to
to	to
to	to
to	to

# SHALLOW STREAM FORD AND GULLY CROSSING ROCK STRUCTURE

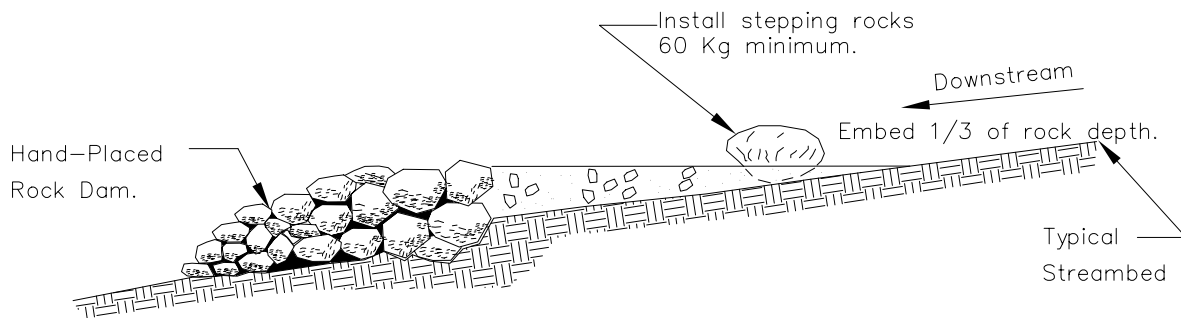
NOT TO SCALE



PLAN VIEW



PROFILE - ROCK DAM

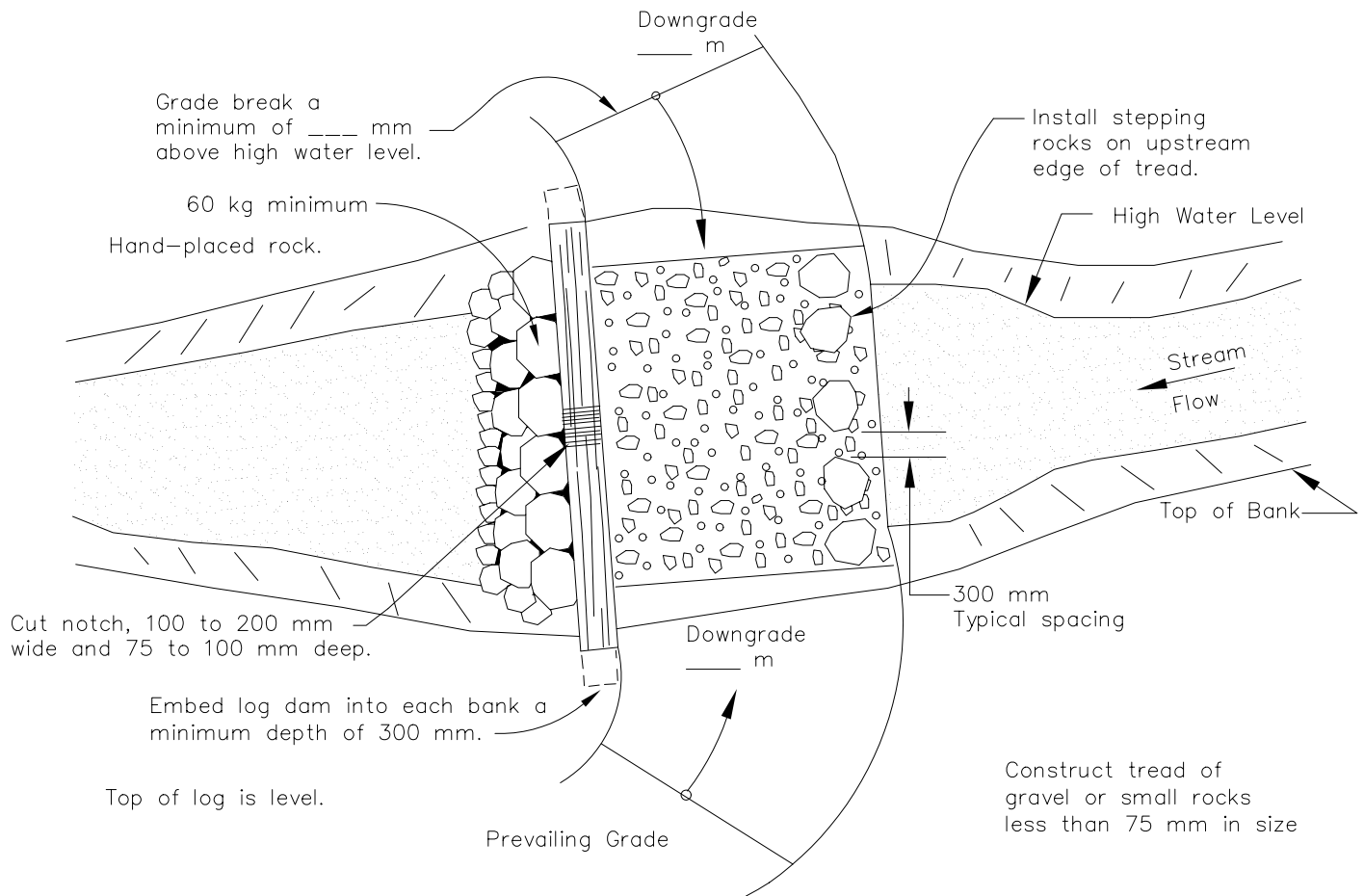


CROSS SECTION

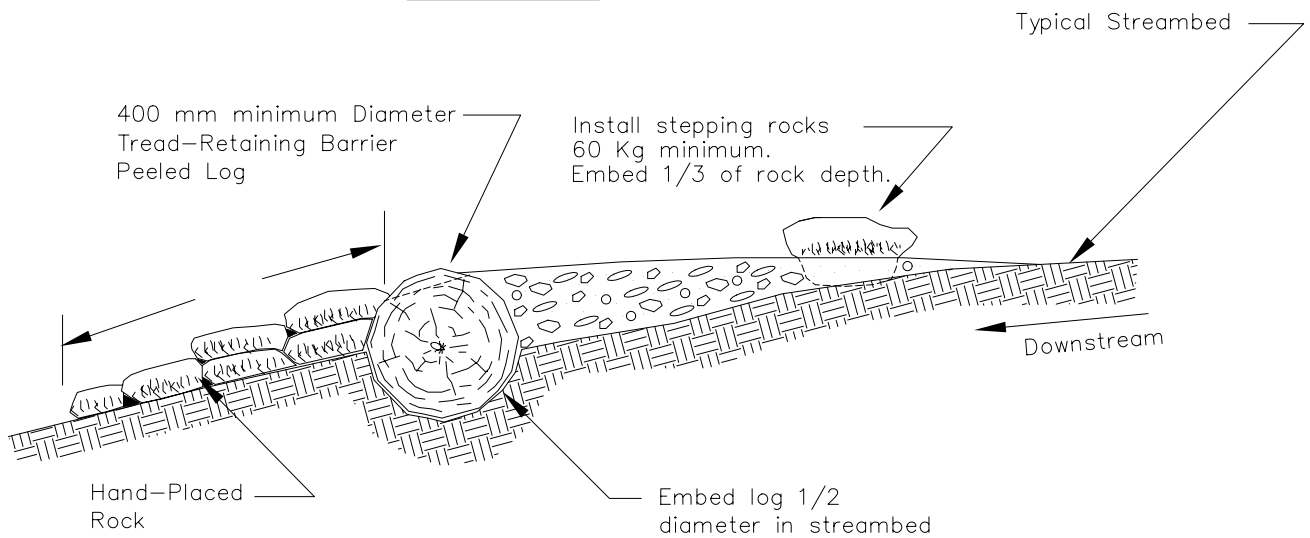


# SHALLOW STREAM FORD OR GULLY CROSSING LOG STRUCTURE

NOT TO SCALE



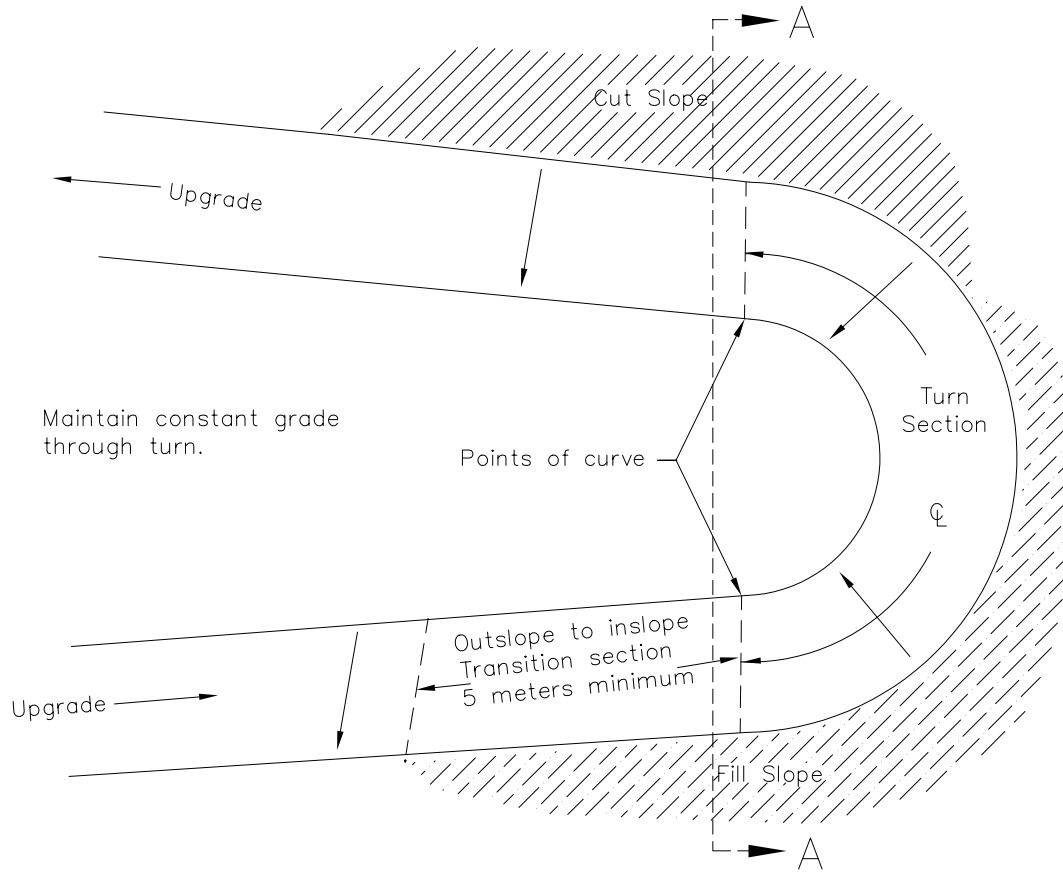
## PLAN VIEW



## CROSS SECTION

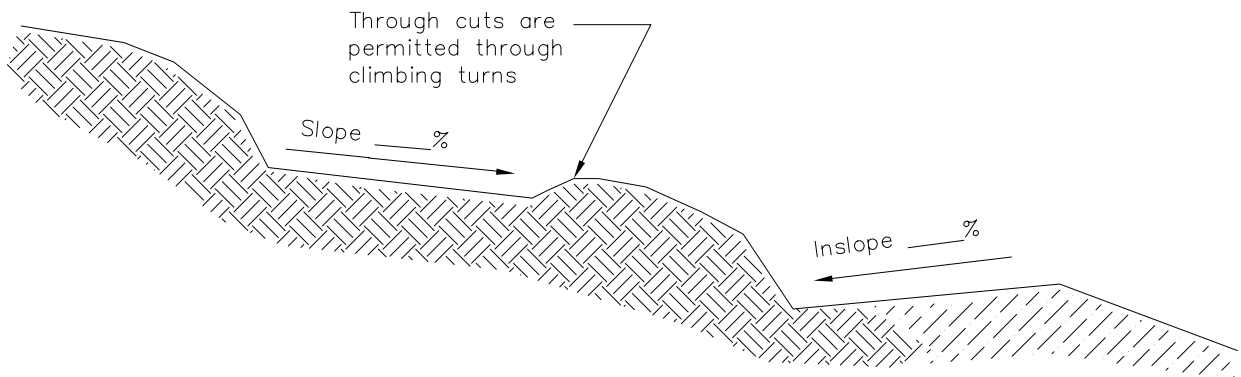
# INSLOPED CLIMBING TURN

NOT TO SCALE



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

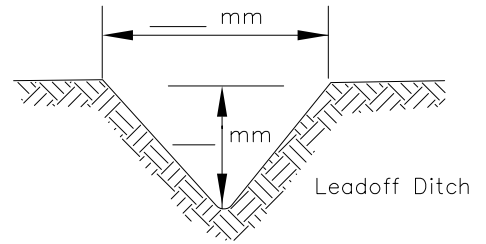
## PLAN VIEW



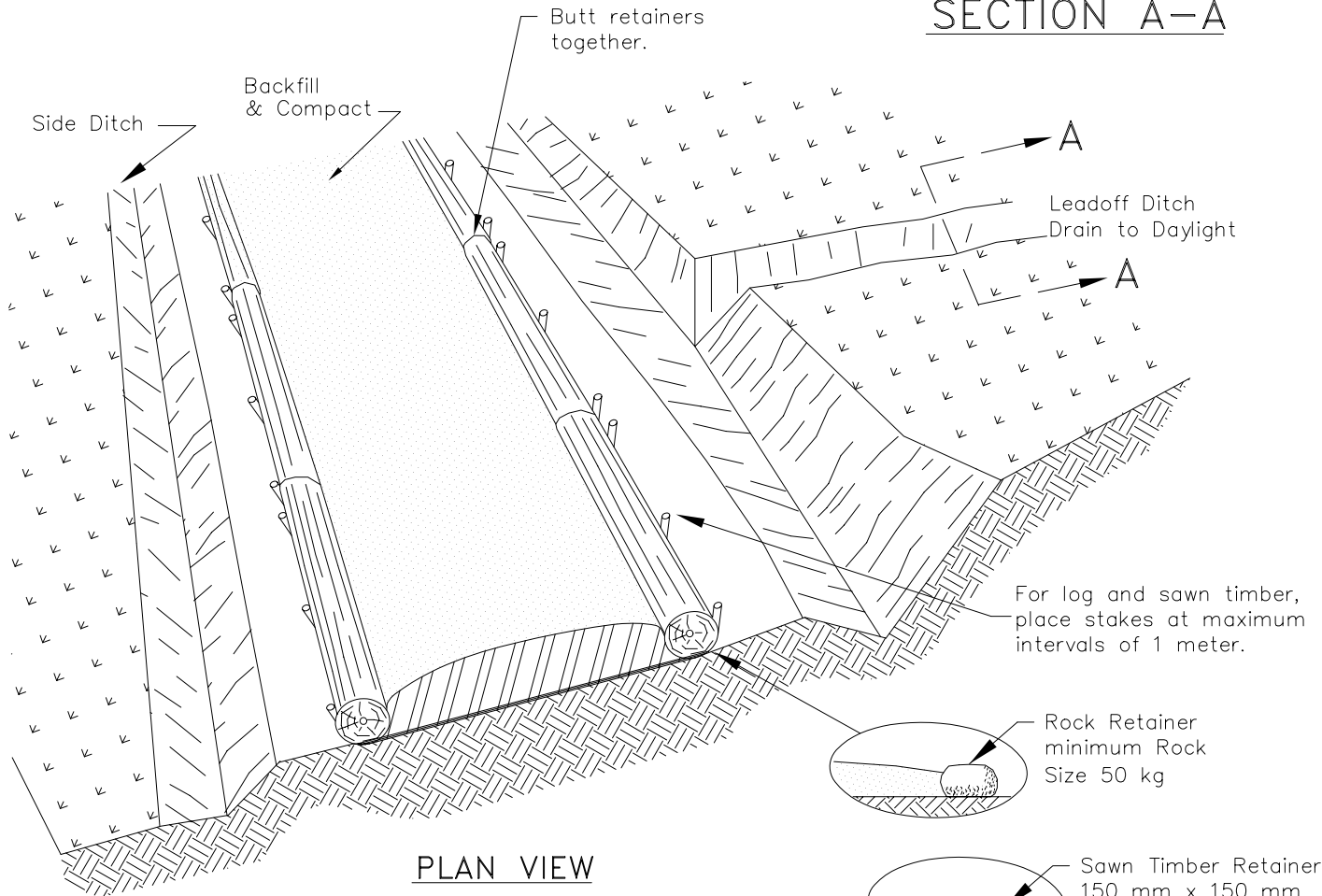
## SECTION A-A

# TURNPIKE -TYPE I

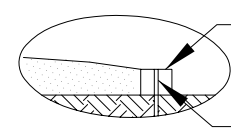
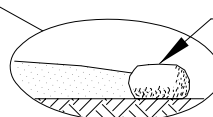
NOT TO SCALE



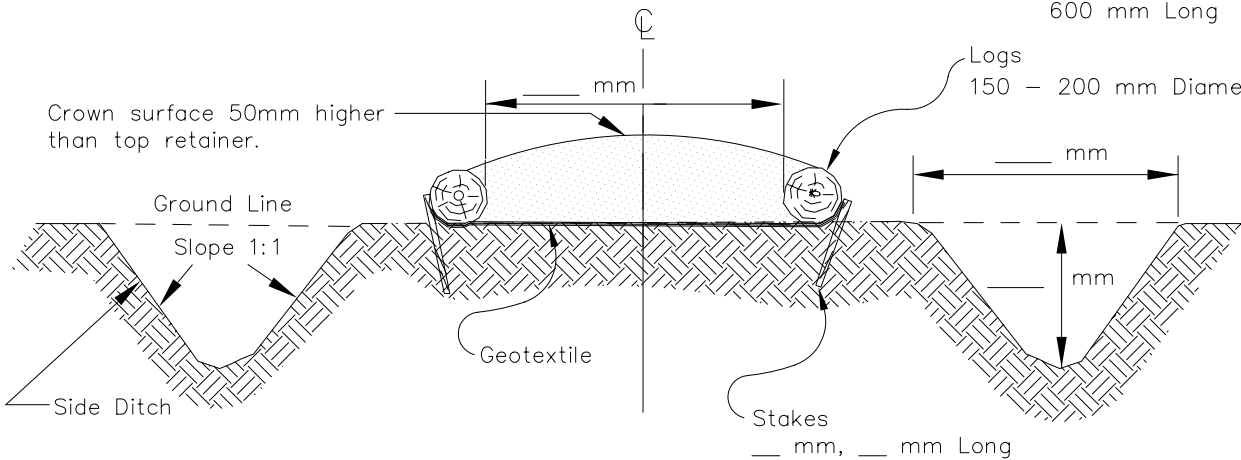
**SECTION A-A**



**PLAN VIEW**



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

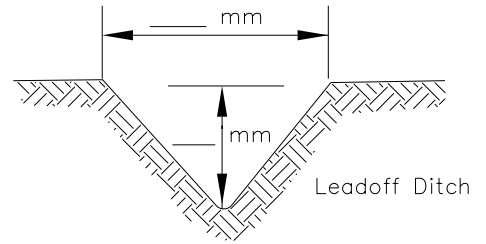


**CROSS SECTION**

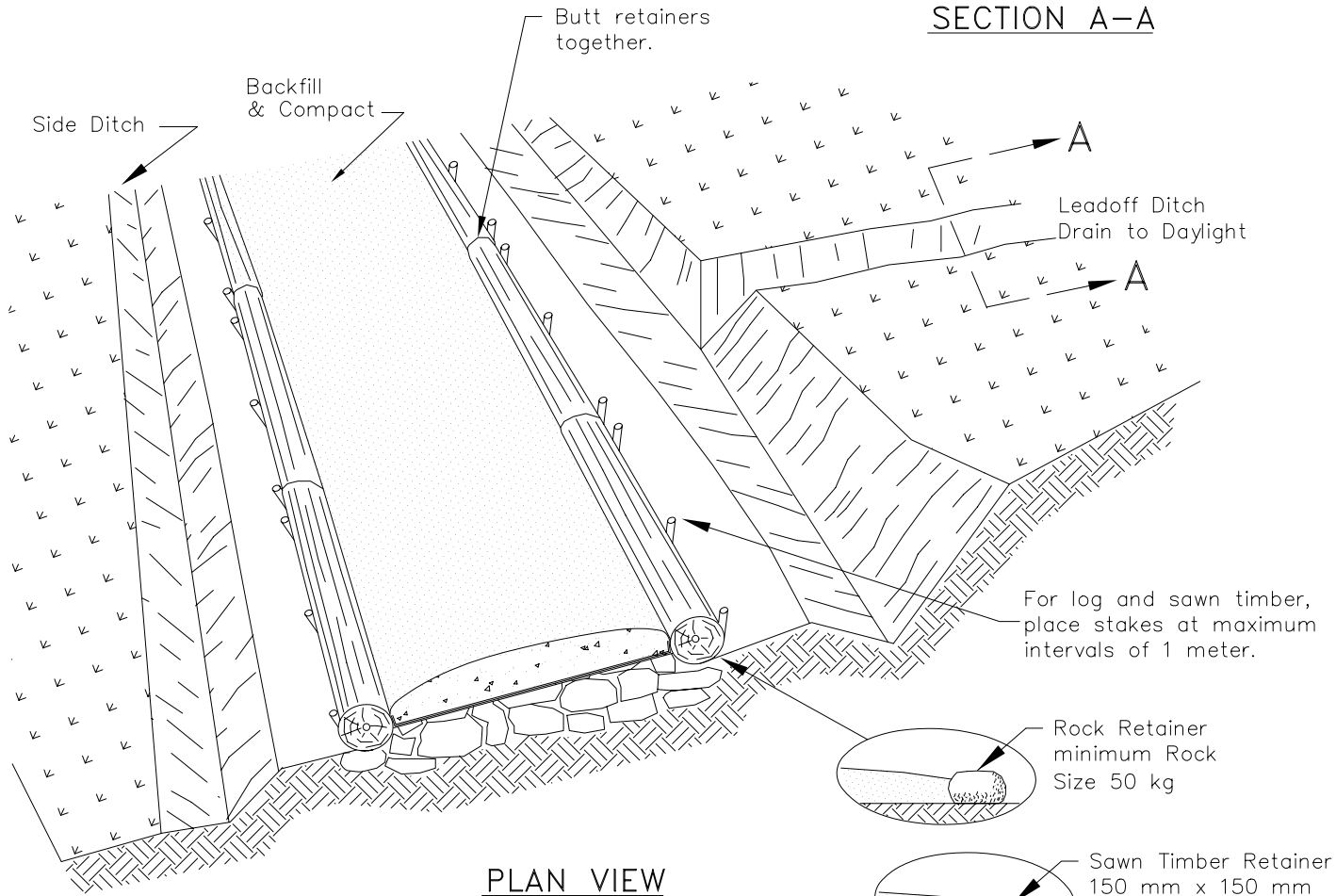
# TURNPIKE -TYPE II

NOT TO SCALE

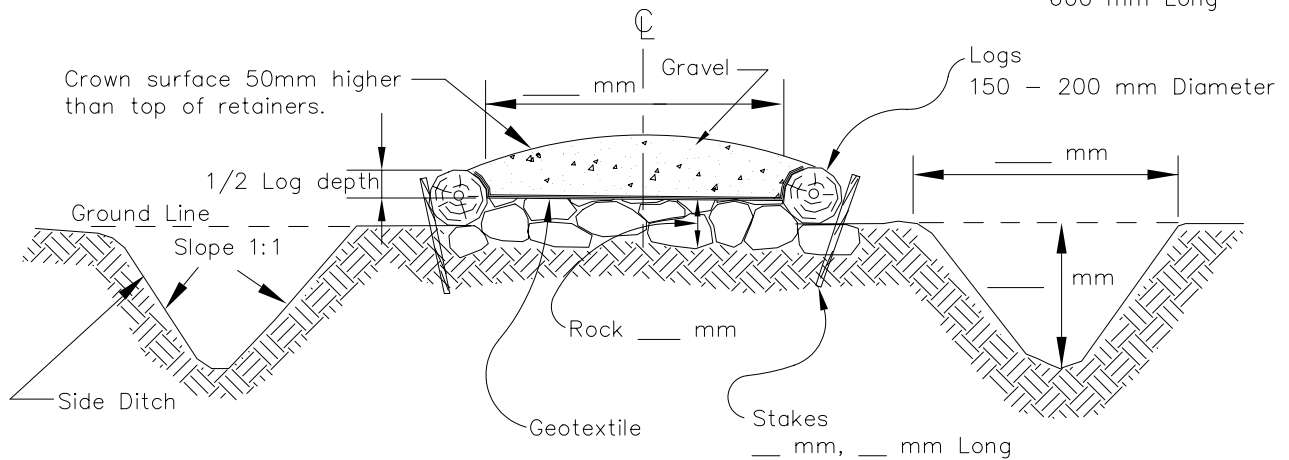
Backfill Material	Min. Size	Max. Size	% Max. Size
Rock			



