Pinawa Trail, MB
Daniel Baylis

SECTION: 2

A GUIDE TO CLASSIFYING TRAILS

Purpose:

- Provide a consistent communication tool to inform users of what they can and should expect on the trail.
- Provide trail operators, designers and builders with a consistent way to communicate the trail classification to the target audience.
- Provide visitor-focused trail planning and management direction.

Target audiences:

Trail operators, designers, builders

Visitors

Trail tourism ecosystem

2.1 A VISITOR-CENTRED APPROACH TO TRAIL CLASSIFICATION

We are approaching things a bit differently with the new process for classifying trails. Recognizing that the primary purpose of a trail is to provide positive visitor experiences, it only makes sense that visitors and their experiences be at the core of how we approach trail classification.

Trail classification is typically based on a set number of trail classes or types (e.g., type 1, type 2, type 3, class A, class B, class C). Each type or class usually provides prescriptive engineering and design-based direction for parameters such as tread widths, surfacing, grades, etc. These traditional approaches, though simple, do not allow trail operators to consider the true and often varying needs of their visitors. The historical approaches oversimplify the desires of the visitors and the factors that drive the visitor experience. They presume that visitor expectations will fit neatly into one of the structured trail classes and are unable to truly account for the diversity in actual needs of the various trail activities that may be permitted on a trail.

Over time, we have found this approach can result in a homogenous trail network and experiences that do not meet the needs of different users. In addition, the past approach does not adequately consider and reflect a trail's intended level of challenge, the needs of various activity combinations, or recognize that some trails may be multi-use and deliberately designed to provide an optimized experience for one of the permitted activity types.

These guidelines are not intended to and should not be interpreted as detailed design direction. Trail operators should refer to and apply detailed designs that are appropriate for local conditions.

Recognizing this, we are establishing new national guidelines and approach to trail classification.

This approach recognizes the unique combinations of trail activities and desired experiences. It allows for many different classification combinations, all of which are driven by deliberate decisions about the intended visitors, trail activities and experiences.

These decisions can be used to evaluate whether a trail's design parameters are appropriate for the intended experience on existing trails and to determine the selection of appropriate design parameters for new trails. This will ensure the physical characteristics of the trail have a better chance of delivering the intended visitor experience.

Figure 1 Elements of a Trail Experience (Justin Ellis, 2018)

What is a trail?

A trail is a defined type of infrastructure that is purposefully designed and used for one or more recreation activities or for active transportation. To be recognized as a trail, it must be approved by the landowner, mapped and marked, as well as actively managed and maintained.

What is a trail experience?

The ability for a visitor to engage in a desired trail activity, at a desired level of challenge, within a desired recreation setting and in a desired natural region.

Meewasin Trail, SK
Daniel Baylis

2.2 A STEP-BY-STEP APPROACH TO TRAIL CLASSIFICATION

Trail classification, the selection and/or determination of trail design parameters and the communication of trail characteristics to visitors is an intertwined and step-by-step process (Figure 2).

Step 1

The process begins with trail operators making deliberate decisions about the desired trail classification components and documenting those decisions in a Trail Management Objective (TMO) form (**Appendix A**).

Step 2

For an existing trail, the trail operator should assess the physical design parameters of the trail. Trail operators should compare the current design parameters of the trail with the design parameters identified in the TMO. Trail operators may need to re-evaluate the trail classification if the current design parameters do not align with the TMO or if they undertake modifications to the trail design to align it with the intended design parameters in the TMO. For new trails, the design parameters set through the TMO should be used to guide the construction of the trail.

TCT has developed an audit tool that can help trail operators determine a suggested technical challenge rating for their trail. Contact TCT at **info@tctrail.ca** for support. This tool is available to both TCT partners and other trail groups.

Step 3

Once the trail classification and design parameters are determined, trail operators should use the information to communicate the trail class (type, permitted activities, level of challenge, level of development and preparedness) and the trail's physical characteristics (e.g., length, surfacing widths, grades, etc.) to visitors on the trail website, trail signage, maps, mobile device applications and other channels.

Flow

Step 1: Classification

1. Season
2. Mode of Travel
3. Type of Use
4. Activity Type(s)
5. Level of Challenge
6. Preparedness
7. Level of Development
8. Design Parameters

Step 2: Assess Design Parameters

1. Clearing Limits
2. Travelled Surface Width
3. Tread Surface Type & Compaction
4. Tread Obstacles
5. Grades
6. Cross Slope
7. Turning Radius
8. Sight Lines

Step 2A: Reconcile Differences

For Existing Trails Only

1. Desired VS Actual

Step 3: Communication

Trail operators should consistently communicate the trail classification, design parameters, and visitor amenities available on or along the trail through signage, websites and other trip planning tools.

See section 2.5 for further details.

Figure 2 Process

2.3 TRAIL CLASSIFICATION

Trail classification is a comprehensive approach to describing and documenting the intended characteristics of a trail and, by doing so, providing answers to the common questions asked by trail operators, builders, visitors and the trail tourism ecosystem (see section 1.1). The trail classification system is comprised of the following components:

1. **Season**
2. **Mode of Travel**
3. **Type of Use**
4. **Activity Type(s)**
5. **Level of Challenge**
6. **Preparedness**
7. **Level of Development**
8. **Design Parameters**

Each component in the trail classification represents an important and deliberate decision for the trail operator. Trail operators should treat this as a step-by-step process where decisions about each component are made and documented sequentially. For each component, trail operators should reflect on a trail's current conditions - or in the case of a new trail, the trail operator's desired conditions - and select the options that best reflect these conditions.

Documentation of these deliberate decisions is important, and we encourage trail operators to document each decision in a TMO form (Appendix A). Once completed, the TMO should be saved, as it can be used to provide consistent development direction to trail maintenance crews and builders. It is also important documentation and evidence should litigation about the trail's condition or development arise in the future.

Each component in the trail classification system is described in the following sections.

Trail Management Objective

A TMO synthesizes and documents, in a single form, the management intention for a trail in a clear, consistent and understandable way. TMOs are referred to and used in guiding all future trail planning, maintenance, design, construction and management decisions.