SECTION A-A



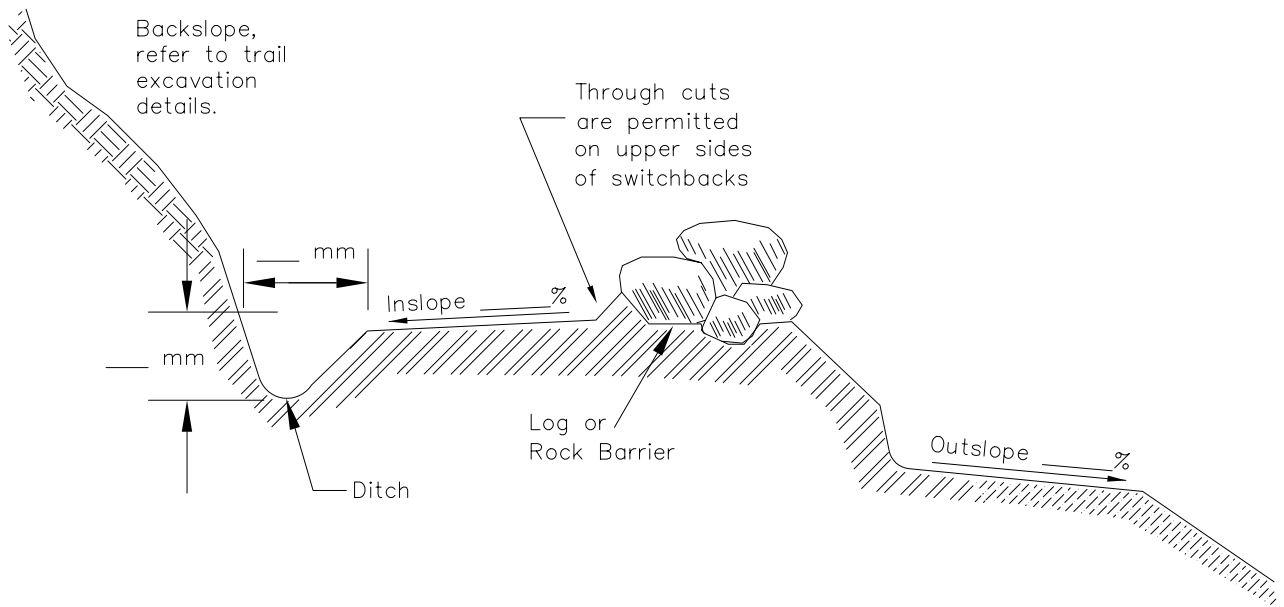
PLAN VIEW



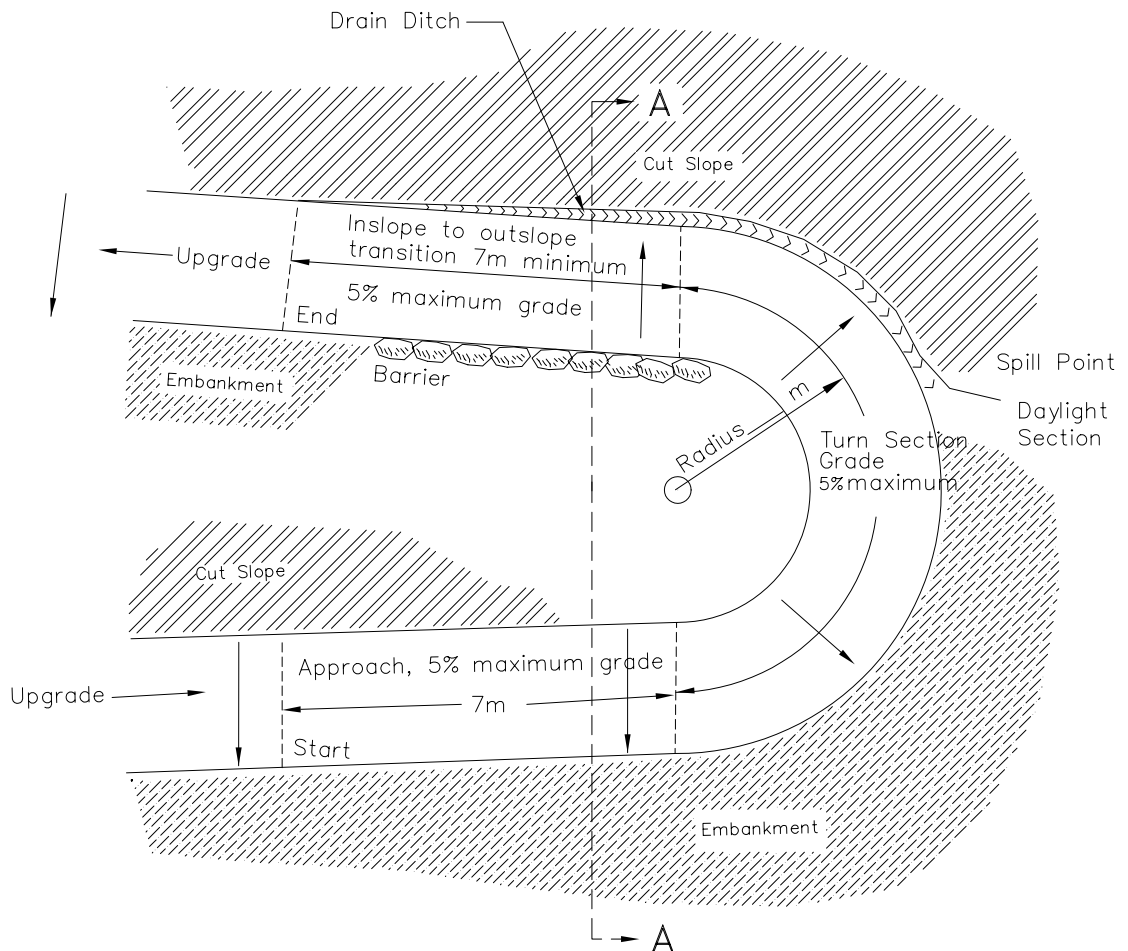
CROSS SECTION

# SWITCHBACK – TYPE I

NOT TO SCALE



## SECTION A-A

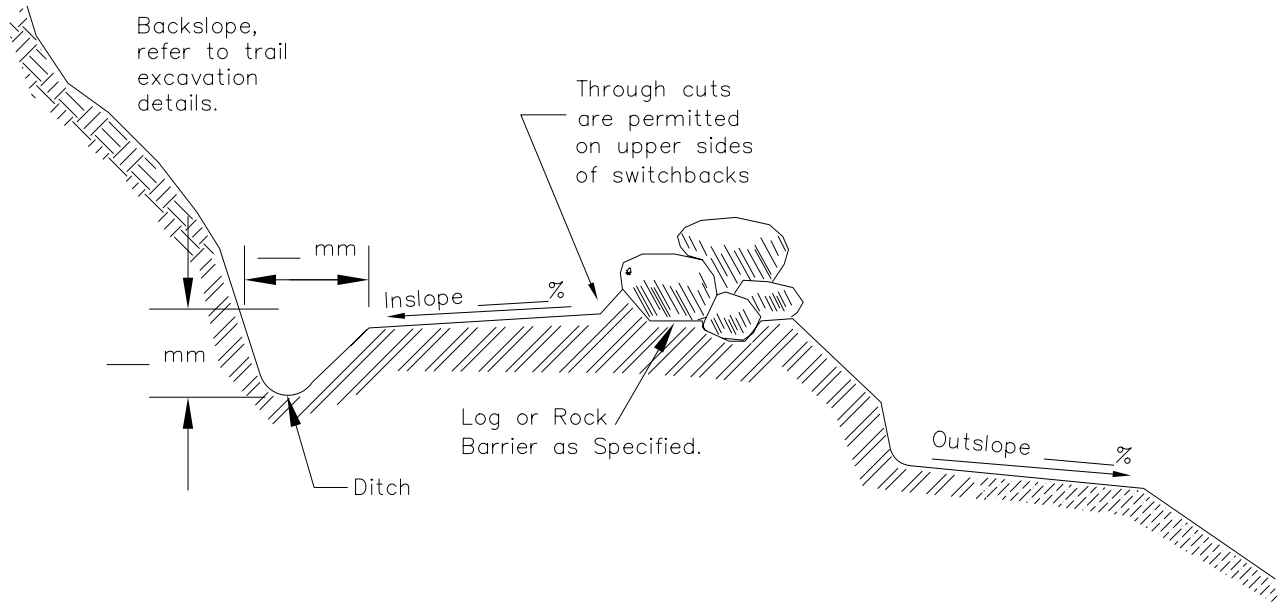


Radius point is staked at each individual site.

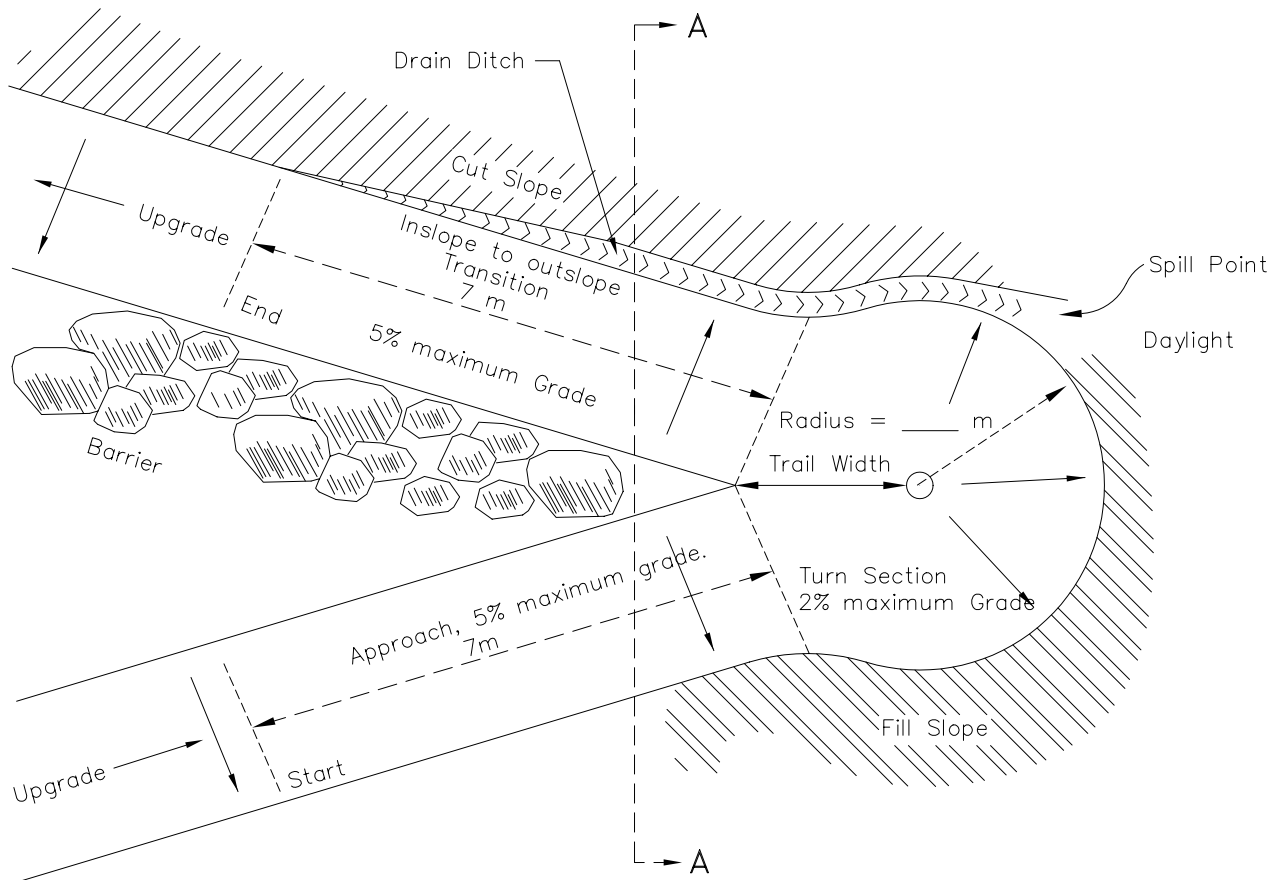
## PLAN VIEW

# SWITCHBACK – TYPE II

NOT TO SCALE



## SECTION A-A

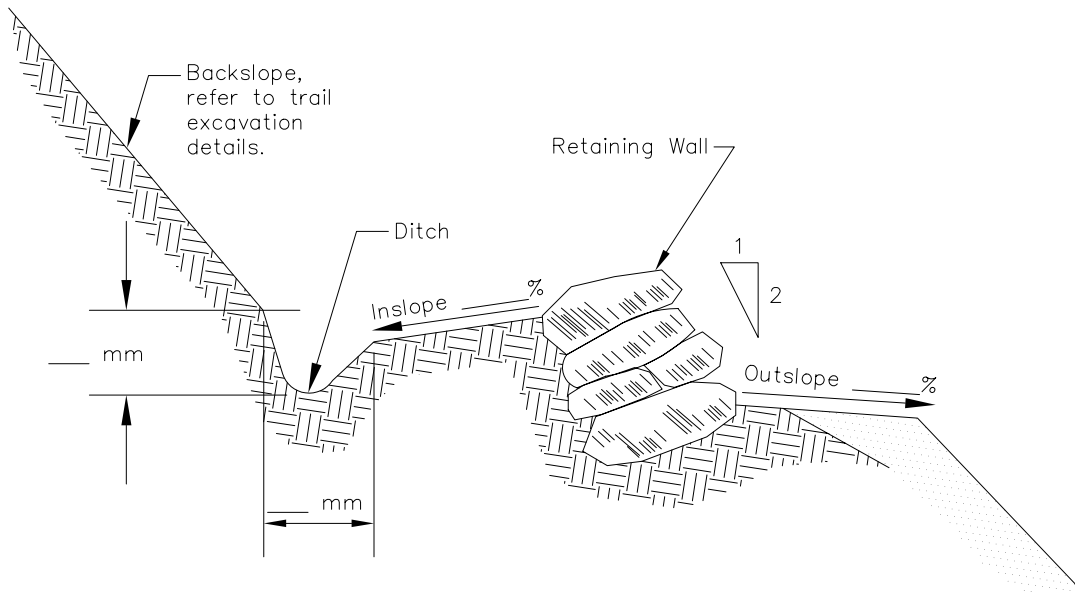


Radius point is staked at each individual site.