City of Vancouver, Stanley Park, BC

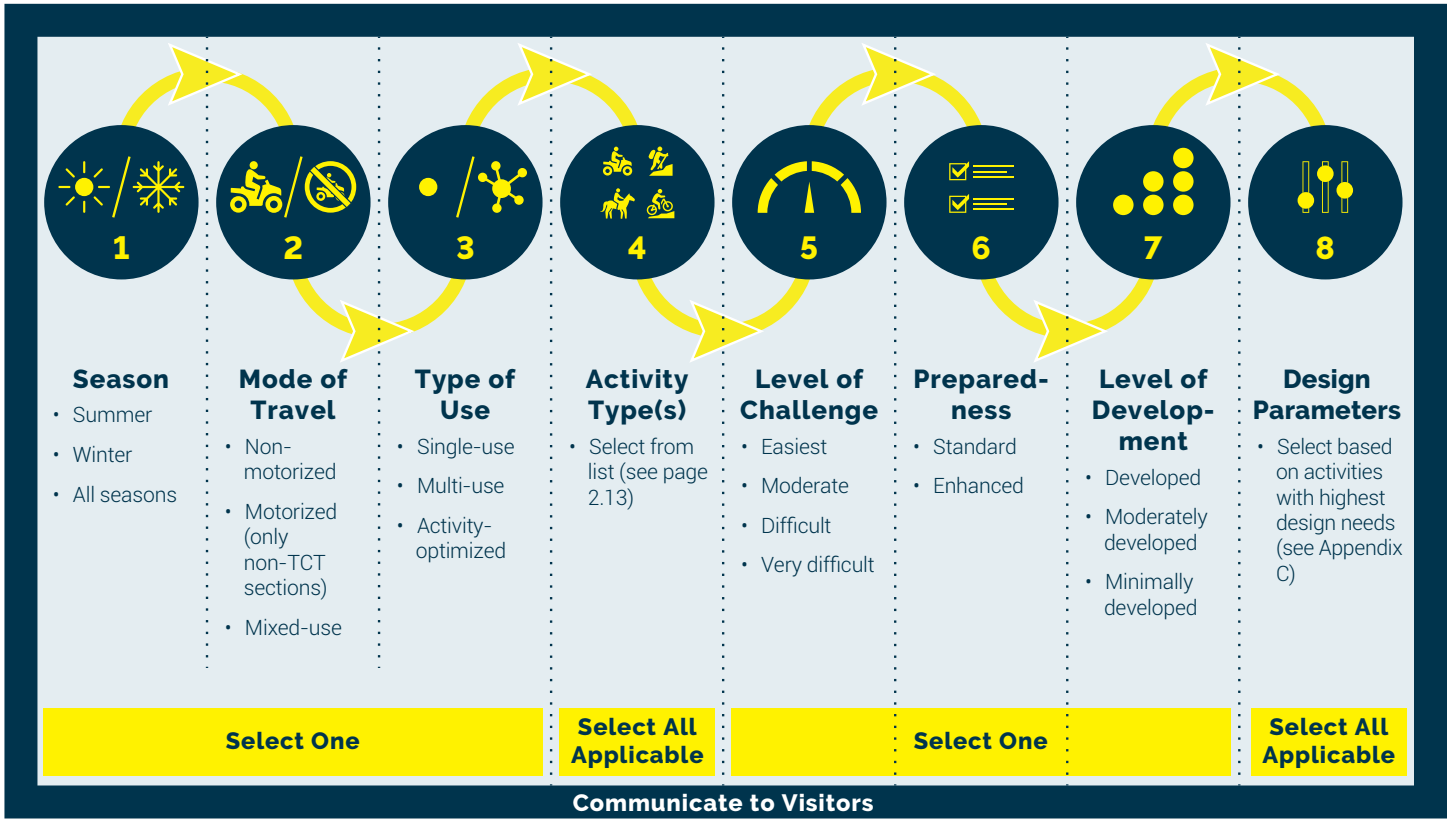
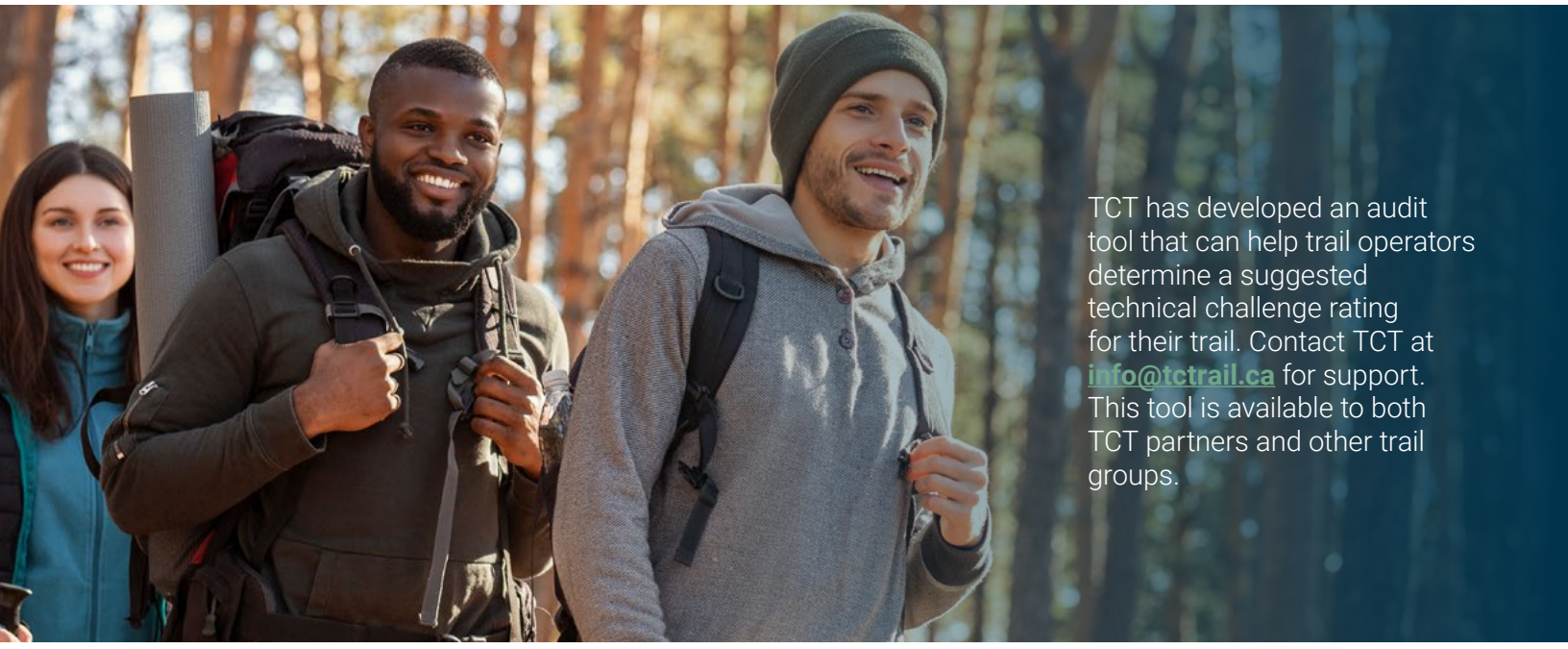


Figure 3 Trail Classification System at a Glance

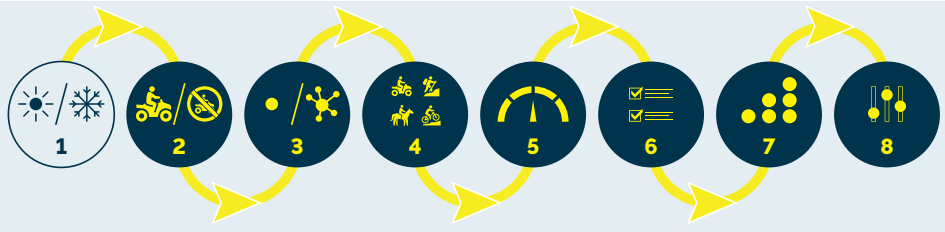


TCT has developed an audit tool that can help trail operators determine a suggested technical challenge rating for their trail. Contact TCT at info@tctrail.ca for support. This tool is available to both TCT partners and other trail groups.

Trail Tip!

Classifying Parallel Trail Treads

In some instances, trail operators utilize parallel separated-use trail treads within the same trail corridor to manage conflicting activity types, visitor experience, volume of use and/or visitor safety. Where parallel trail treads exist, trail operators should classify each trail tread using this guide, and communicate the classification information to visitors through onsite signage and trip planning sources.