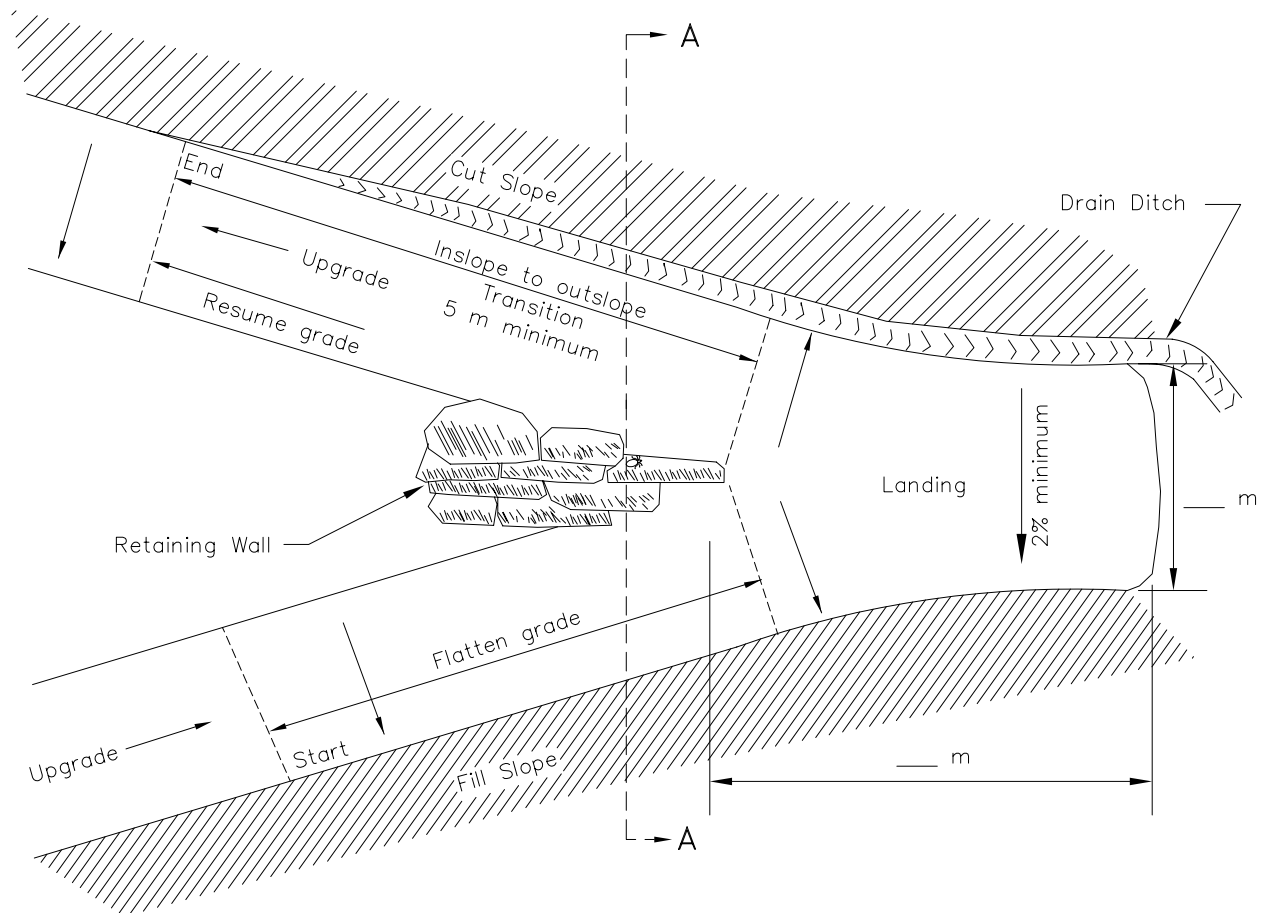
## PLAN VIEW

# SWITCHBACK – TYPE III

NOT TO SCALE



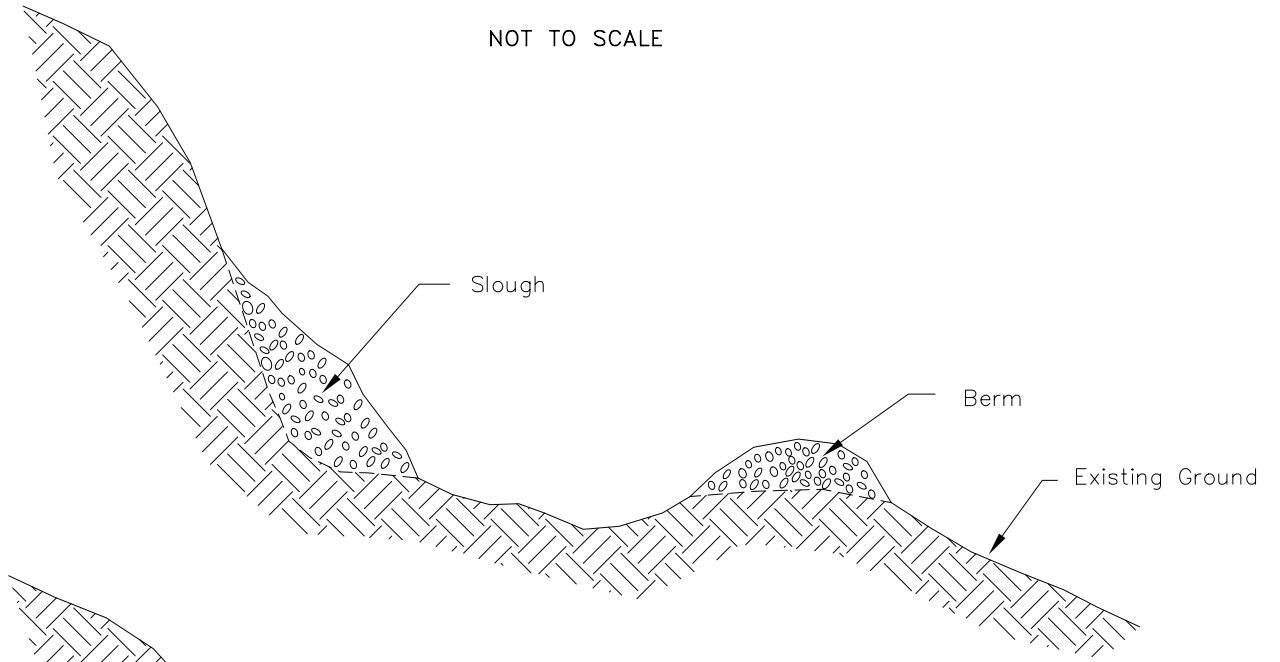
## SECTION A-A



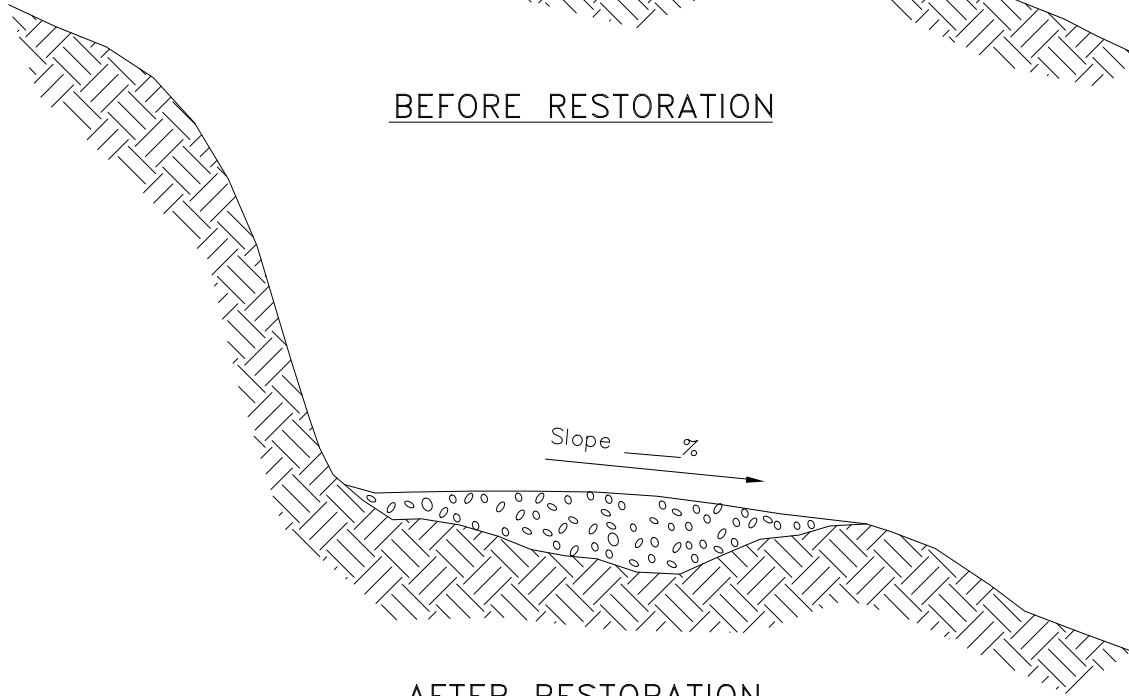
## PLAN VIEW

# EXISTING TRAIL RESTORATION

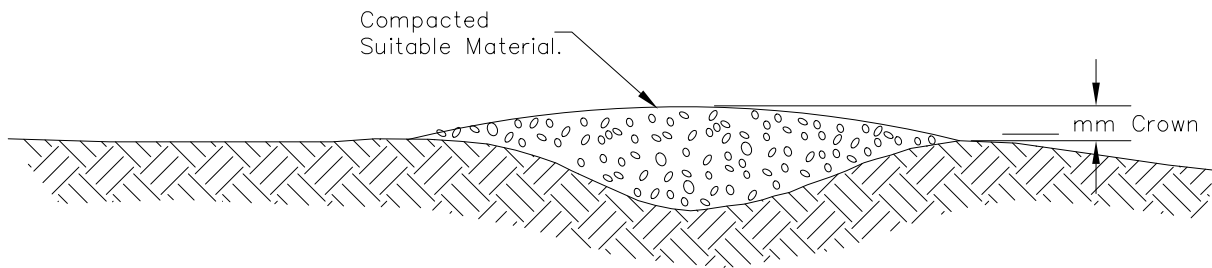
NOT TO SCALE



## BEFORE RESTORATION



## AFTER RESTORATION

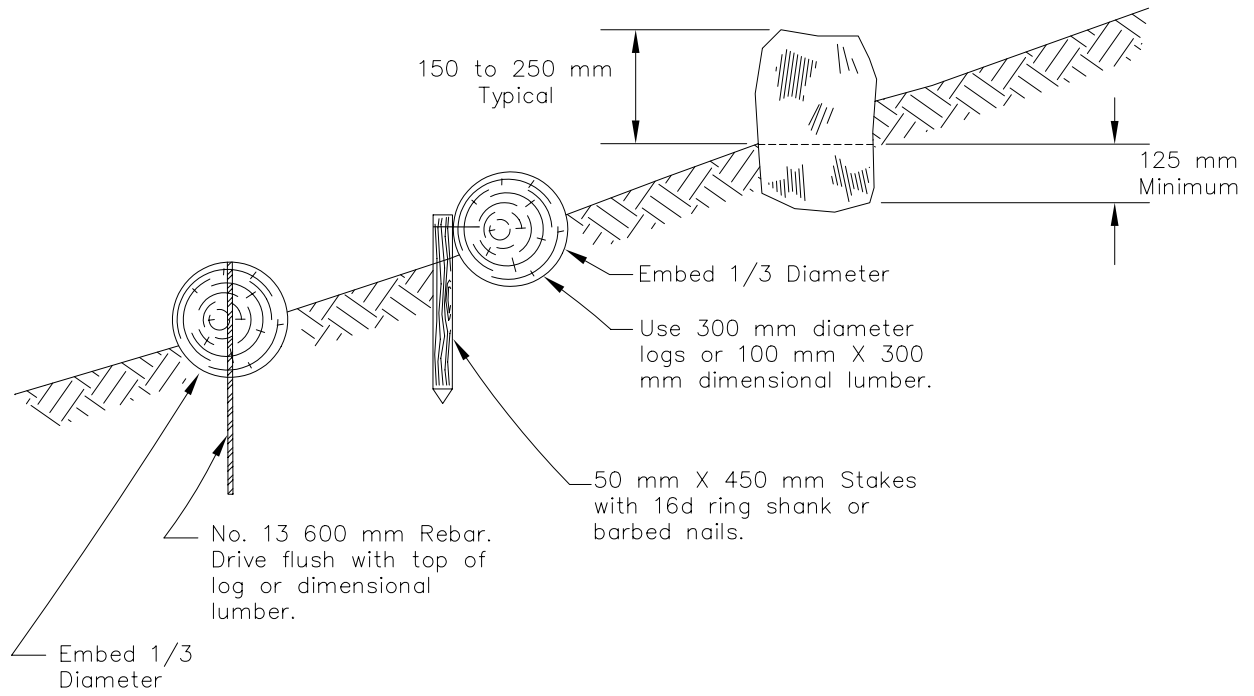


## FLAT SLOPES

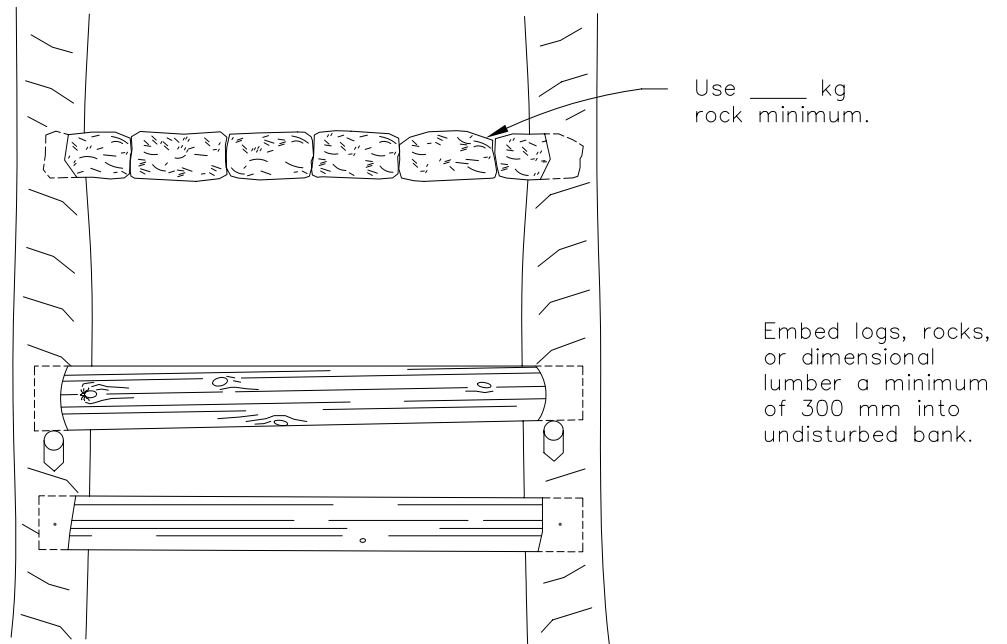


# CHECK DAMS

NOT TO SCALE



## SECTION

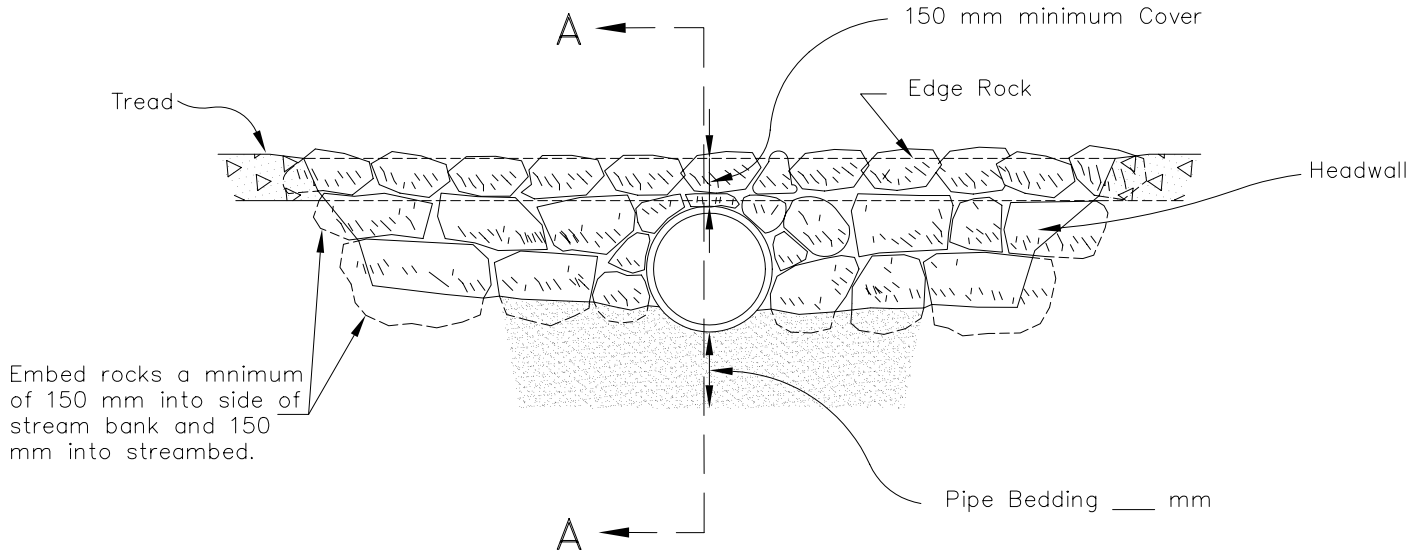


Construct check dams at locations staked on the ground. Space check dams \_\_\_ m apart.

## PLAN VIEW

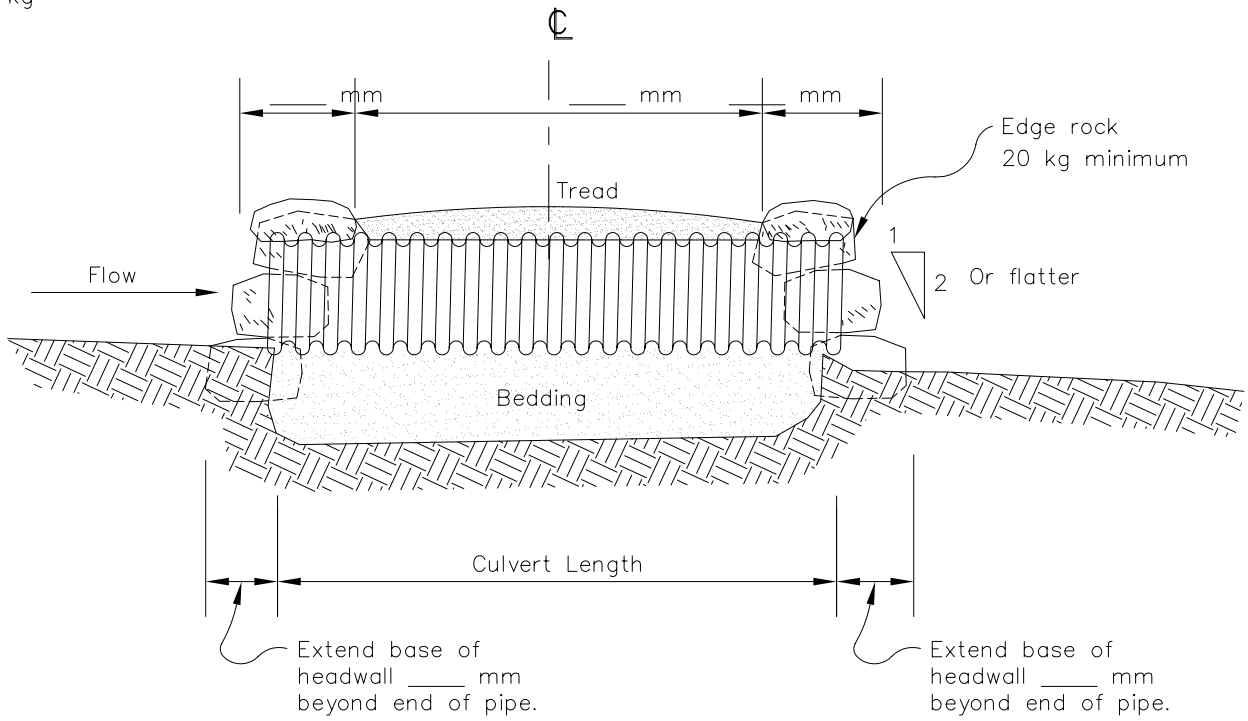
# CULVERT WITH HEADWALLS

NOT TO SCALE



## END VIEW

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

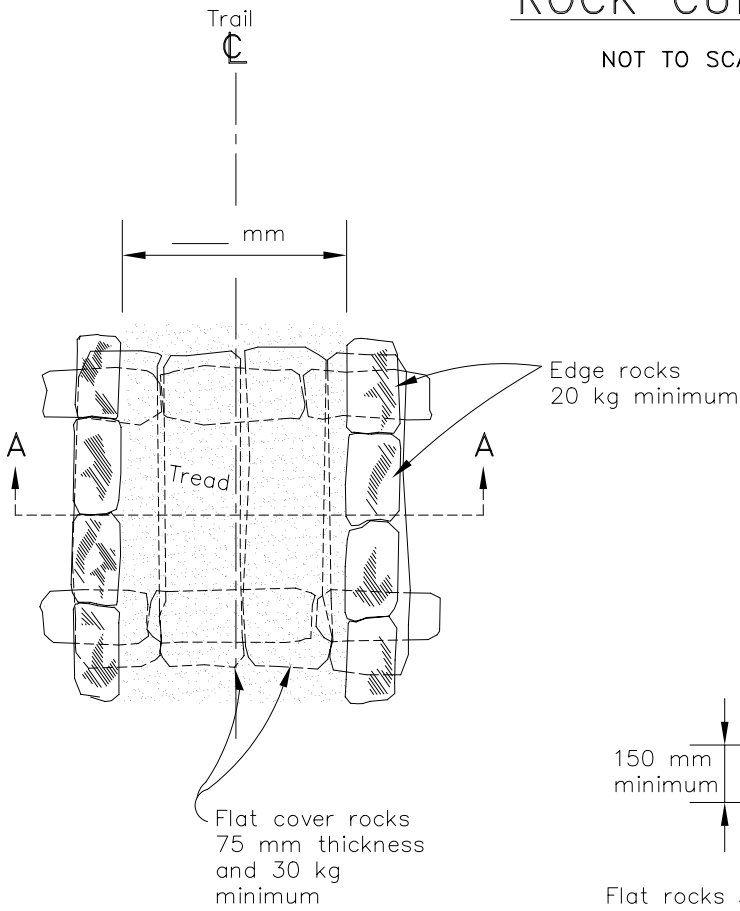


## SECTION A-A

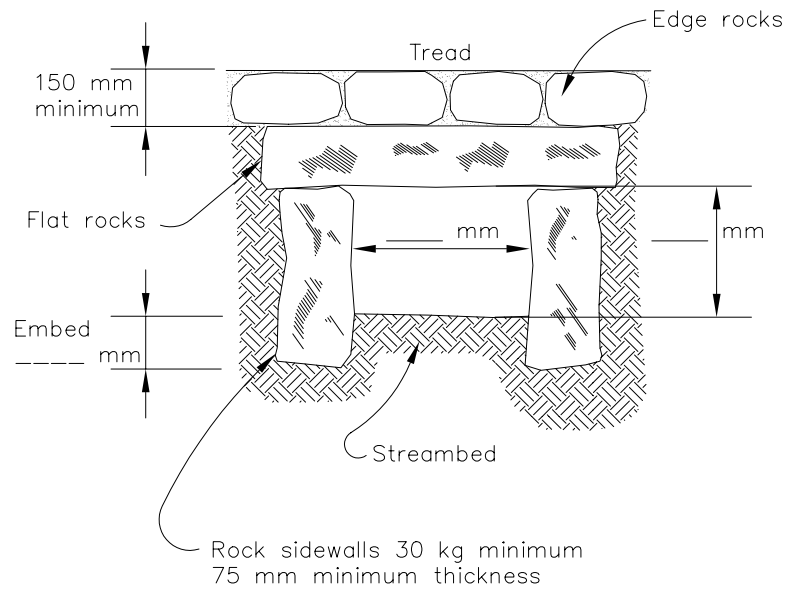


# ROCK CULVERT

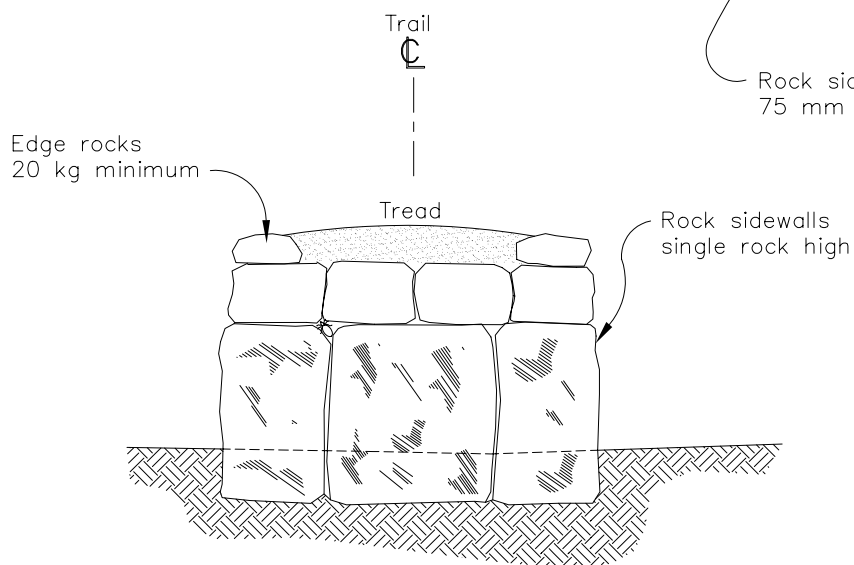
NOT TO SCALE



PLAN VIEW



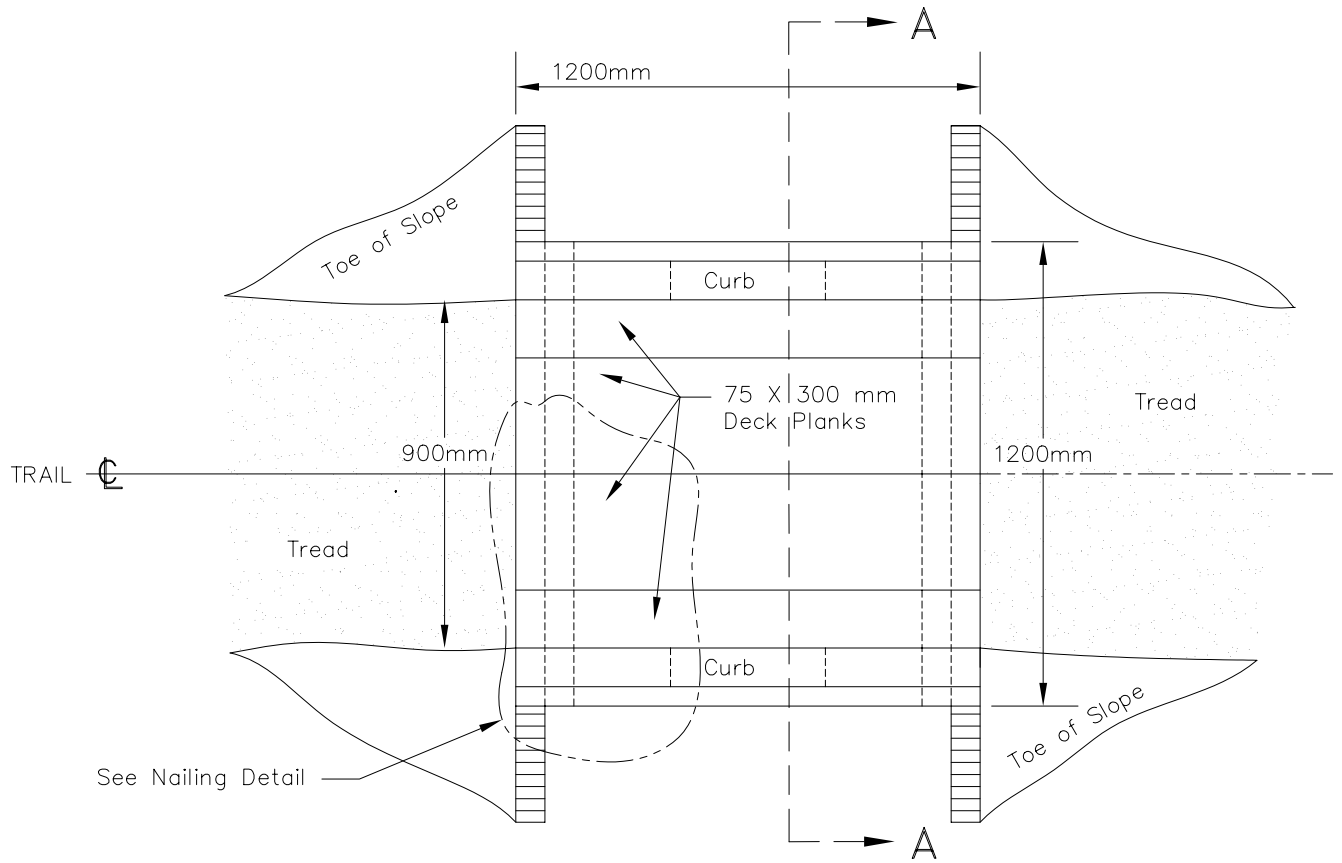
SIDE VIEW



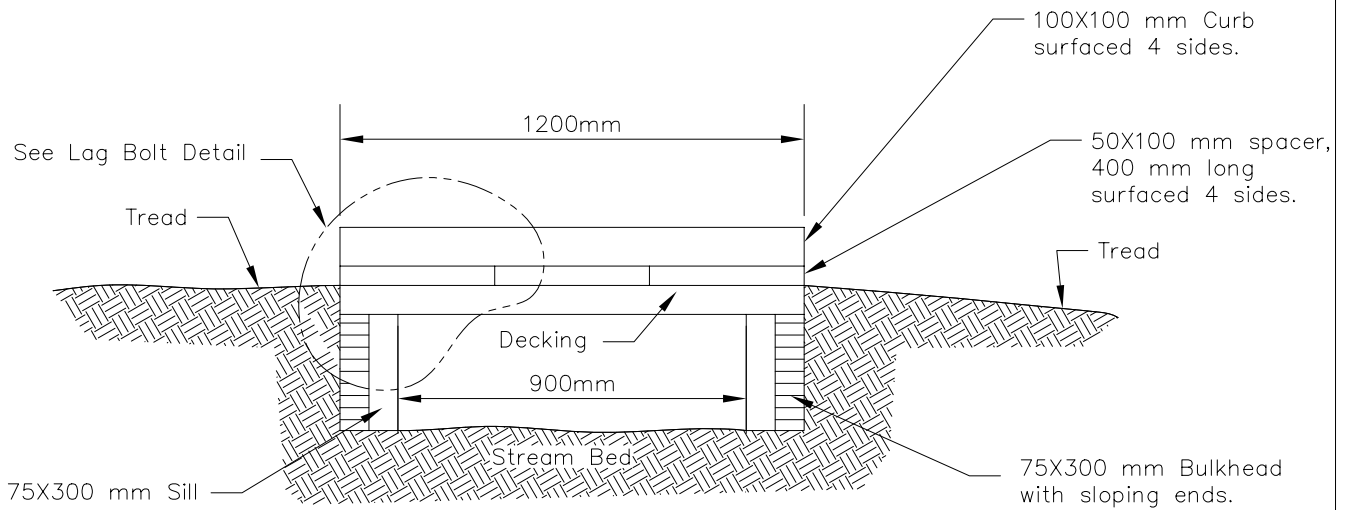
SECTION A-A

# TREATED TIMBER BOX CULVERT

NOT TO SCALE



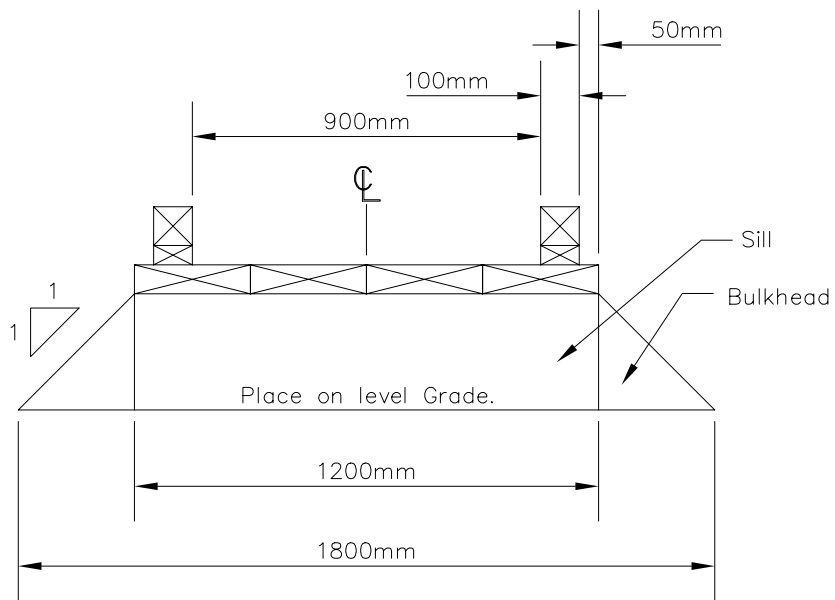
PLAN VIEW



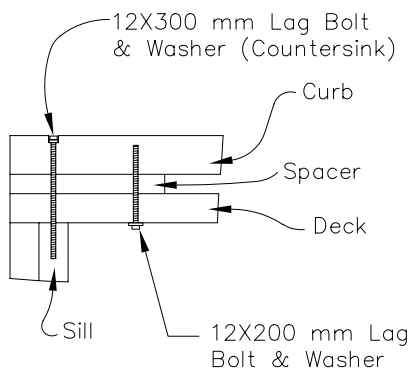
END VIEW

# TREATED TIMBER BOX CULVERT DETAILS

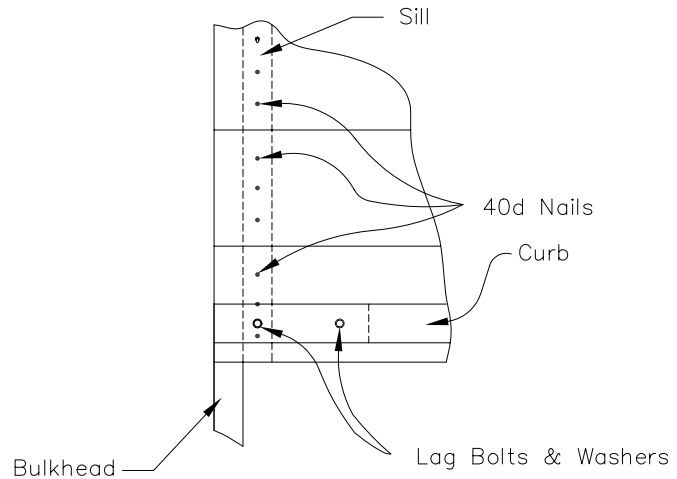
NOT TO SCALE



SECTION A-A



LAG BOLT DETAIL



NAILING DETAIL

## NAILING PATTERN:

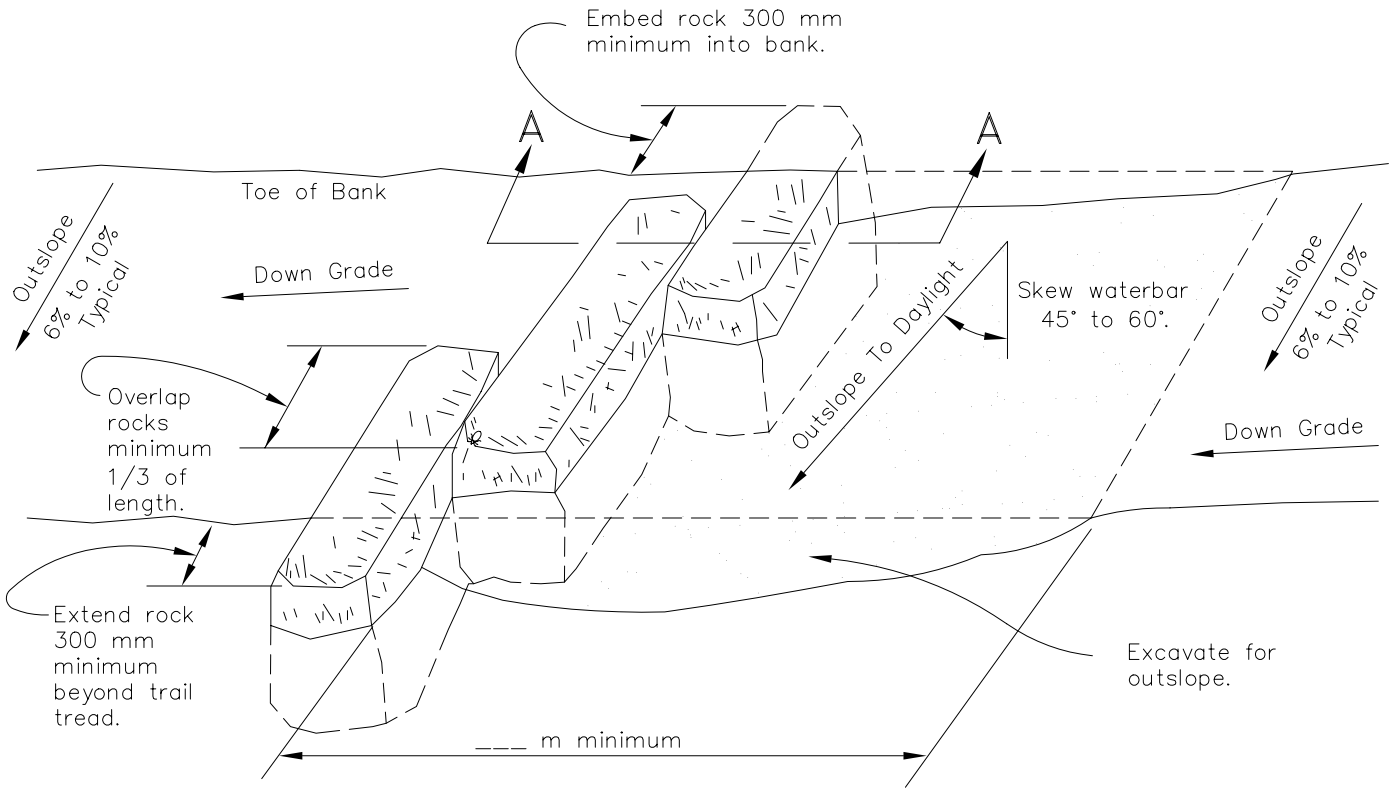
Sill To Bulkhead - 30d nails in two 150 mm staggered rows, 50 mm minimum from edges of sills.  
Deck To Sill - Three 40d nails through each deck plank into sills, on both ends of plank, 50 mm minimum from sides of deck.

## PRESERVATIVE TREATMENT:

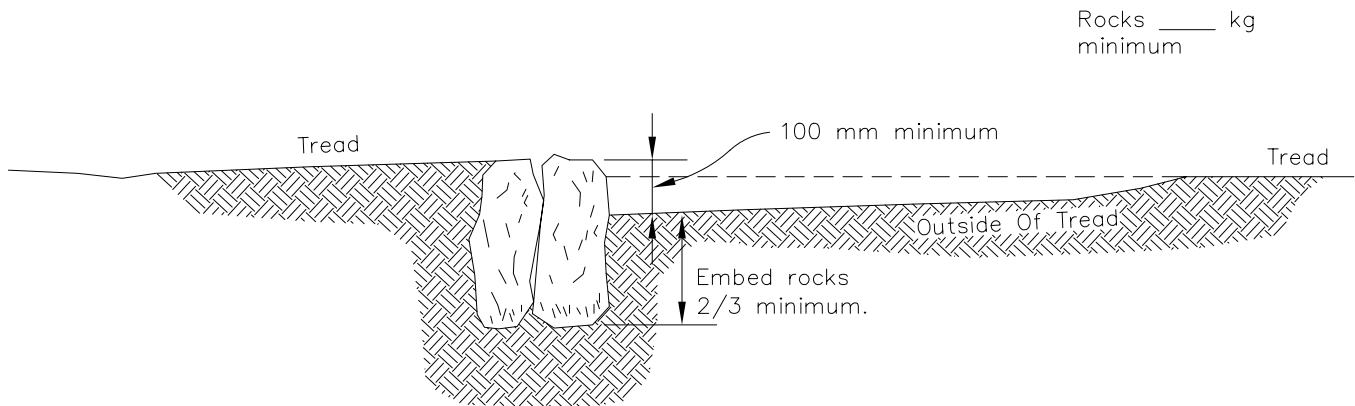
\_\_\_\_\_ Net Retention \_\_\_\_\_ kg/m<sup>3</sup>  
 Lumber rough sawn except as noted.

# ROCK WATERBAR

NOT TO SCALE



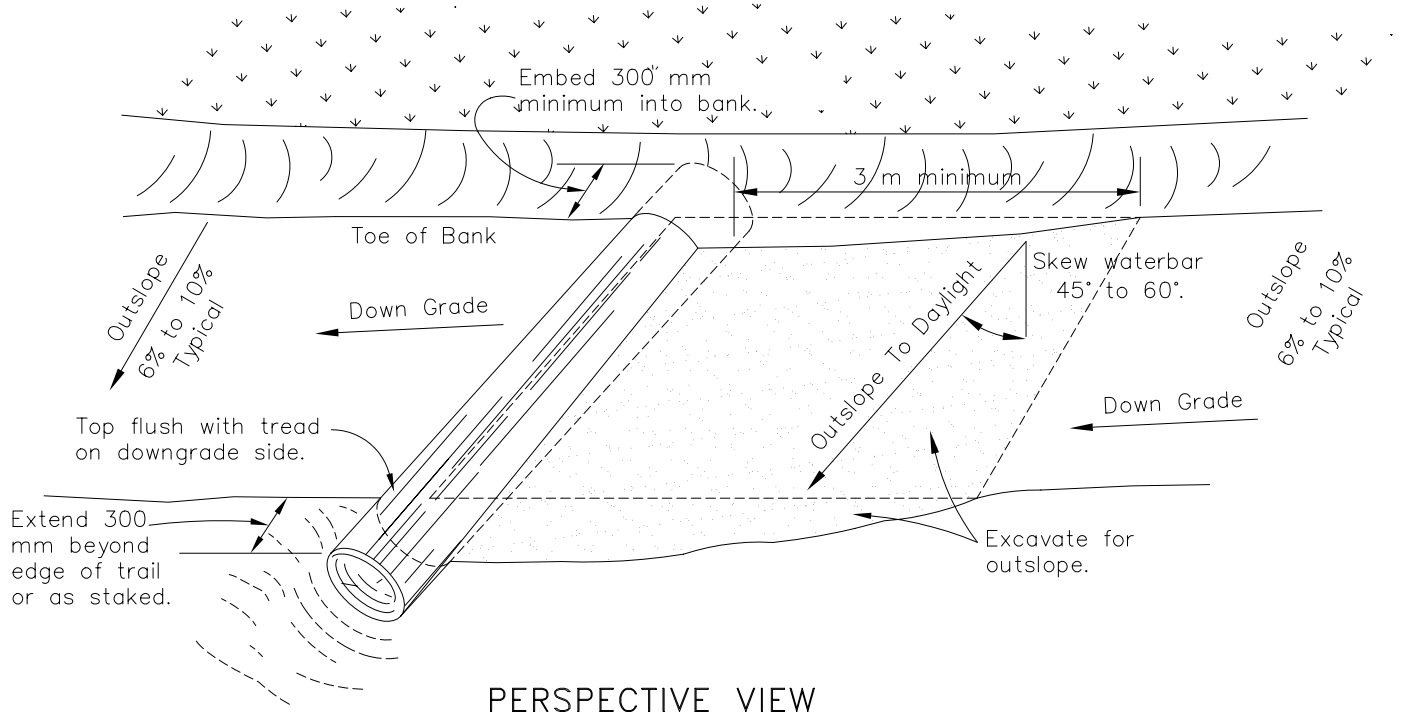
## PERSPECTIVE VIEW



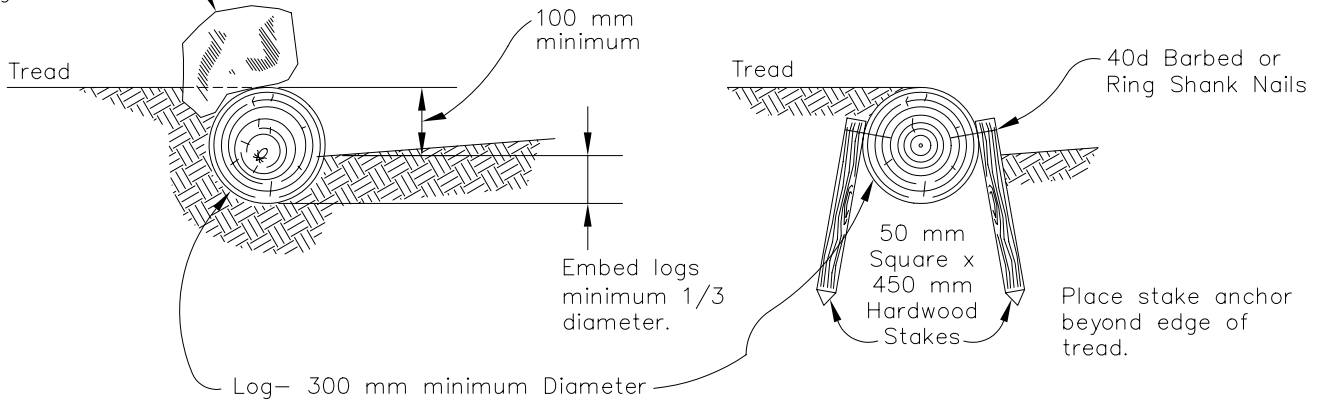
## SECTION A-A

# LOG OR TREATED TIMBER WATERBAR

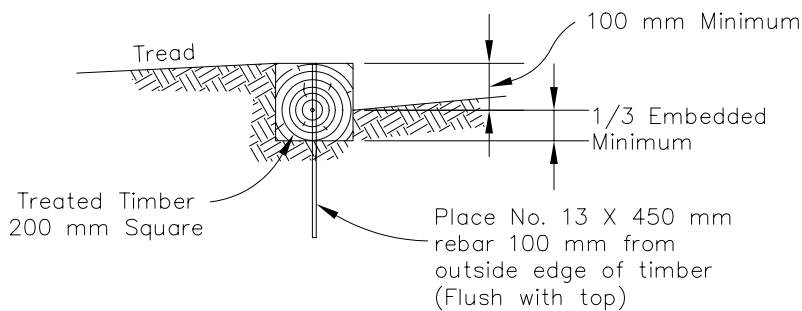
NOT TO SCALE



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



## LOG ANCHORS



Preservative Treatment: \_\_\_\_\_

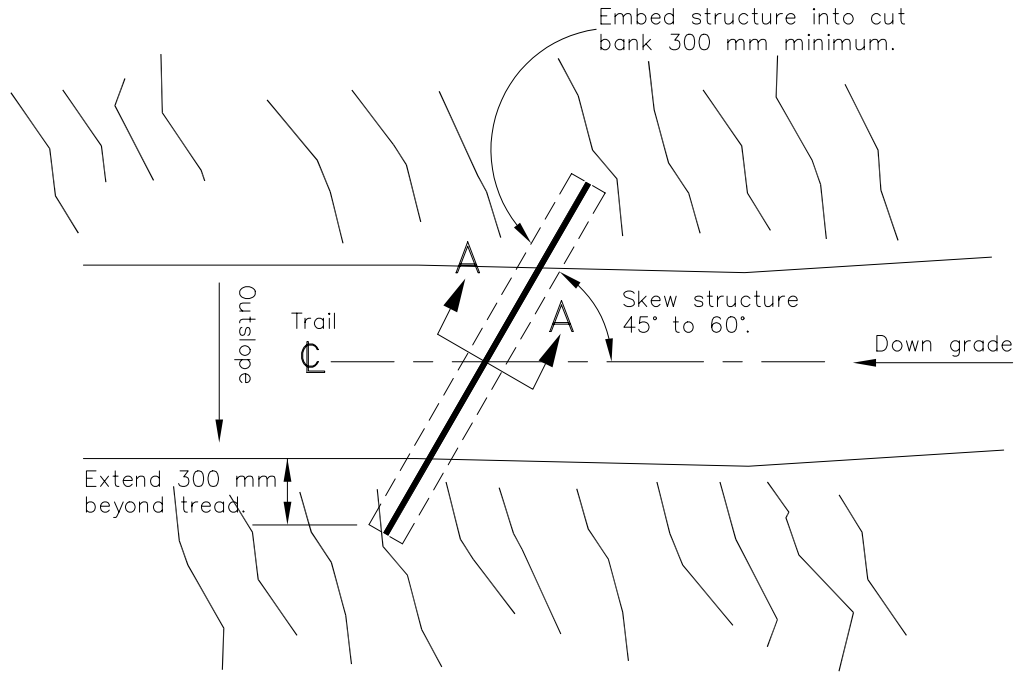
Net Retention \_\_\_\_\_ kg/m<sup>3</sup>

## TREATED TIMBER ANCHOR



# RUBBER BELTING WATERBAR

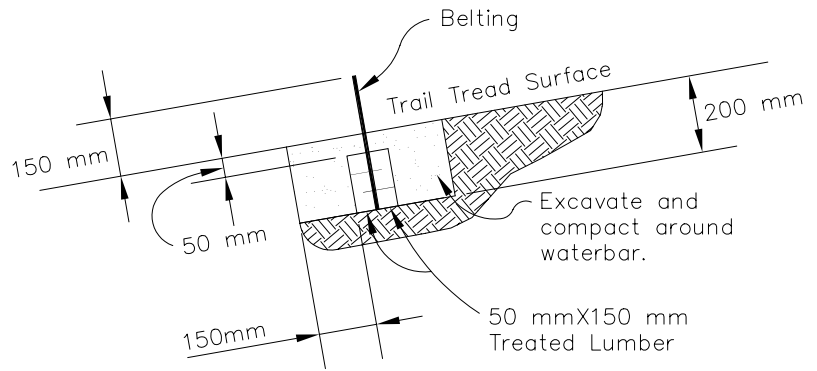
NOT TO SCALE



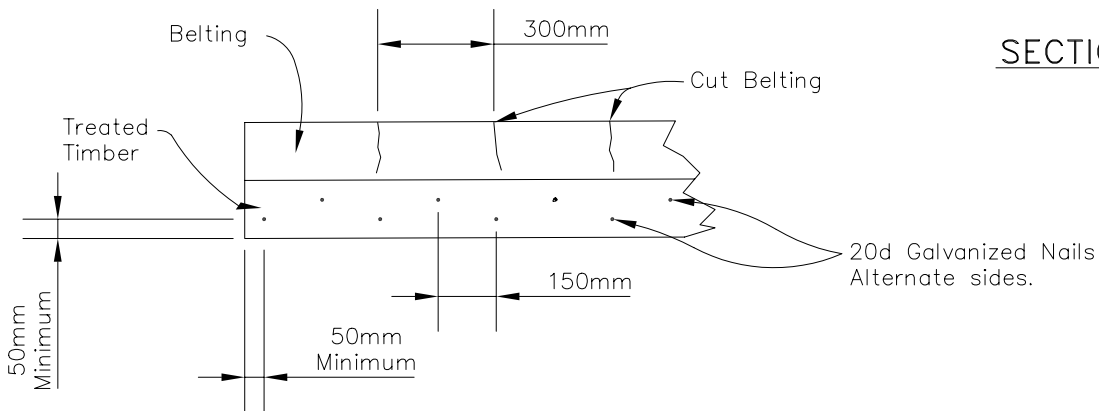
PLAN VIEW

Preservative Treatment:

Net Retention \_\_\_\_\_ kg/m<sup>3</sup>



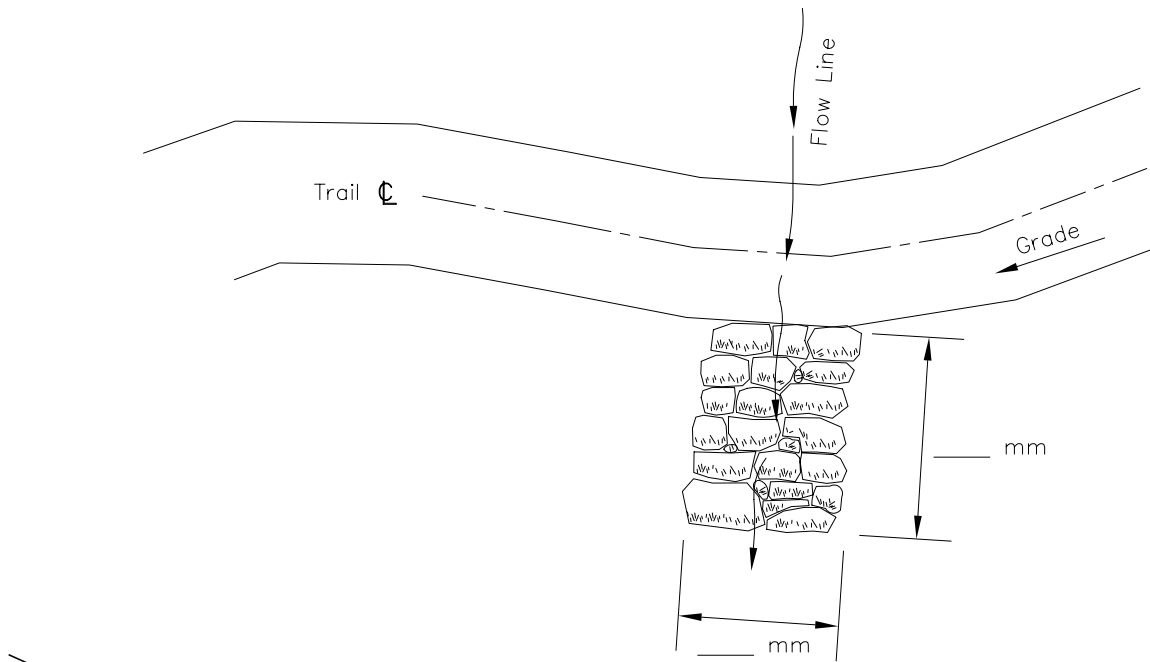
SECTION A-A



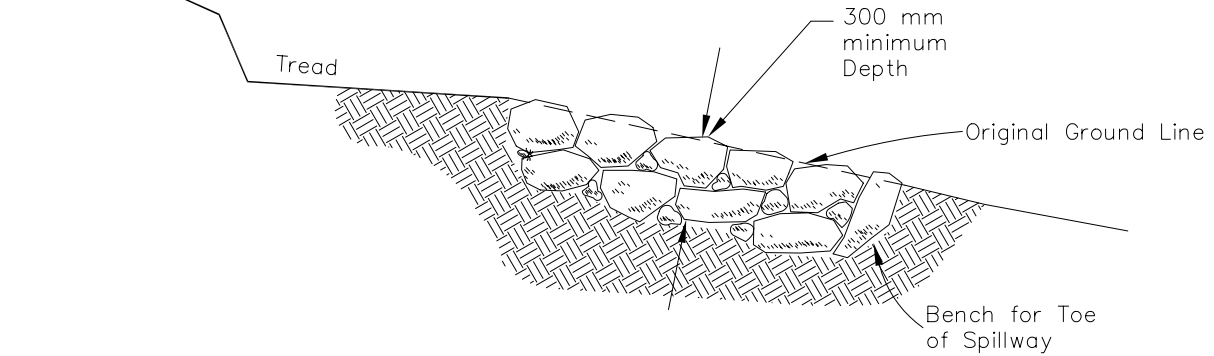
NAILING AND CUTTING DETAIL

# ROCK SPILLWAY

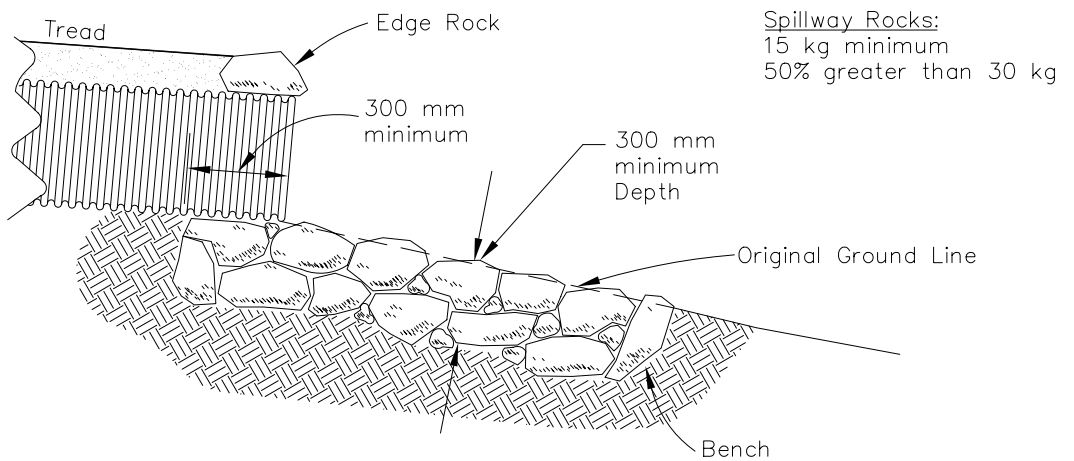
NOT TO SCALE



PLAN VIEW



TYPICAL CROSS SECTION  
DRAINAGE DIP OR CROSS DRAINAGE

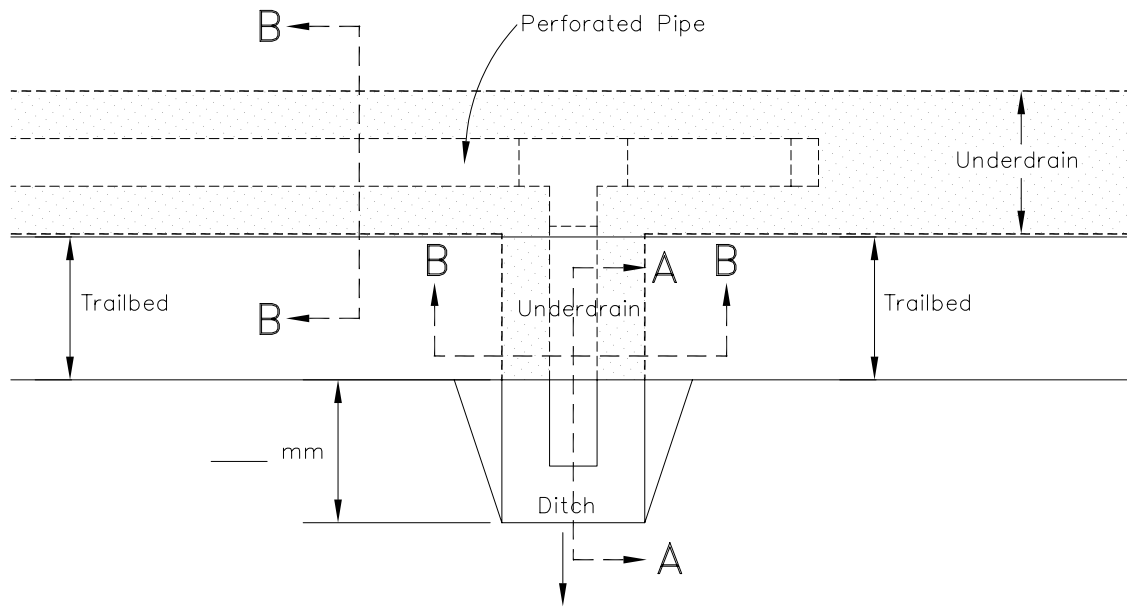


Spillway Rocks:  
15 kg minimum  
50% greater than 30 kg

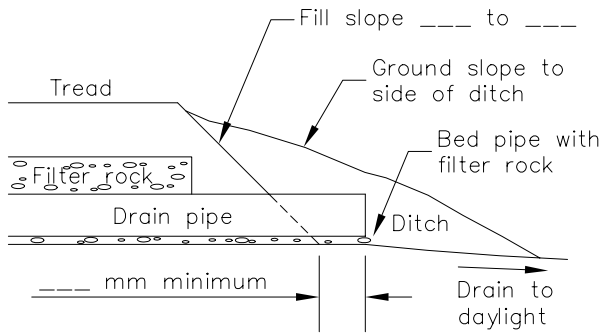
TYPICAL CULVERT  
CROSS SECTION

# UNDERDRAIN

NOT TO SCALE

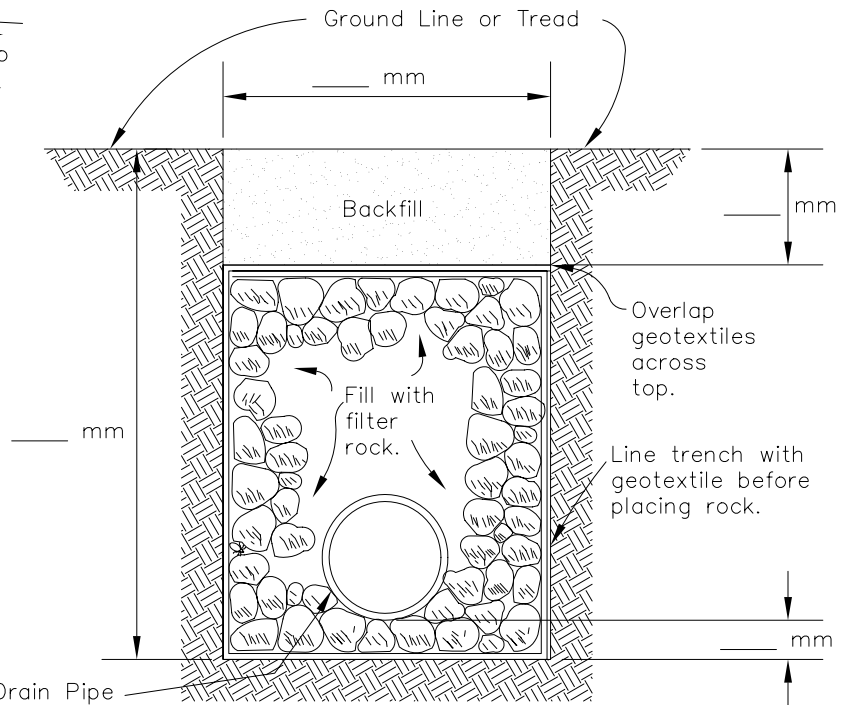


## PLAN VIEW



## SECTION A-A

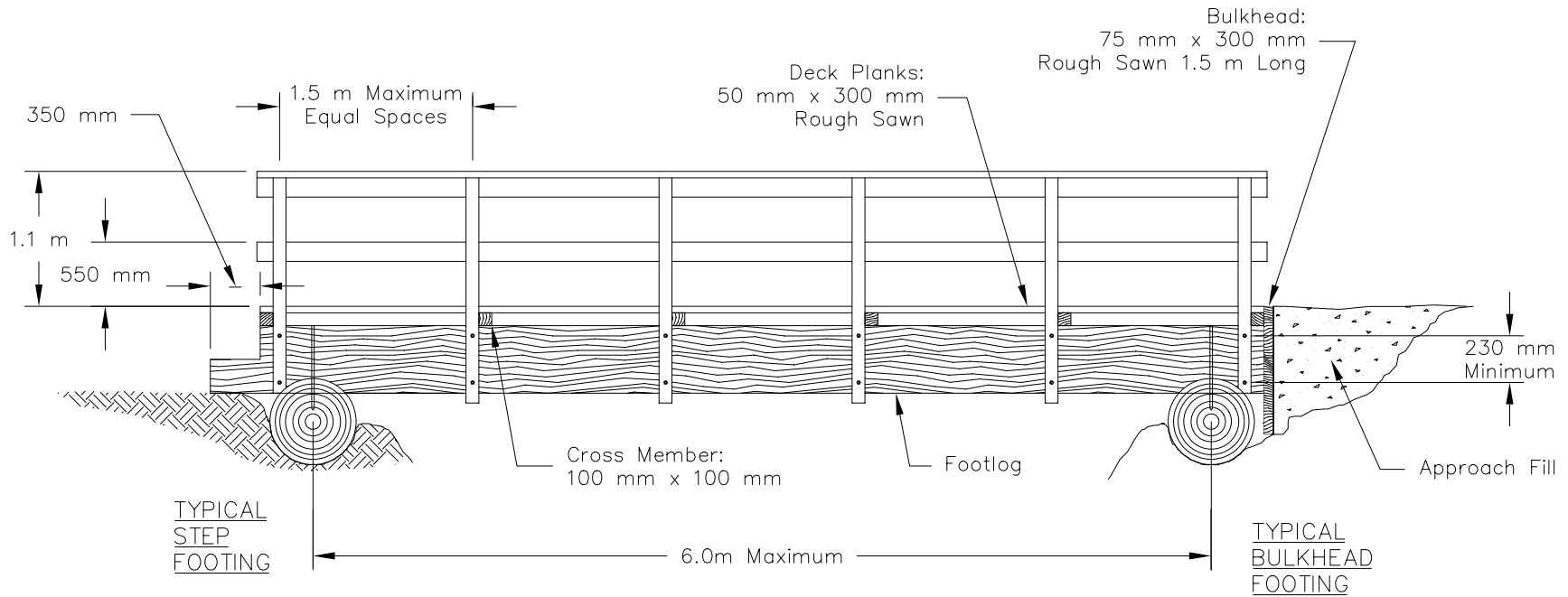
**Filter Rocks:**  
Use clean, durable rock between 25 mm and 100 mm in diameter.