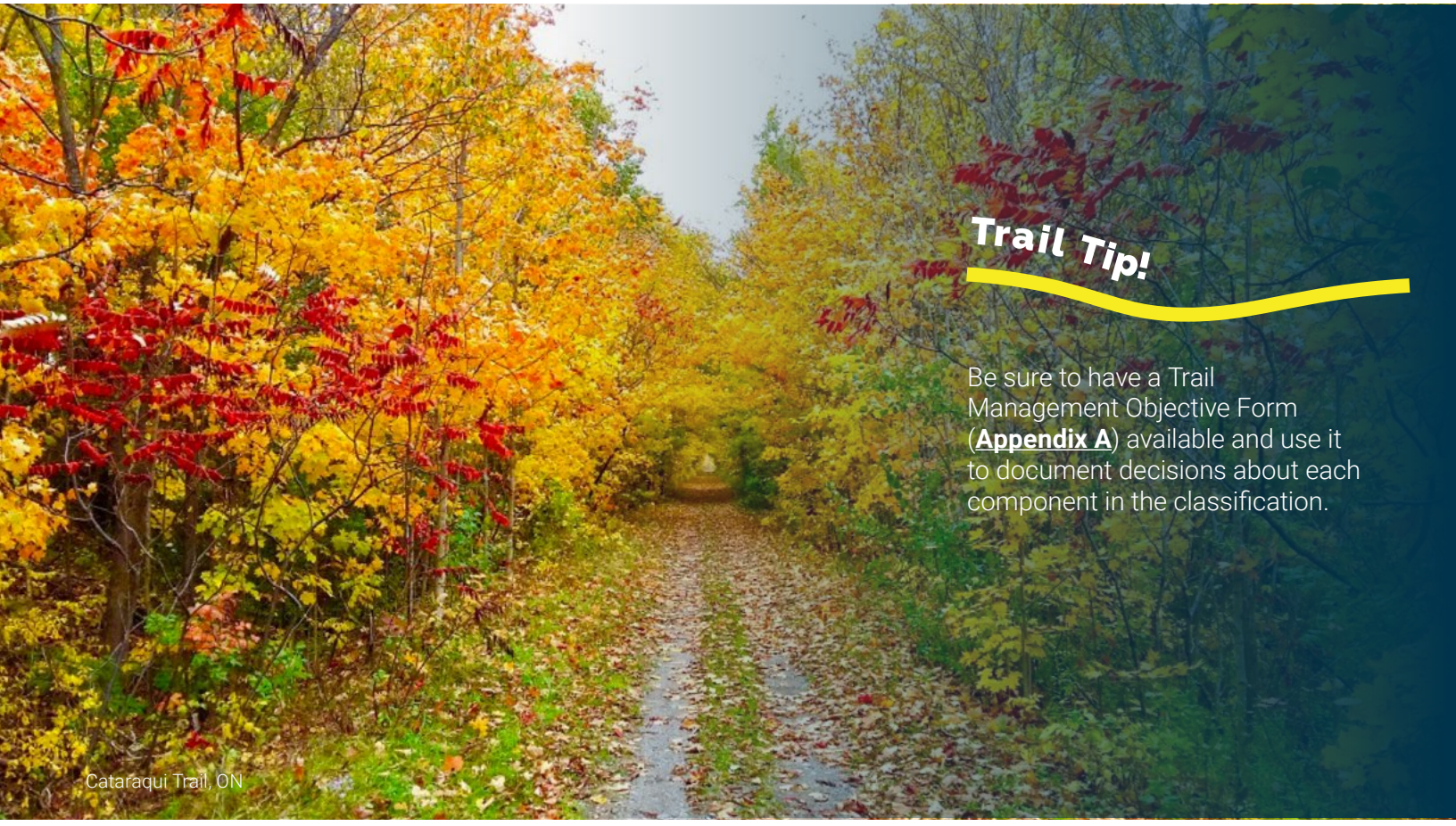
2.3.1 Season

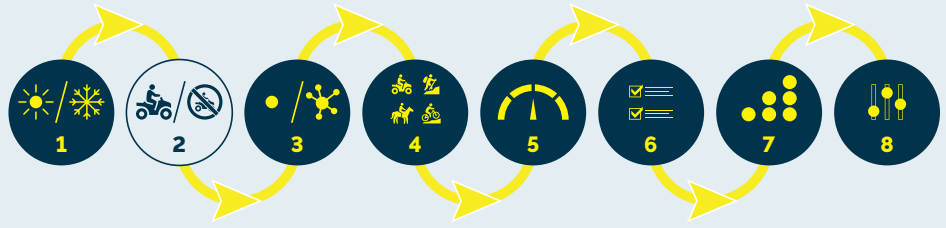
The first decision that needs to be made for the trail classification is to determine in which season(s) the trail will be open/accessible (choose one):

Summer – A trail that supports non-snow-based activities during non-frozen conditions.

Winter – A trail that supports snow-based activities during frozen conditions where the trail is predominantly covered with snow and/or ice.

All-season – A trail that supports trail activities during both summer and winter conditions.