## 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.
- Dap 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.

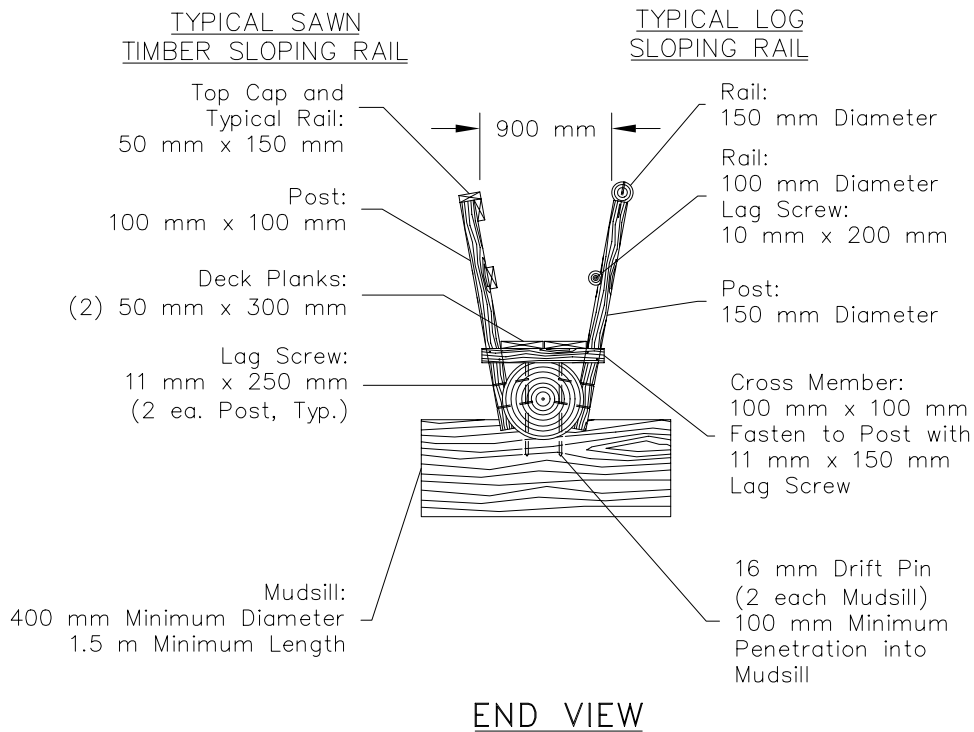
3/97

931-1a

Member	Species	Treatment Type	Minimum Retention (kg/m <sup>3</sup> )
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: \_\_\_\_\_

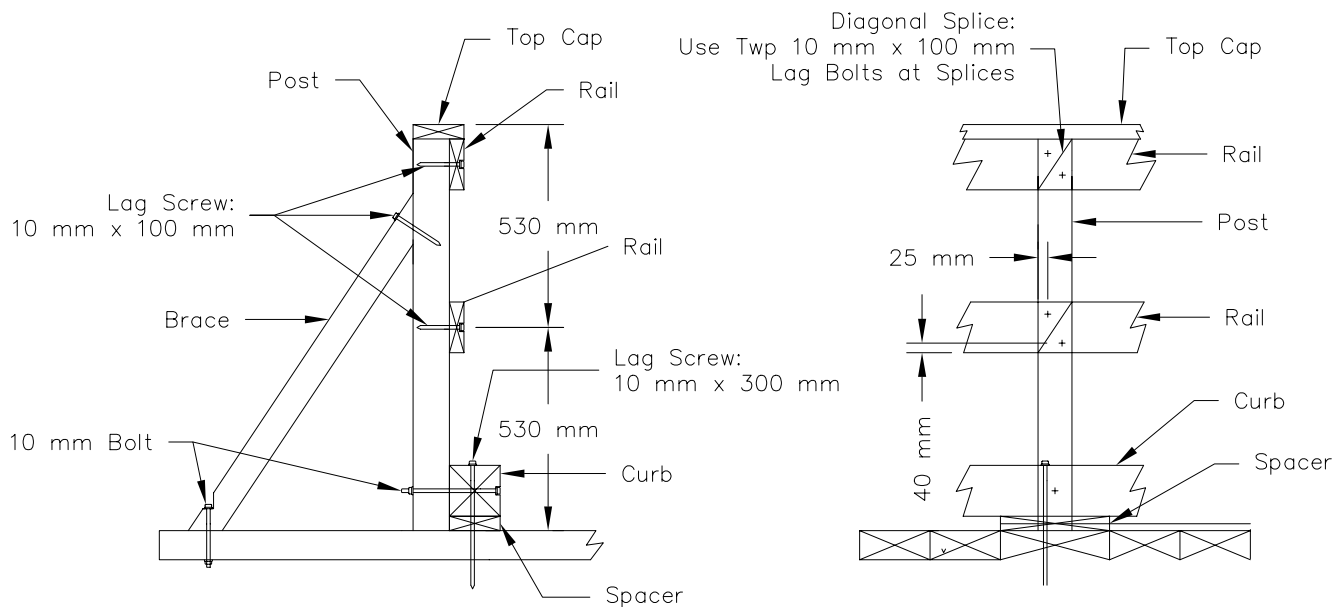
Ftg Type at Begin of Bridge \_\_\_\_\_

Ftg Type at End of Bridge \_\_\_\_\_

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

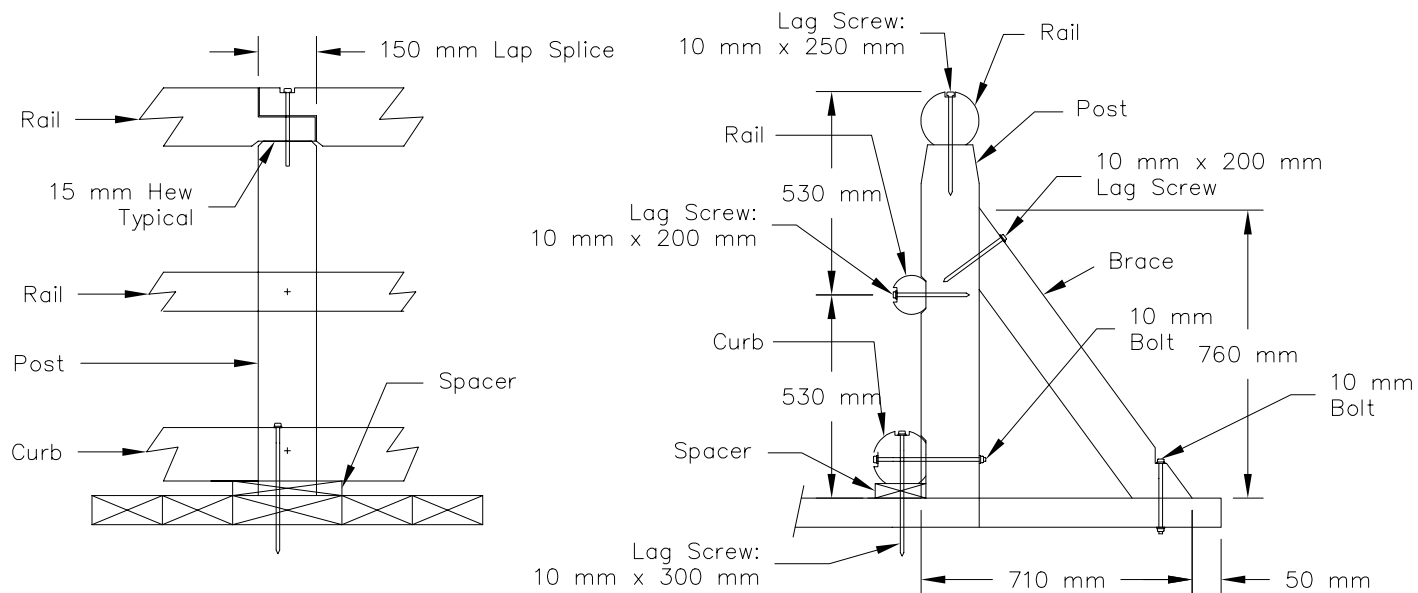
# OPTIONAL DECK AND HANDRAILS

NOT TO SCALE



## SAWN TIMBER RAIL ALTERNATIVE

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

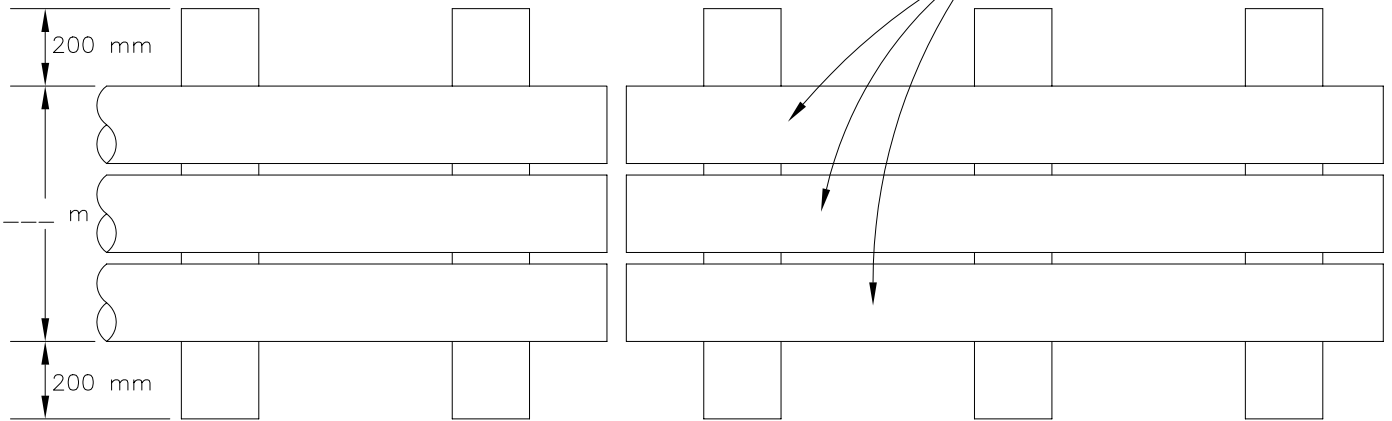


## LOG RAIL ALTERNATIVE

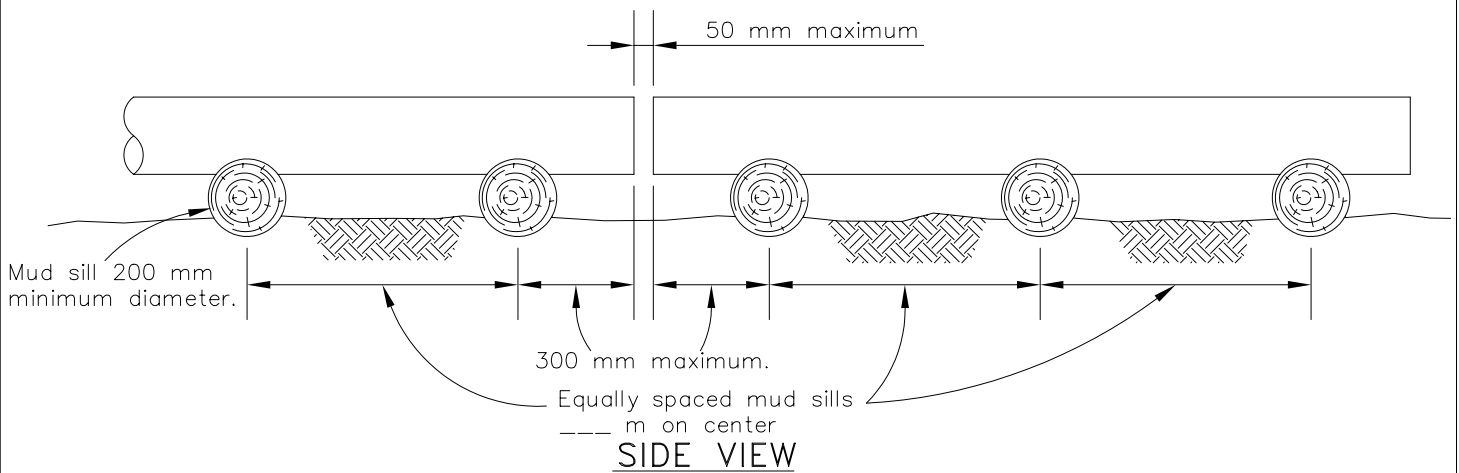
# PUNCHEON WITHOUT DECKING

NOT TO SCALE

Logs with tops flattened or sawn timber.

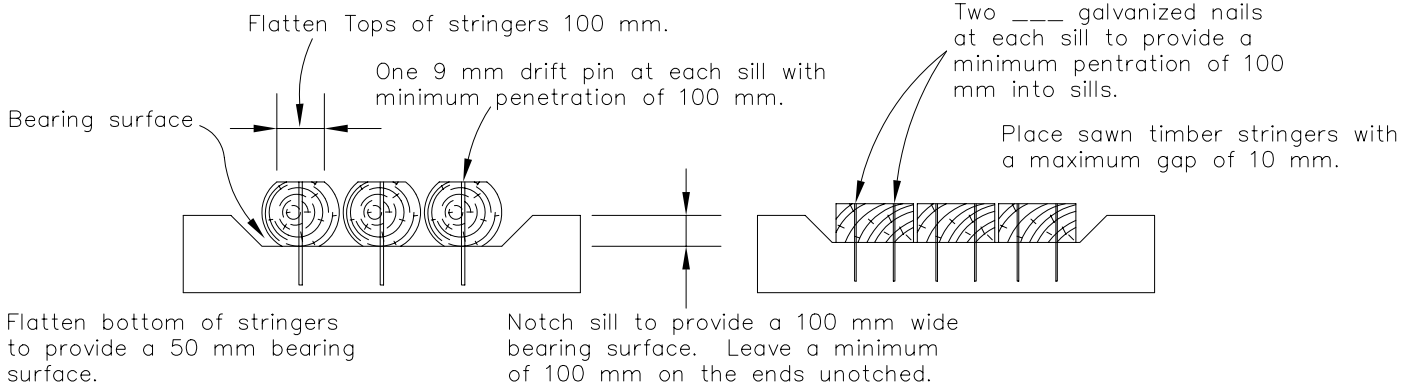


PLAN VIEW



SIDE VIEW

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



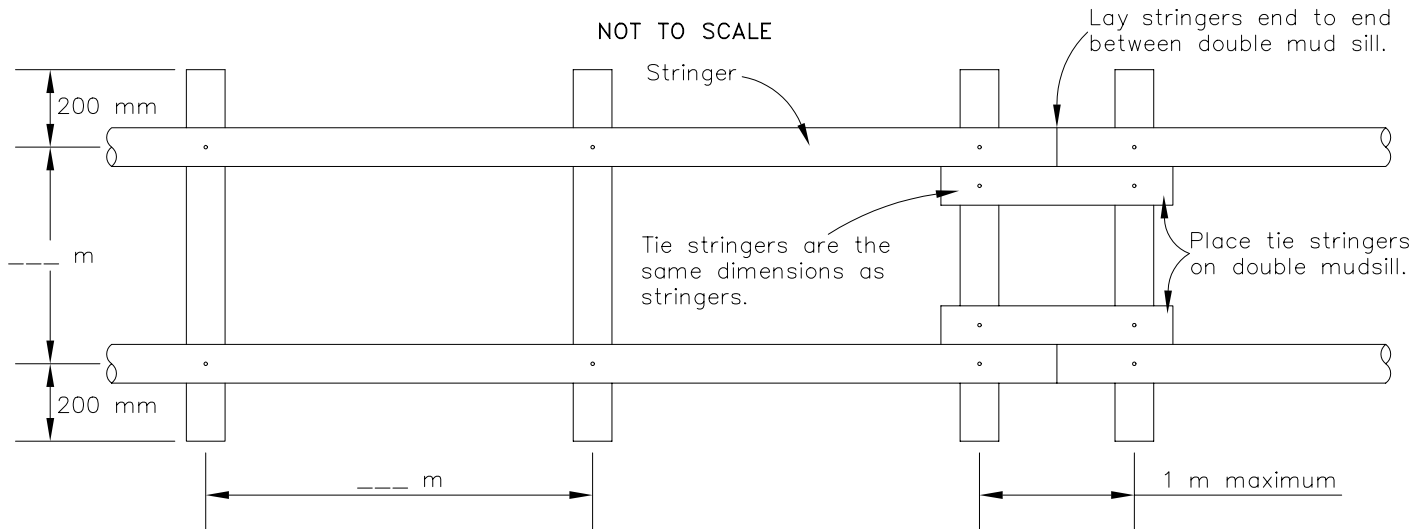
END VIEW  
LOG STRINGER

END VIEW  
SAWN TIMBER STRINGER

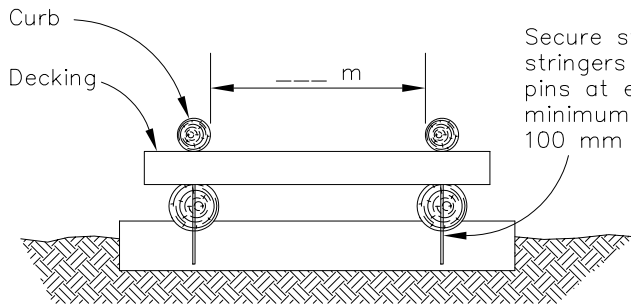
MEMBER	TYPE	SPECIES	SIZE (mm)	TREATMENT TYPE	MINIMUM RETENTION (kg/m <sup>3</sup> )
Stringer					
Deck					
Bulkhead					

# PUNCHEON WITH DECKING

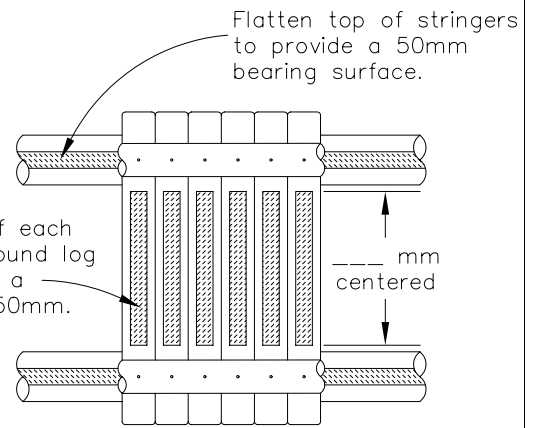
NOT TO SCALE



## MUD SILL AND STRINGER LAYOUT



Secure stringers and tie stringers with 9 mm drift pins at each sill with a minimum penetration of 100 mm into the sill.



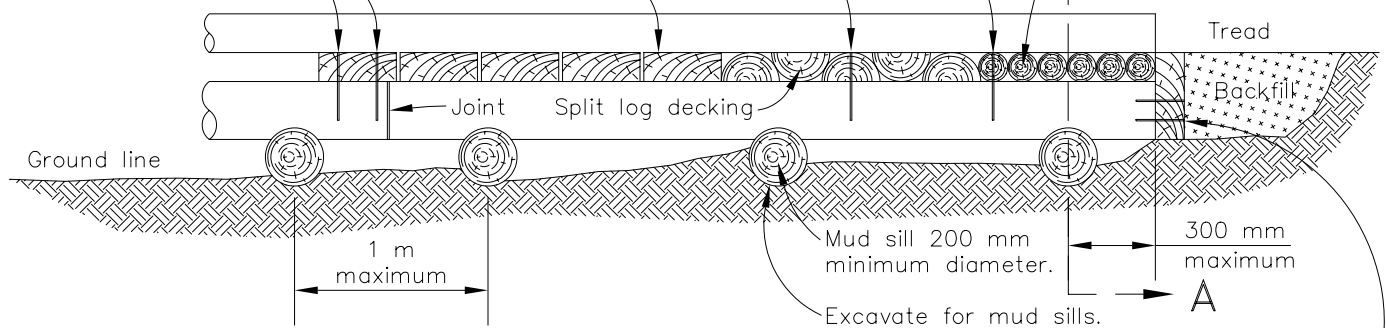
## PLAN VIEW

Two \_\_\_ galvanized nails at each stringer to provide a minimum penetration of 50 mm into the stringer.

Sawn timber decking with a 10 mm maximum gap.

One \_\_\_ galvanized nail at each stringer to provide a minimum penetration of 50 mm into the stringer.

Round log decking



## SECTION VIEW

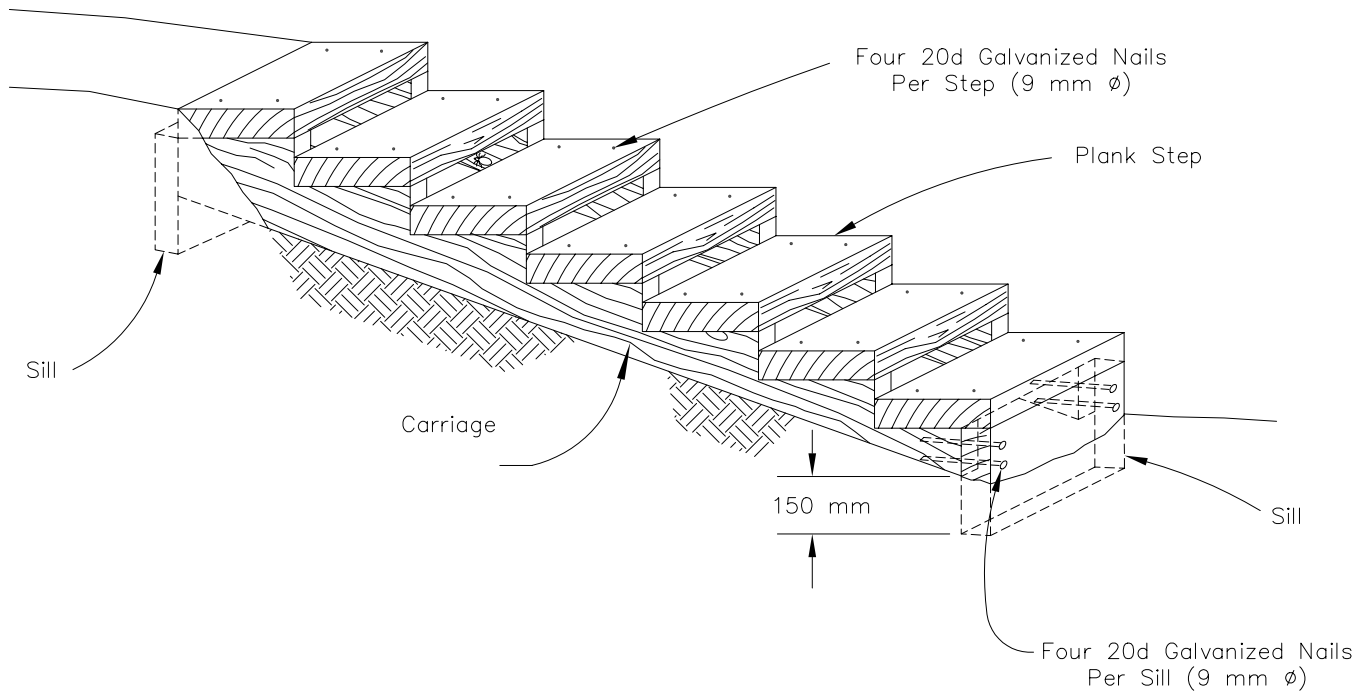
Bulkhead:  
Secure with a minimum of two galvanized spikes with a minimum penetration of 50 mm into the stringer.

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



# PLANK STAIRWAY

NOT TO SCALE



Preservative Treatment:

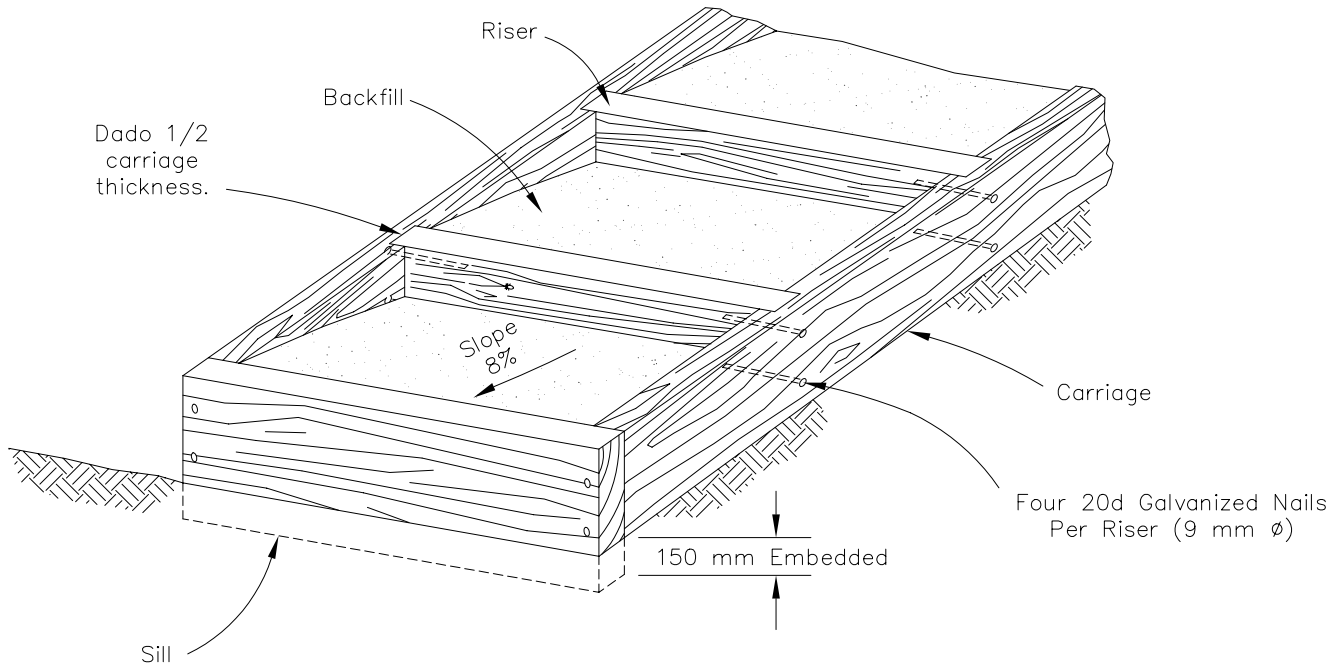
\_\_\_\_\_

Net Retention \_\_\_\_\_ kg/m<sup>3</sup>

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

# CRIB LADDER STAIRWAY

NOT TO SCALE



Preservative Treatment: \_\_\_\_\_

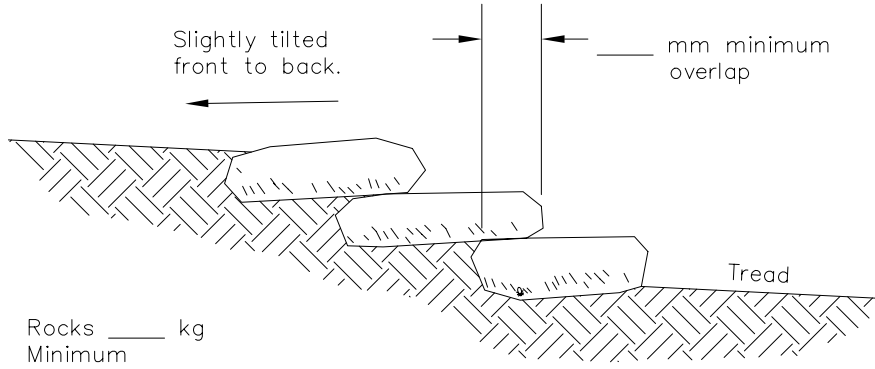
Net Retention \_\_\_\_\_ kg/m<sup>3</sup>

## STAIRWAY DIMENSIONS

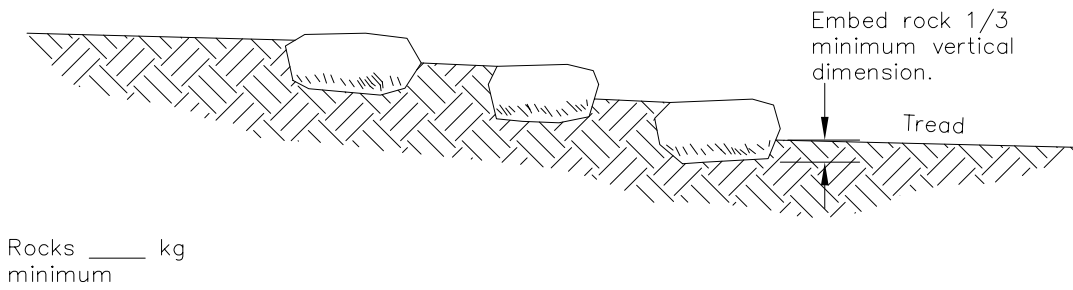
Location	Step Rise	Step Run	Width	Carriage Length	Carriage/Plank Step Dimensions	Sill Dimensions	Species

# ROCK STAIRWAYS

NOT TO SCALE



## OVERLAPPING ROCK STAIRWAY

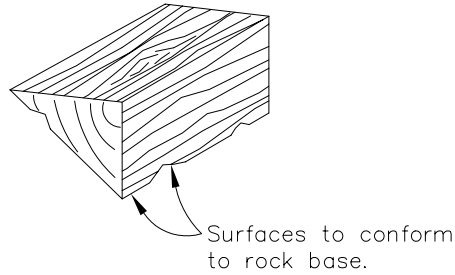


## ROCK RISER STAIRWAY

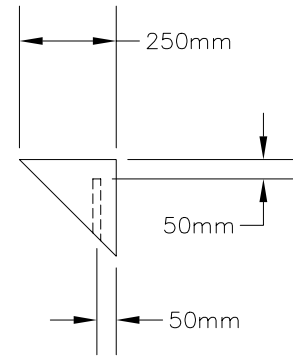
Location	Type	Maximum Step Rise	Maximum Step Run	Width

# PINNED STAIRWAY

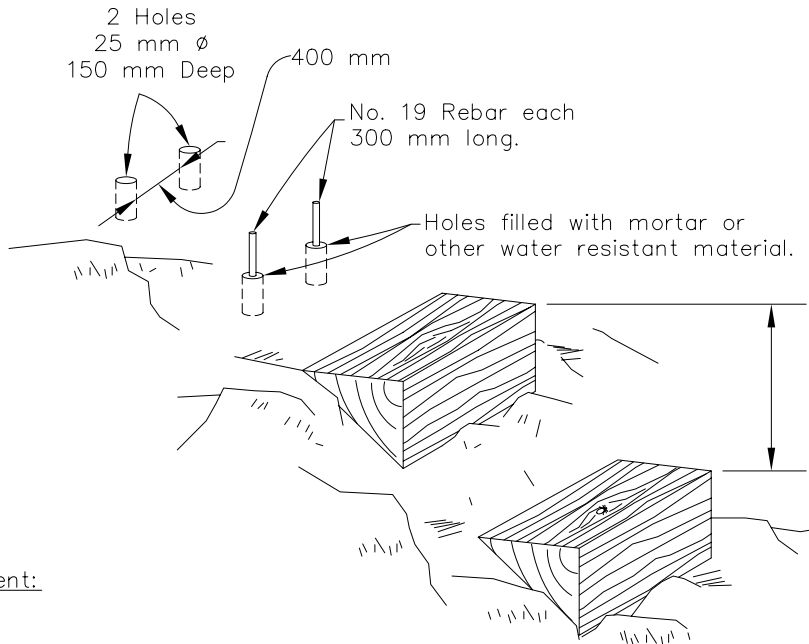
NOT TO SCALE



STEP



TYPICAL END VIEW OF TREADS



Preservative Treatment:

\_\_\_\_\_

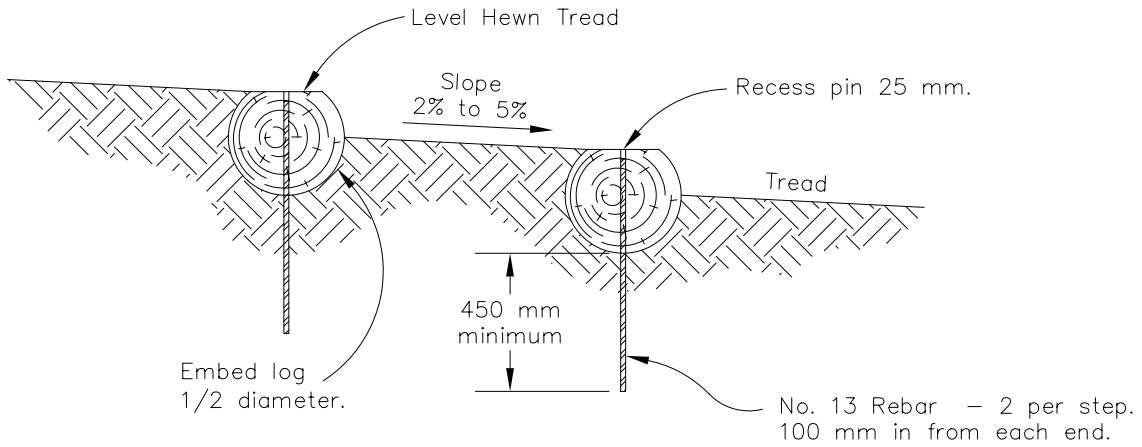
Net Retention \_\_\_\_\_ kg/m<sup>3</sup>

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

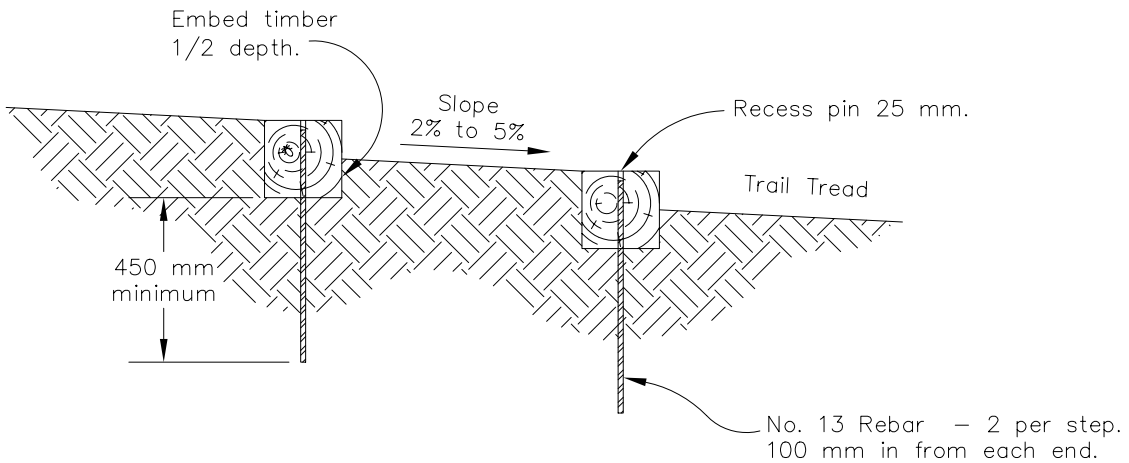
Location	Step Rise	Step Run	Width	Species

# LOG AND TREATED TIMBER RISER STAIRWAY

NOT TO SCALE



## LOG RISER STAIRWAY



## TREATED TIMBER RISER STAIRWAY

Preservative Treatment:

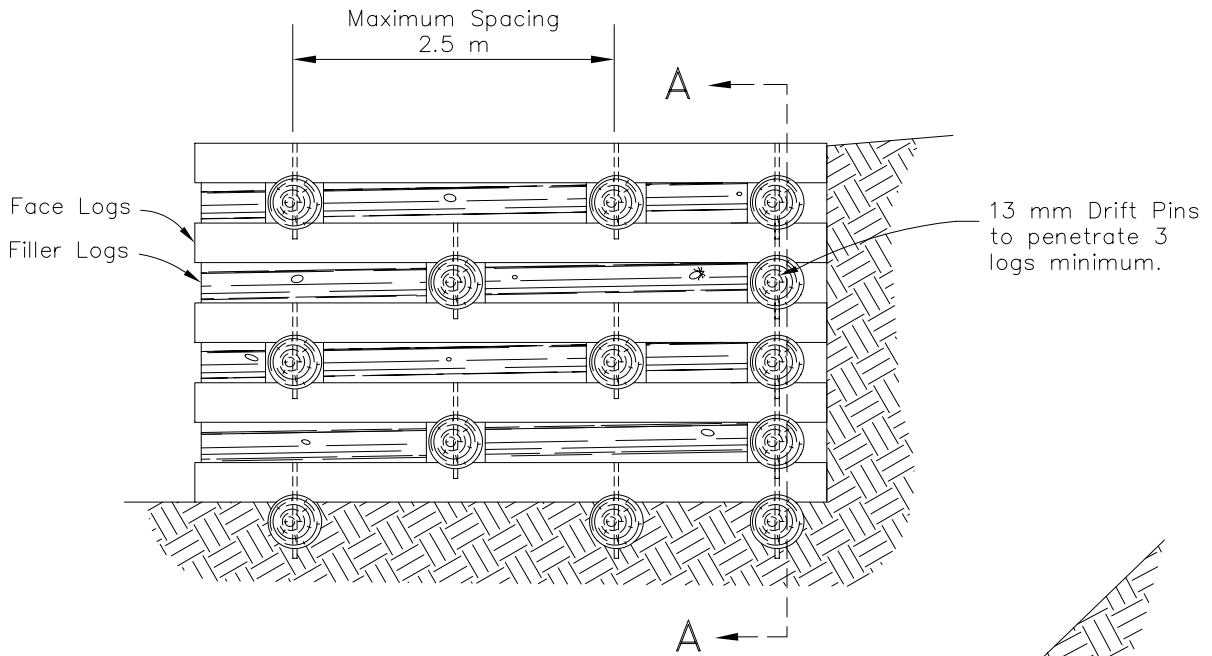
\_\_\_\_\_

Net Retention \_\_\_\_\_ kg/m<sup>3</sup>

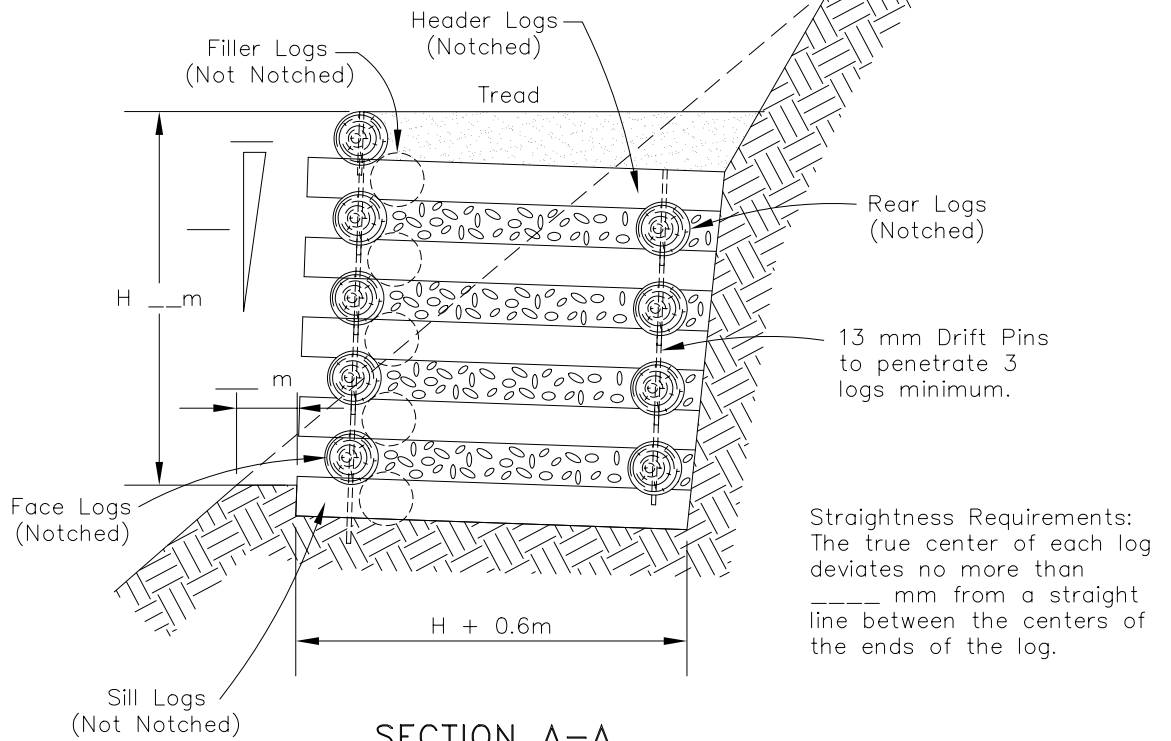
Location	Step Rise	Step Run	Step Width	Riser Material Type	Riser Material Dimensions	Species

# LOG RETAINING WALL

NOT TO SCALE



FRONT VIEW



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

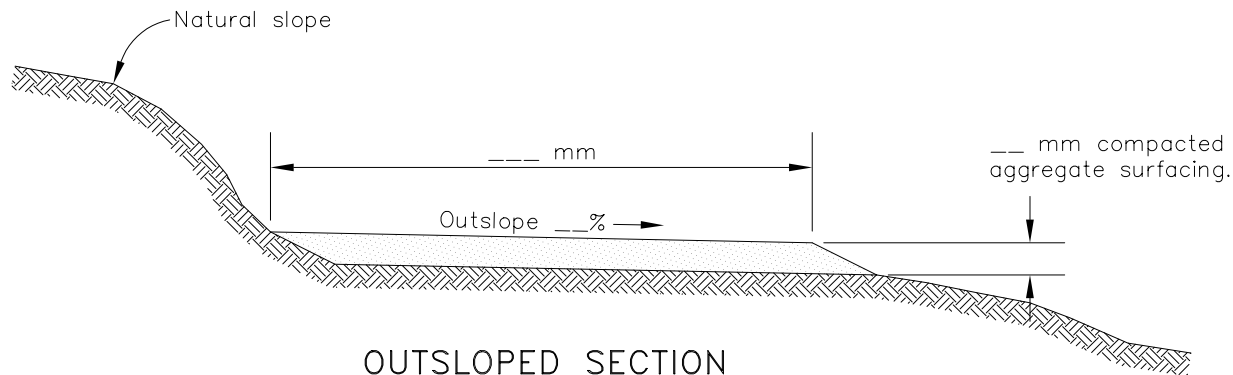
Preservative Treatment:

Net Retention \_\_\_\_\_ kg/m<sup>3</sup>

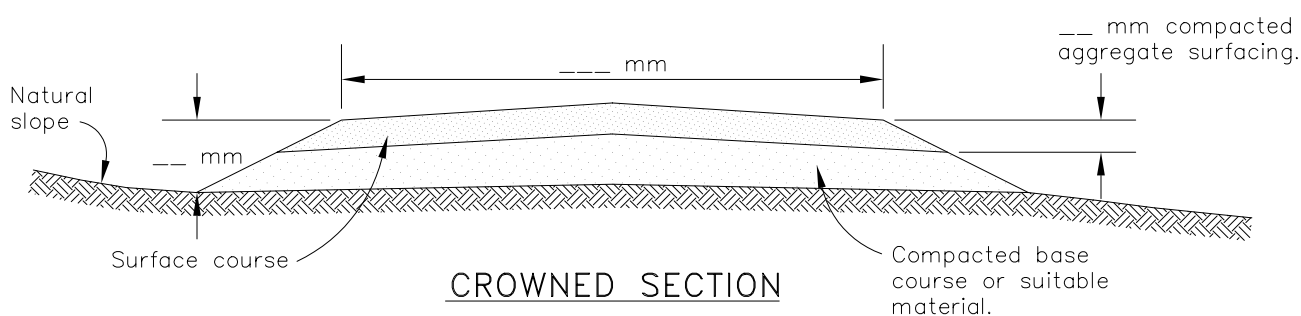


# AGGREGATE SURFACING

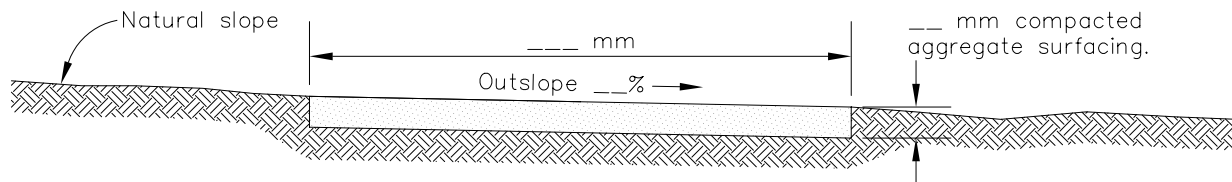
NOT TO SCALE



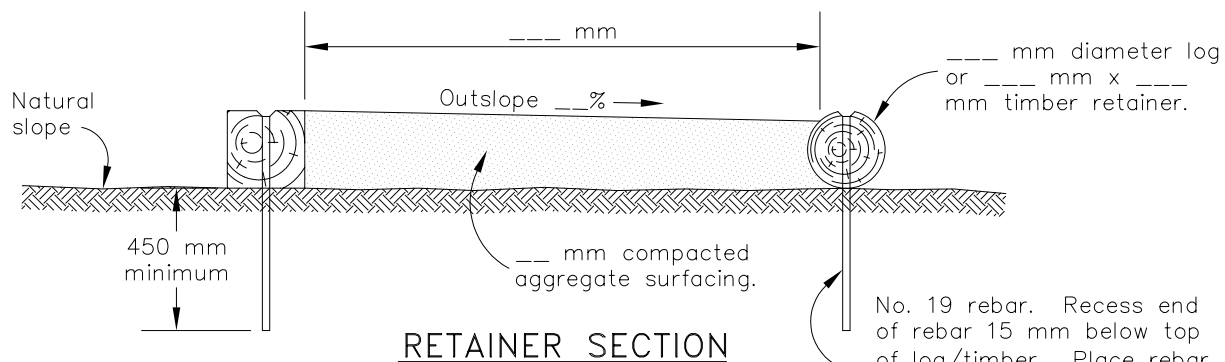
OUTSLOPED SECTION



CROWNED SECTION



EXCAVATED SECTION



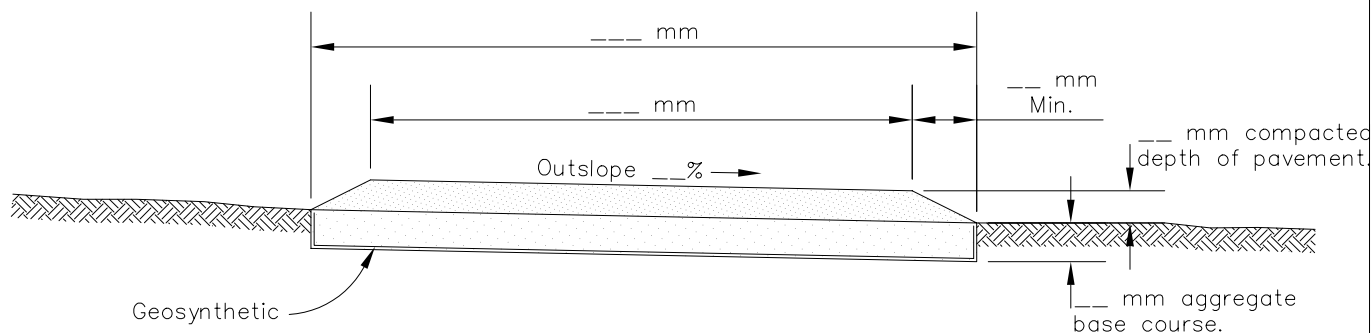
RETAINER SECTION

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

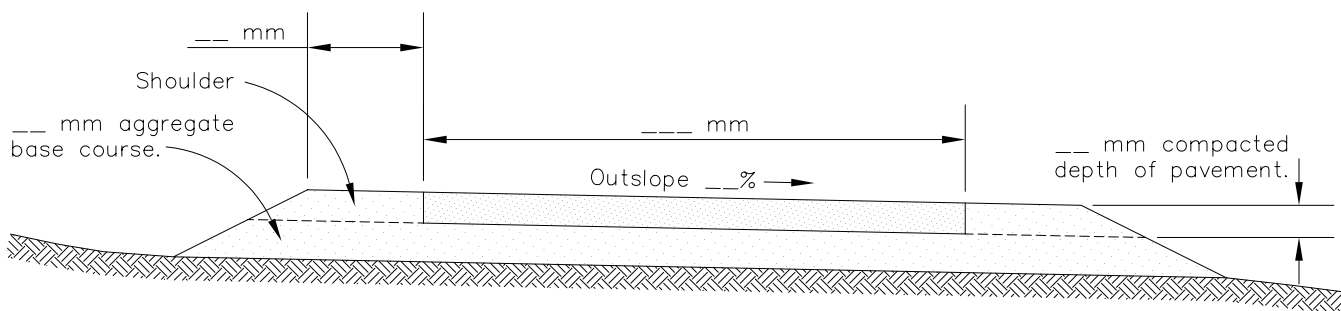


# BITUMINOUS SURFACING

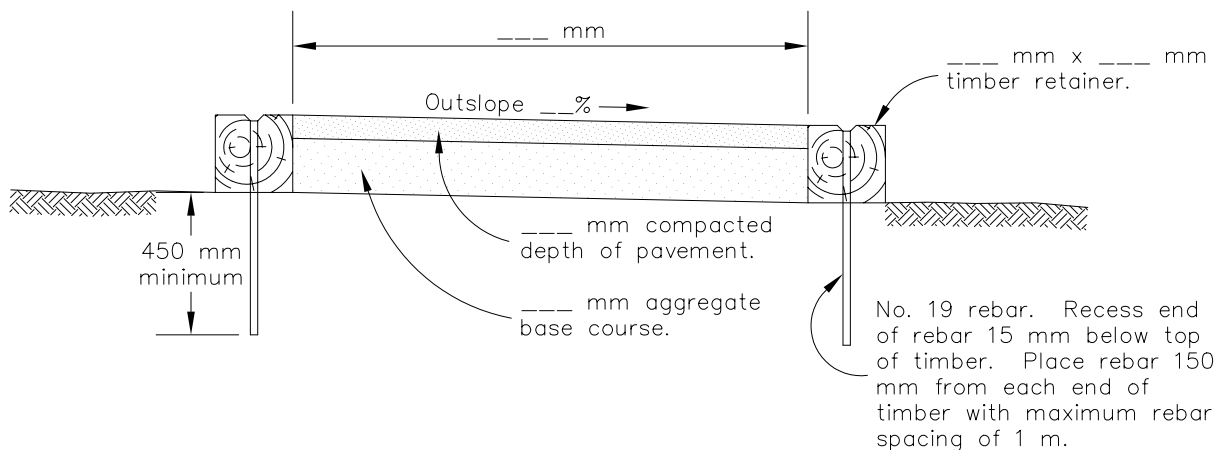
NOT TO SCALE



## BITUMINOUS SURFACING – NO SHOULDERS



## BITUMINOUS SURFACING WITH SHOULDERS



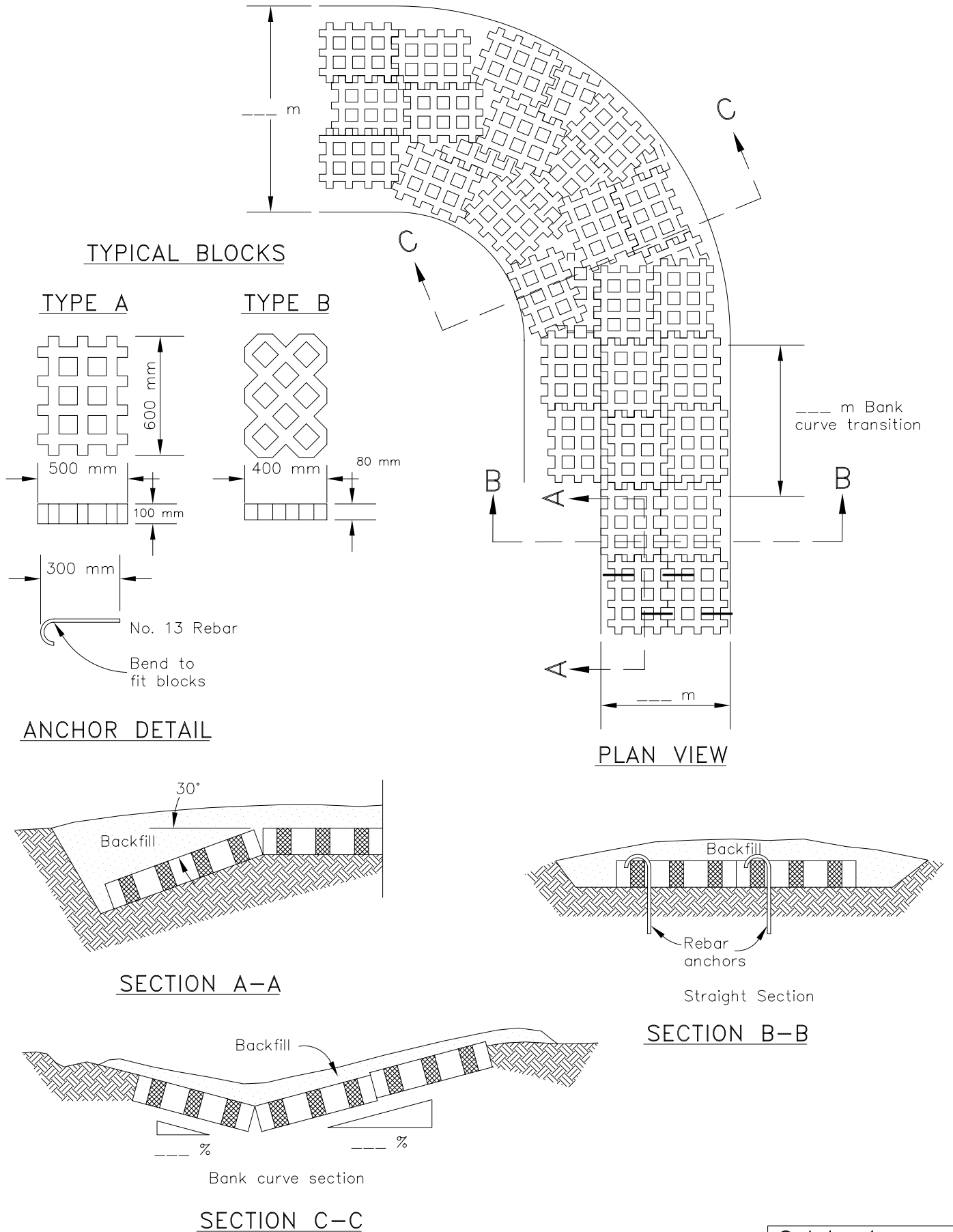
## BITUMINOUS SURFACING WITH RETAINERS

RETAINER NOTES:

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

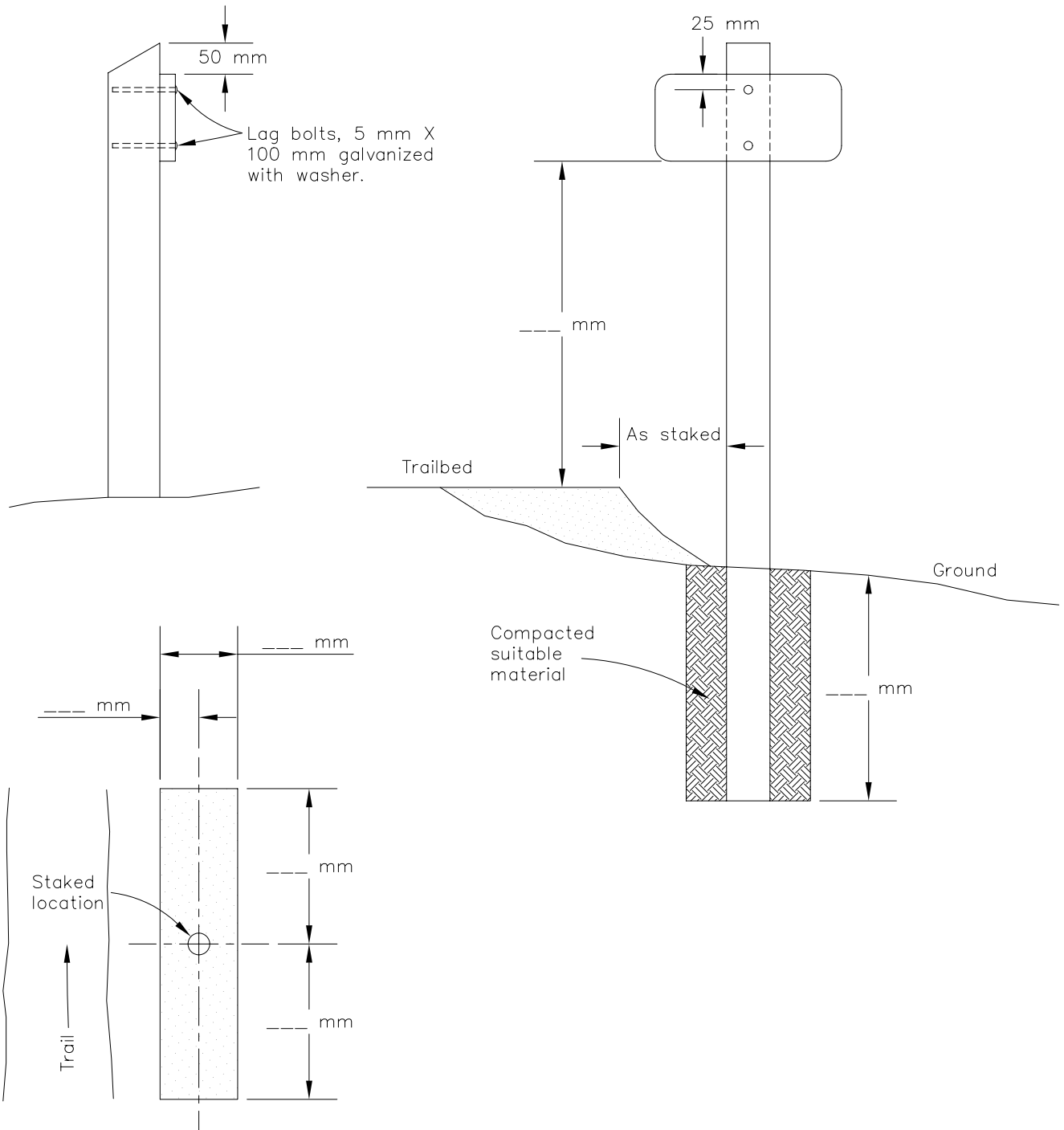
# GRID PAVEMENT UNITS

NOT TO SCALE



# SIGN AND POST INSTALLATION

NOT TO SCALE



Placement tolerance within shaded area for avoiding obstacles.

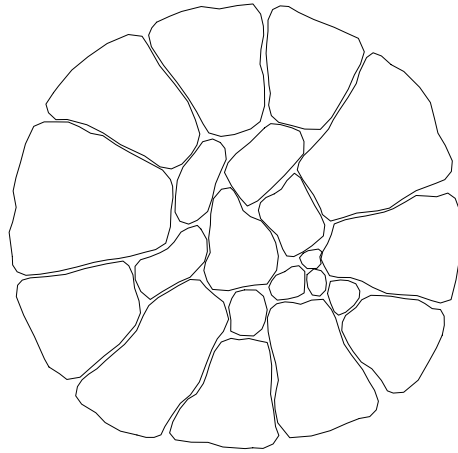
Preservation type \_\_\_\_\_

Minimum net retention \_\_\_\_\_

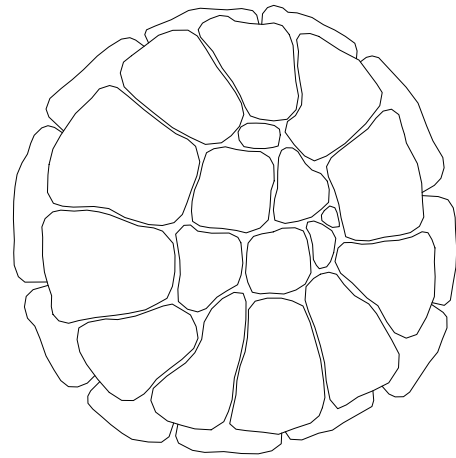
POSTS			SIGN
LOCATION	MATERIAL	SIZE (mm)	

# ROCK CAIRN CONSTRUCTION

NOT TO SCALE

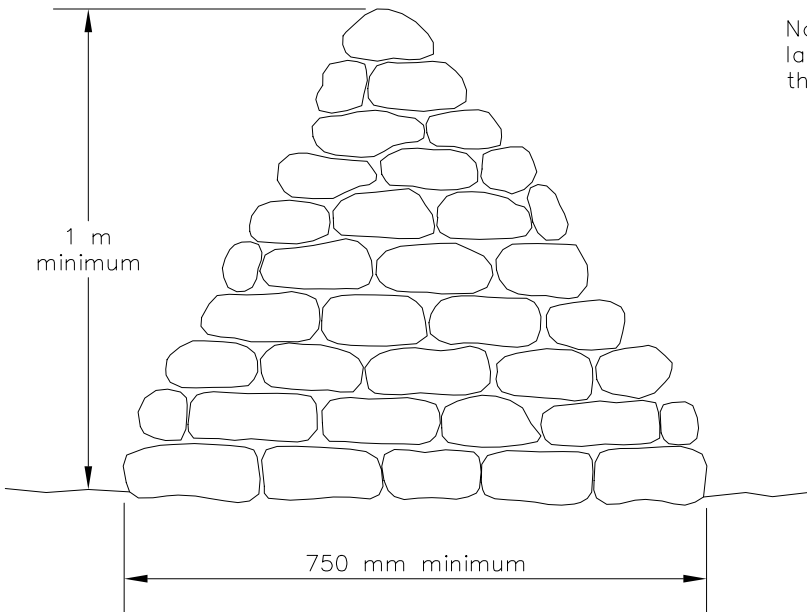


FIRST LAYER



SECOND LAYER

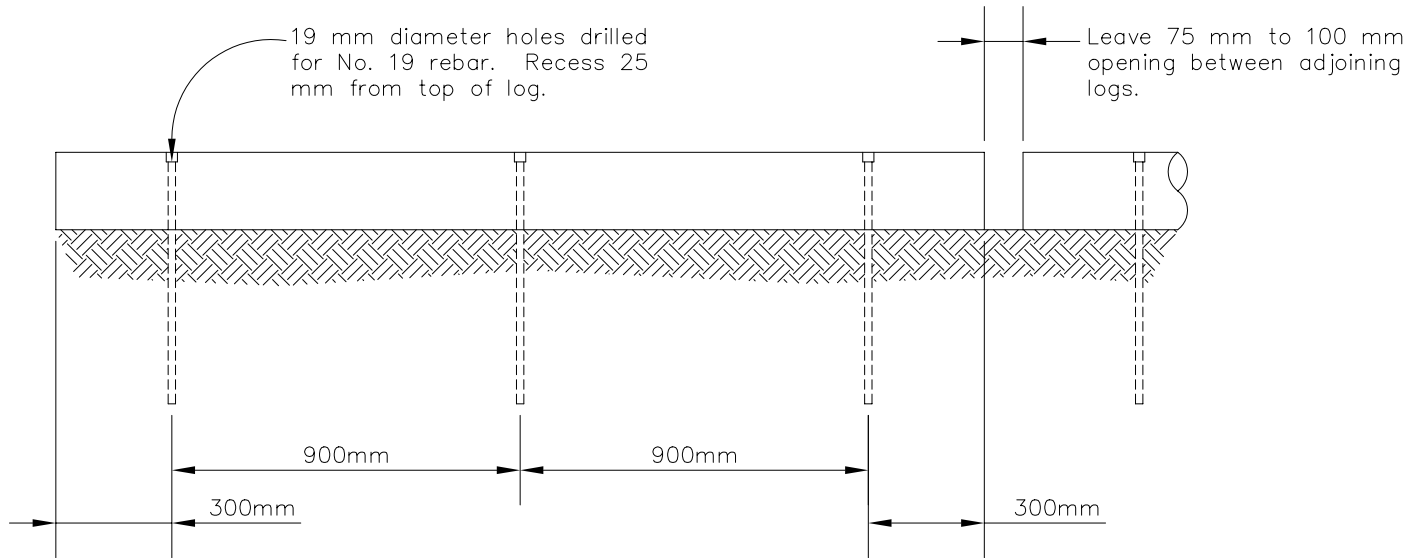
Note joints of first layer are bridged by the second.



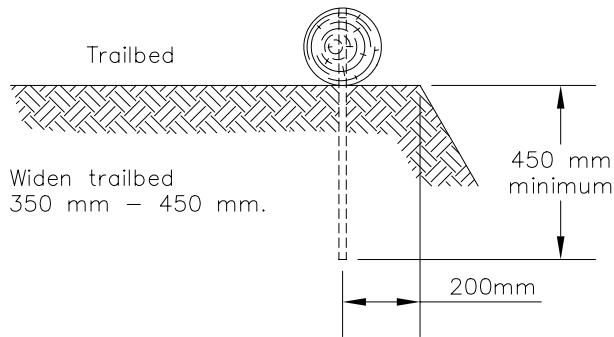
LOCATIONS

# LOG BARRIER

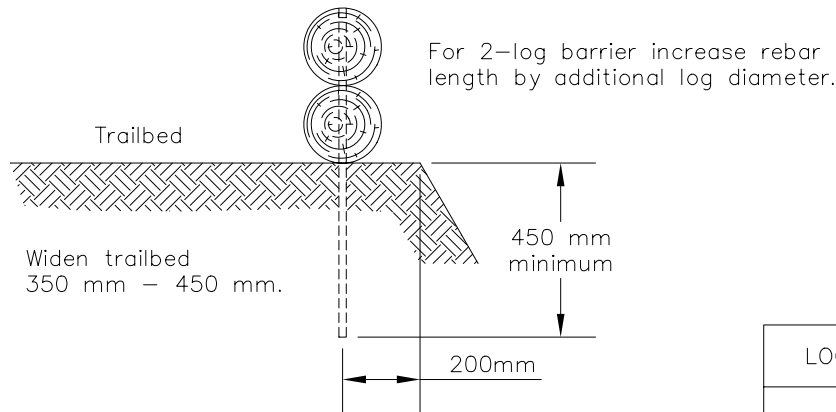
NOT TO SCALE



FRONT VIEW



END VIEW  
ONE LOG

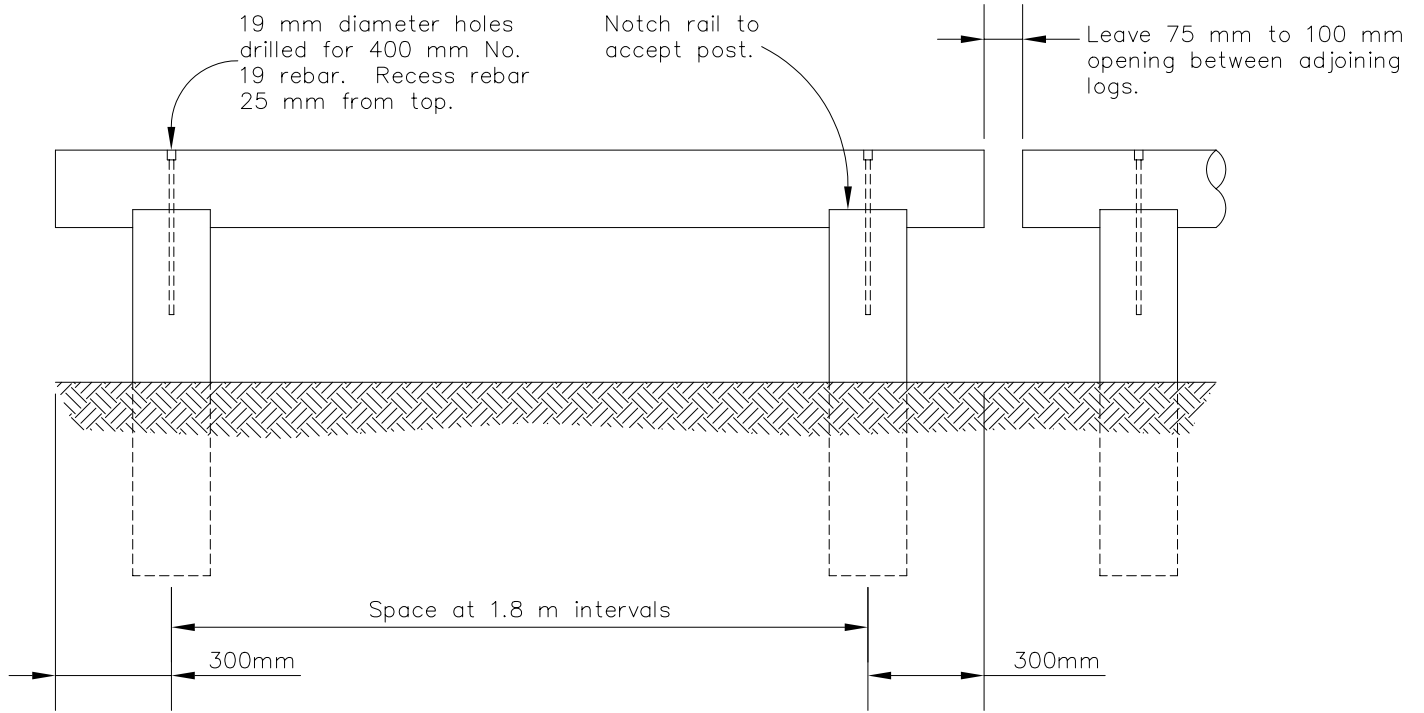


END VIEW  
TWO LOG

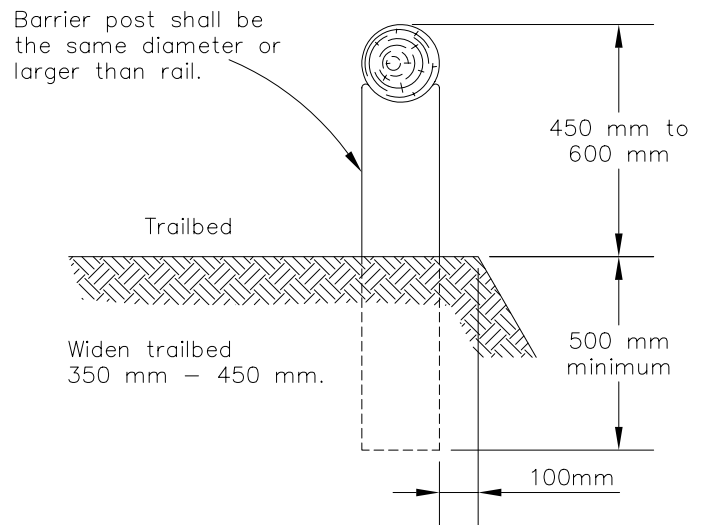
LOCATION	MATERIAL	DIAMETER (mm)

# LOG BARRIER ON POSTS

NOT TO SCALE



FRONT VIEW

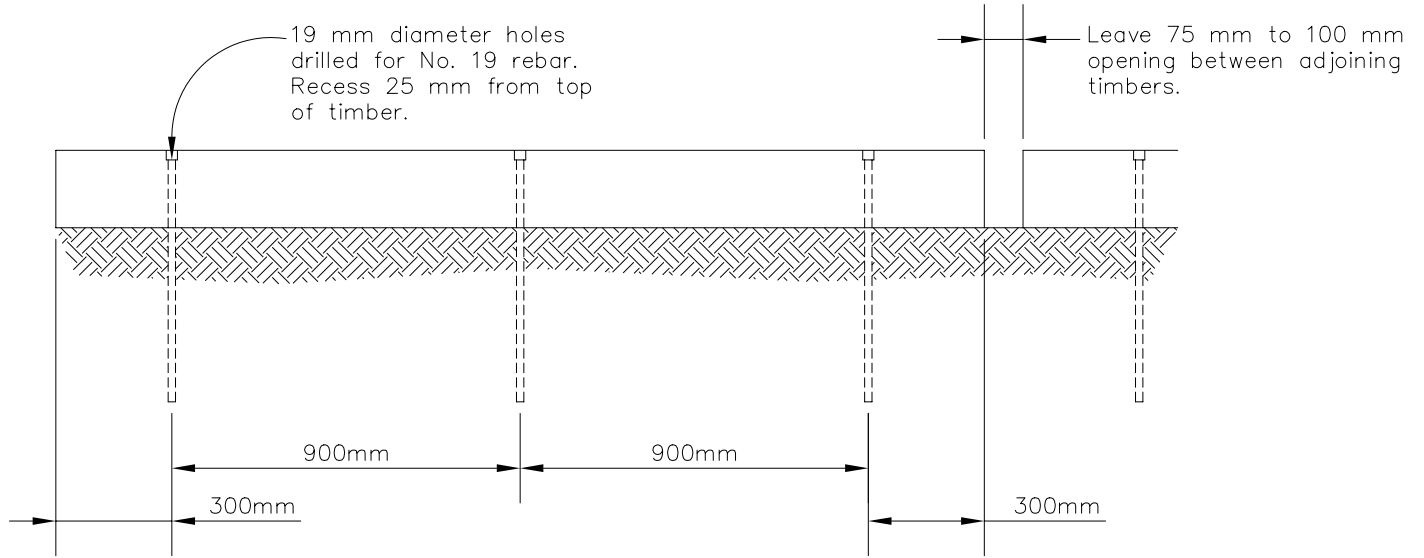


END VIEW

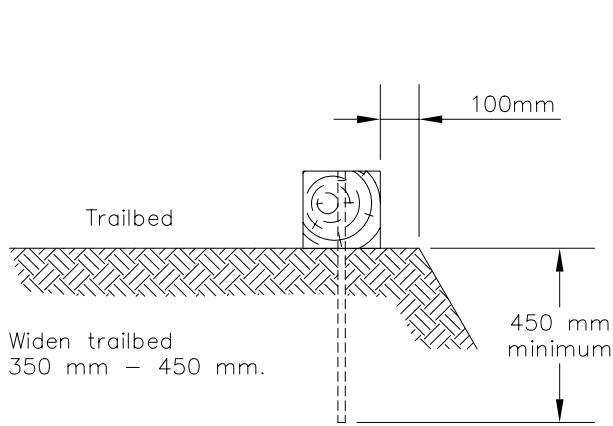
LOCATION	RAIL DIAMETER (mm)	SPECIES

# TREATED TIMBER BARRIER

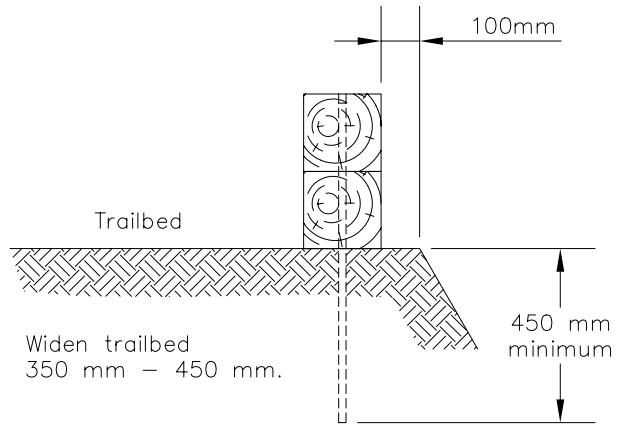
NOT TO SCALE



FRONT VIEW



END VIEW ONE TIMBER

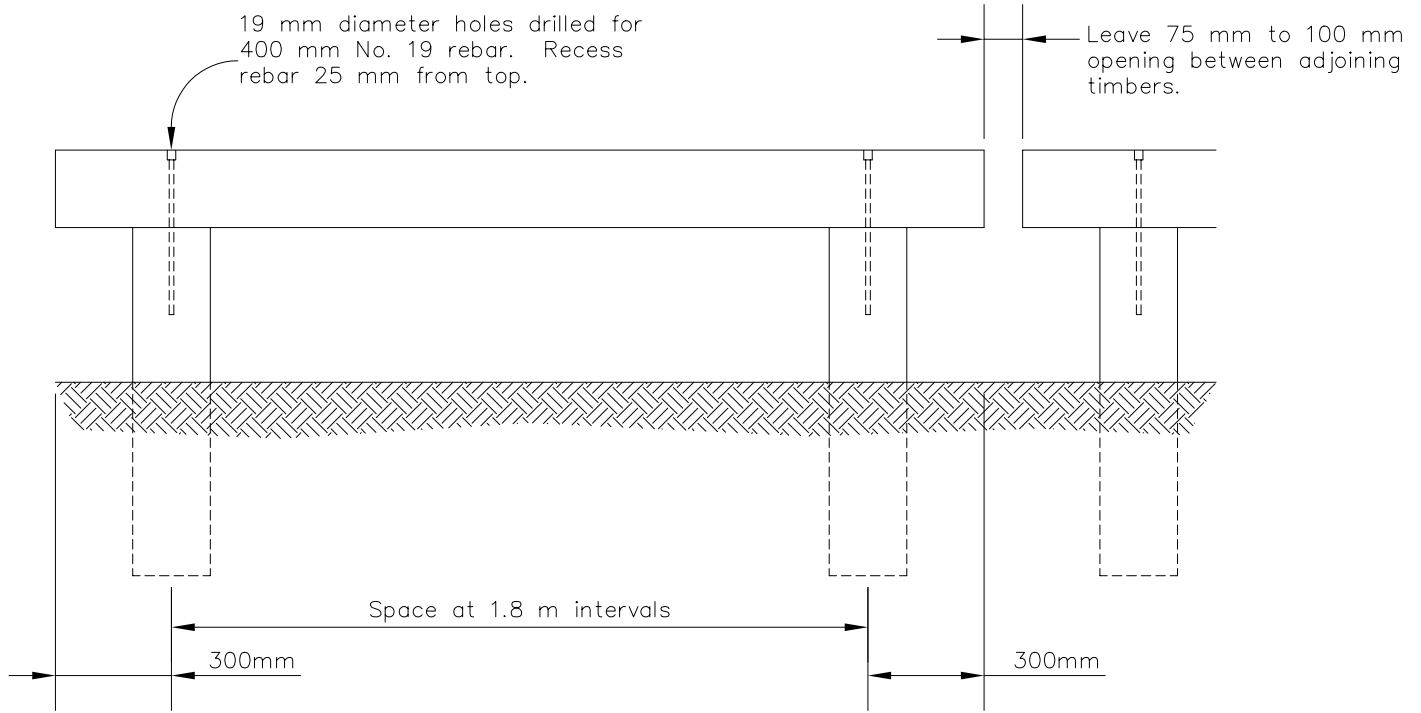


END VIEW TWO TIMBER

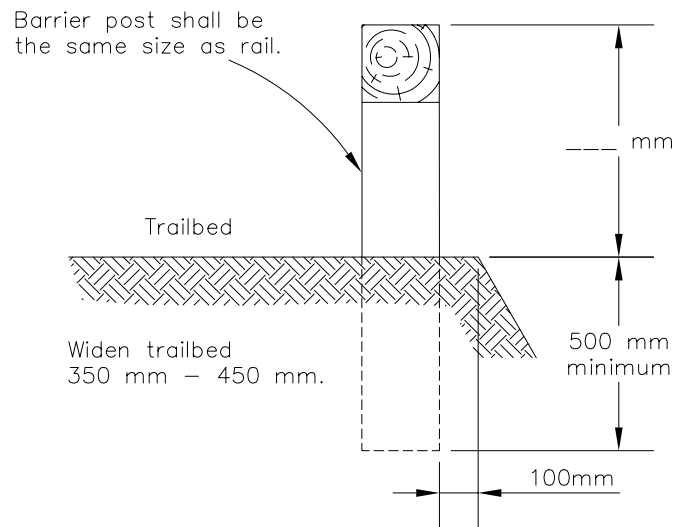
LOCATION	MATERIAL DIMENSIONS (mm)	SPECIES	TREATMENT TYPE	MINIMUM RETENTION

# TREATED TIMBER BARRIER ON POSTS

NOT TO SCALE



FRONT VIEW



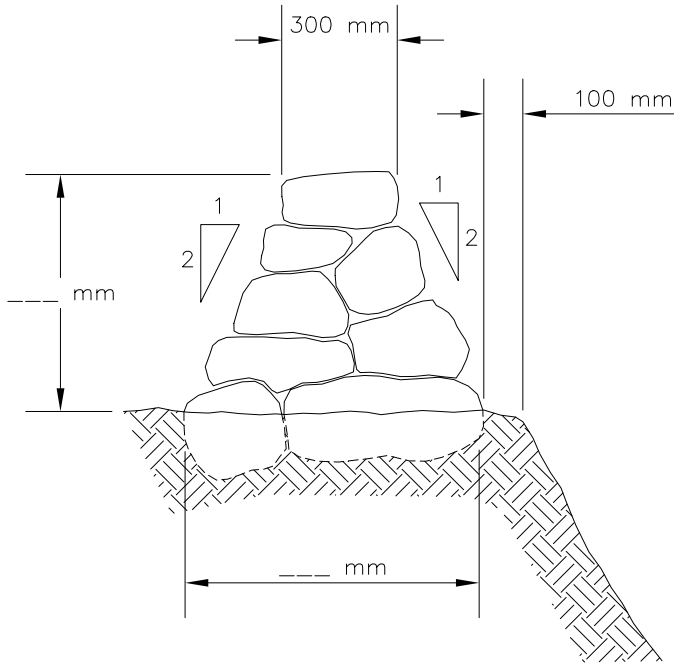
END VIEW

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

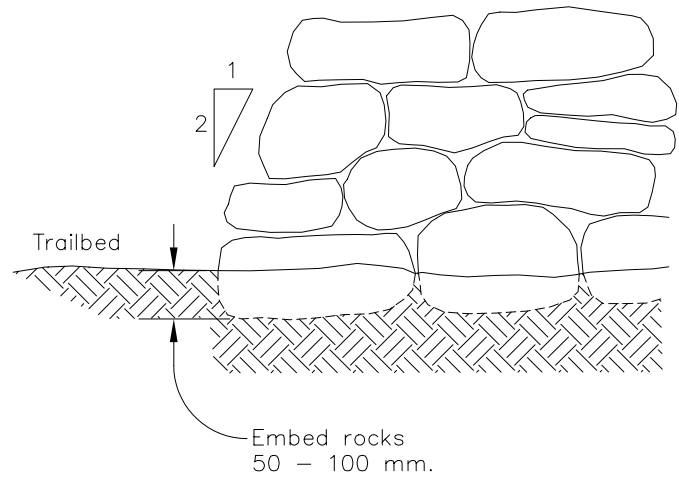


# ROCK BARRIER

NOT TO SCALE



END VIEW



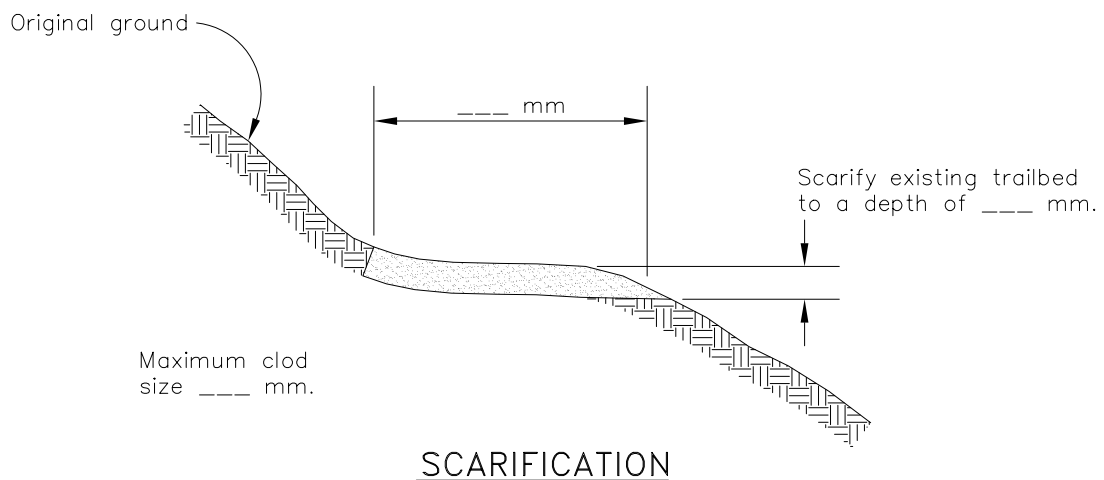
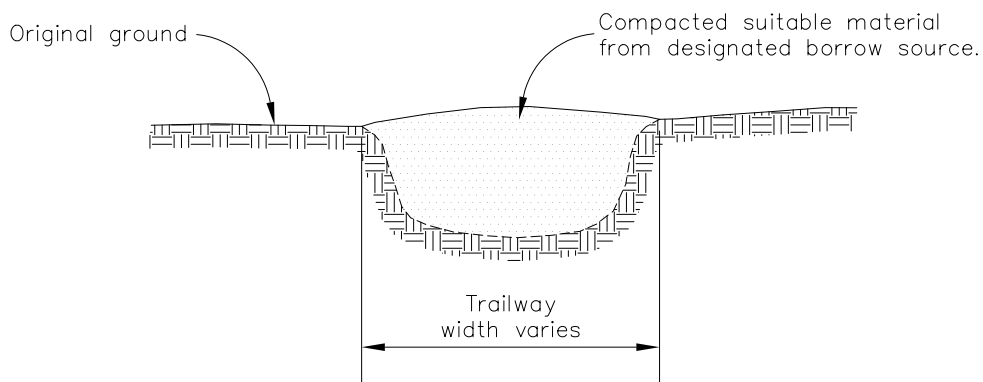
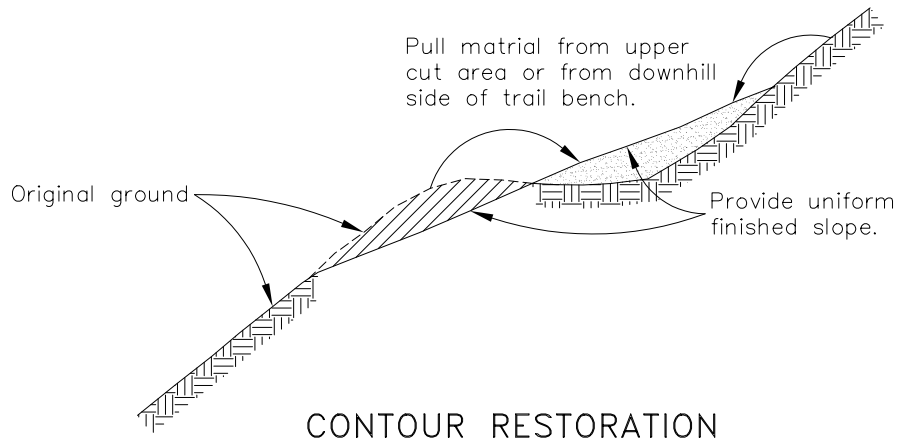
FRONT VIEW

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 <sup>2</sup> )	% Weed Content	% Crop Seeds	% Inert Matter	Origin

Test Date \_\_\_\_\_

Apply seed by the \_\_\_\_\_ method.

Apply fertilizer at a rate of \_\_\_\_\_ kg/m<sup>2</sup> in \_\_\_\_\_ applications by the \_\_\_\_\_ method. Provide fertilizer meeting the following requirements:

Nutrient	Percent
Nitrogen, N.....	_____
Phosphorus, P205....	_____
Potassium.....	_____



## Appendix E: TRACS Tips



### Observations, Tips & Suggestions

This section is included in the *TRACS User Guide* to provide space for you to store trail survey tips, ideas and examples that you find useful. Add to this section to meet your trail program needs.

Additional tips and sources of reference material could include lessons learned and examples resulting from trail survey experience on your unit or adjacent units; advice from Forest and Regional Trail Coordinators; and non-Forest Service trail publications and websites. Share helpful references and documents with your peers and other trail managers.



# Implementing TRACS: Lessons Learned

Diane Taliaferro, USFS

## Pre-Trip and Survey Planning

- Required to survey 20% of system trail miles each year during a 5year rotation. 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.

# Appendix F: TRACS Trail References



## General Trail References

May 2008

- **FSM 2350 Trail, River, and Similar Recreation Opportunities** [with Amendments] Access via: <http://www.fs.fed.us/im/directives/dughtml/fsm2000.html>
- **FSH 2309.18 Trails Management Handbook** [with Amendments]  
Access via: <http://www.fs.fed.us/im/directives/dughtml/fsh2000.html>
- **EM-7720-103 Standard Specifications for Construction and Maintenance of Trails**,  
September 1996. Access via: <http://www.fs.fed.us/.ftproot/pub/acad/dev/trails/trails.htm>
- **EM-7720-104 Standard Drawings for Construction and Maintenance of Trails**,  
September 1996. Access via: <http://www.fs.fed.us/.ftproot/pub/acad/dev/trails/trails.htm>
- **EM-7100-15 Sign and Poster Guidelines for the Forest Service**, August 1998
- **Trail Construction and Maintenance Notebook, 2007 Edition** (0723 2806 MTDC)  
Access via: <http://www.fs.fed.us/eng/t-d.php>  
Order copies from FHWA's Recreational Trails Program website:  
<http://www.fhwa.dot.gov/environment/fspubs/index.htm>
- **Forest Service Trail Bridge Catalog, 2007 Update**  
Access via: <http://www.fs.fed.us/eng/bridges/>
- **Forest Service Trail Accessibility Guidelines (FSTAG)**  
Access via: <http://www.fs.fed.us/recreation/programs/accessibility/>
- **Forest Service Technology and Development Centers:**  
Missoula Technology and Development Center: <http://fsweb.mtdc.wo.fs.fed.us/>  
San Dimas Technology and Development Center: <http://fsweb.sdt dc.wo.fs.fed.us/>

## Specific References

### IBS Website

**Intranet:** <http://fswweb.wo.fs.fed.us/rhwr/ibsc/index.shtml>

**Internet:** <http://www.fs.fed.us/r3/measures/index.shtml>

(Note: this internet site is under reconstruction. A redirect link will be available via this address once the new site is available)

Current versions and information on the references below can be found on the USFS Recreation, Heritage & Wilderness Resources Integrated Business Services website:

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

### I-Web and InfraNet

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

**I-Web:** <http://i-web.wo.fs.fed.us/>

**InfraNet:** <http://infra.wo.fs.fed.us/infra/>

# Appendix G: 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

(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)

<b>ROS</b>		<b>WROS</b>	
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  
 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:  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"/> 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 (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 type="checkbox"/> Existing Permit or Agreement (Trail-Specific / Area)
<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 Survey

<b>Trail Name:</b>				<b>Trail No:</b>				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)		
<b>BMP</b>	<b>Feature</b>			<b>Condition</b>				<b>Task</b>			Critical	Non-Crit
<b>EMP</b>	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=	
Qty=		Lgth=		Wdth=		Dpth=		Hgth=		Rad=		Dia=		DistToMtl=		Mtl=	















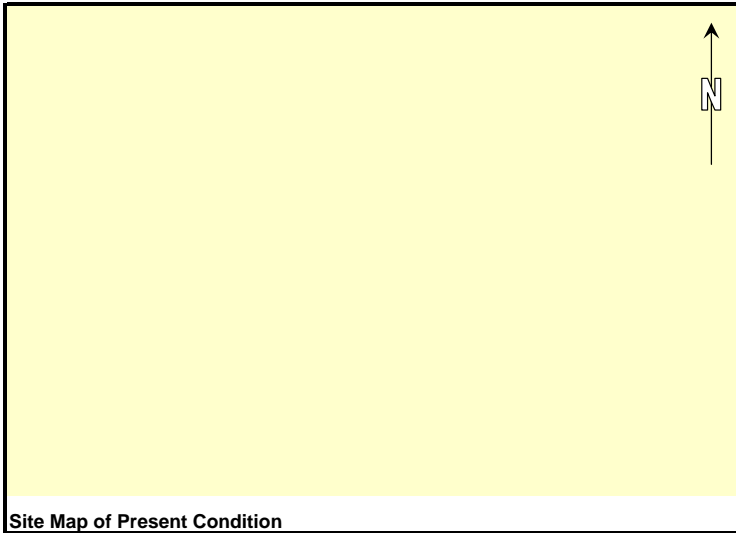


# TRACS Sign Inventory

Trail Name:

Trail Number:

Milepost:



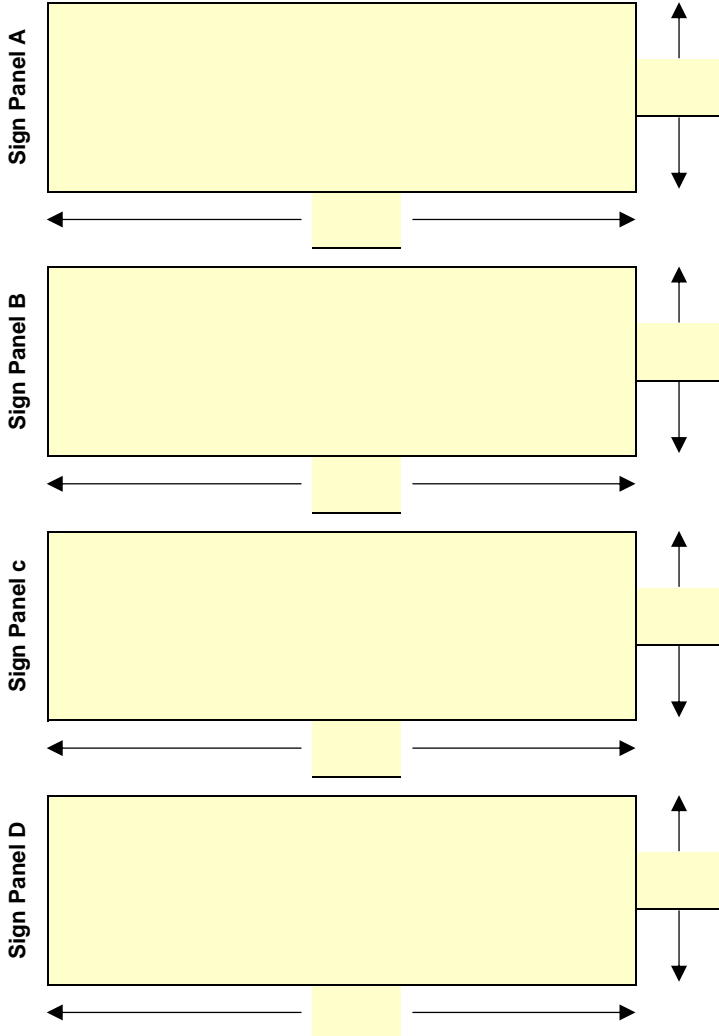
Surveyor:

Date:

Photo ID:

Installation  
Comments:

Sign Panel				Sign Type
A	B	C	D	<input type="checkbox"/> Destination/Guide <input type="checkbox"/> Travel Management <input style="width: 100%; height: 15px;" type="text"/>
<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				Panel Substrate
A	B	C	D	<input type="checkbox"/> Routed Oak <input type="checkbox"/> Plywood <input type="checkbox"/> Plastic <input type="checkbox"/> Aluminum <input type="checkbox"/> Redwood <input style="width: 100%; height: 15px;" type="text"/>
<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"/>	
<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				Letter Size
A	B	C	D	<input type="checkbox"/> 1 Inch <input type="checkbox"/> 2 Inch <input style="width: 100%; height: 15px;" type="text"/>
<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				Reflectorized
A	B	C	D	<input type="checkbox"/> Non-reflectorized <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"/> Live Tree <input type="checkbox"/> Native Post <input type="checkbox"/> Treated Post <input type="checkbox"/> Fiberglass Marker <input style="width: 100%; height: 15px;" type="text"/>
<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"/>	
<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:

Film Roll number:

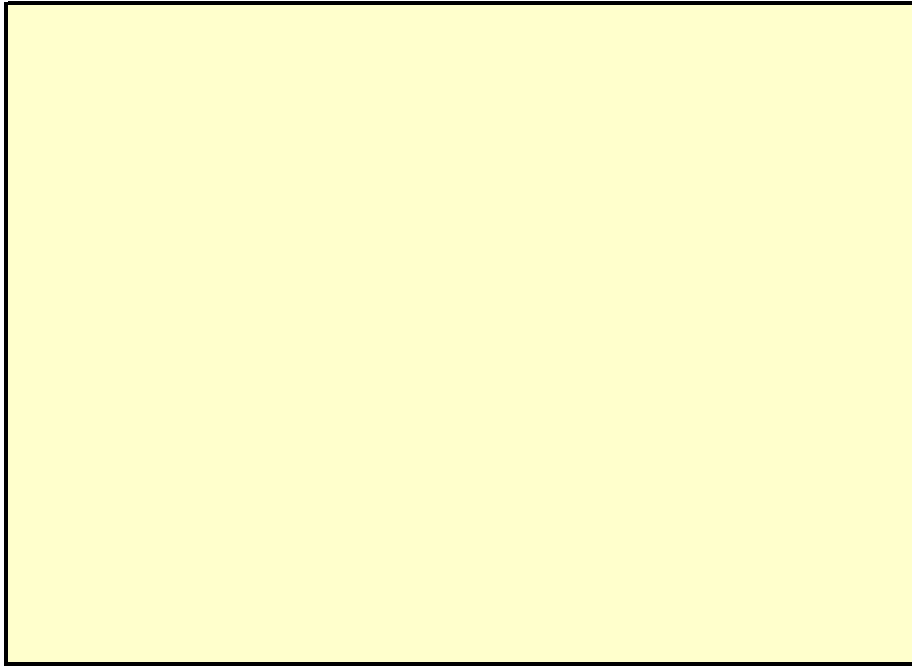
	Date	Location & Description		Date	Location & Description
1	<input type="text"/>	<input type="text"/>	14	<input type="text"/>	<input type="text"/>
2	<input type="text"/>	<input type="text"/>	15	<input type="text"/>	<input type="text"/>
3	<input type="text"/>	<input type="text"/>	16	<input type="text"/>	<input type="text"/>
4	<input type="text"/>	<input type="text"/>	17	<input type="text"/>	<input type="text"/>
5	<input type="text"/>	<input type="text"/>	18	<input type="text"/>	<input type="text"/>
6	<input type="text"/>	<input type="text"/>	19	<input type="text"/>	<input type="text"/>
7	<input type="text"/>	<input type="text"/>	20	<input type="text"/>	<input type="text"/>
8	<input type="text"/>	<input type="text"/>	21	<input type="text"/>	<input type="text"/>
9	<input type="text"/>	<input type="text"/>	22	<input type="text"/>	<input type="text"/>
10	<input type="text"/>	<input type="text"/>	23	<input type="text"/>	<input type="text"/>
11	<input type="text"/>	<input type="text"/>	24	<input type="text"/>	<input type="text"/>
12	<input type="text"/>	<input type="text"/>	25	<input type="text"/>	<input type="text"/>
13	<input type="text"/>	<input type="text"/>	26	<input type="text"/>	<input type="text"/>



# TRACS Photo Record

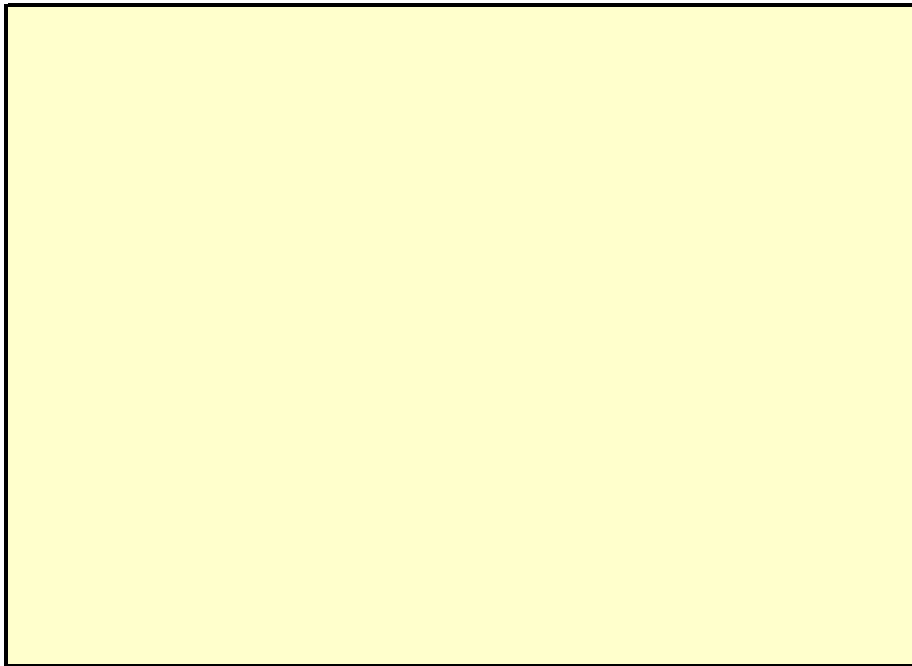
Trail Name:

Trail Number:



Milepost:

Description:



Milepost:

Description:



# Appendix H: My TRACS Stuff