2.3.2 Mode of Travel

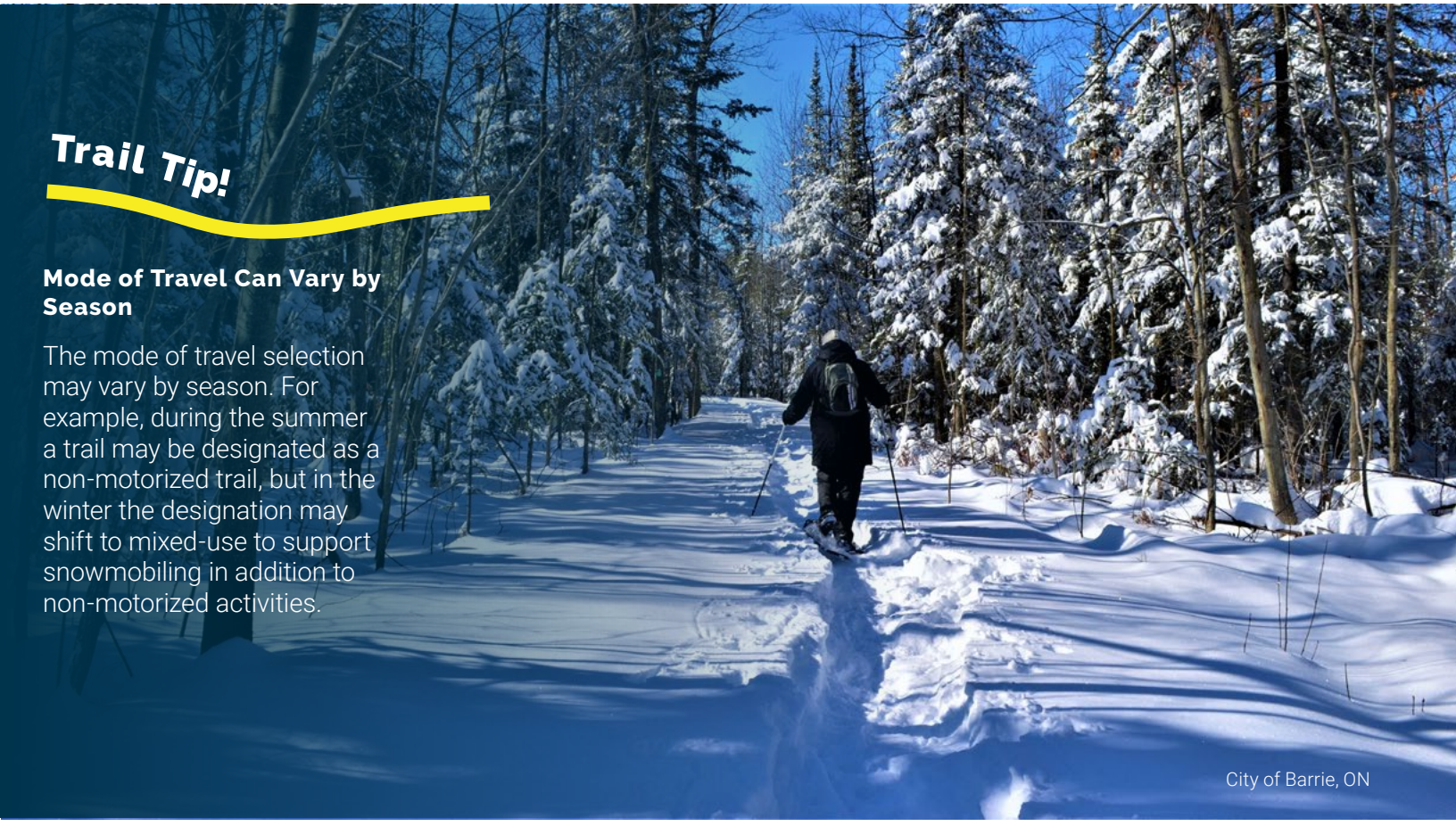
Next, determine which mode of travel the trail supports, or is intended to support. Select from one of the following options:

Non-motorized – a type of travel that is propelled by humans or animals (e.g., horse, dog).*

**Note, type 1 electric-bicycles (see section 2.3.4.1), adaptive cycles (see section 2.3.4.2) and electric mobility devices for people with physical disabilities are considered to be non-motorized modes of travel.*

Motorized – a type of travel that is fully propelled by anything other than muscular power, such as internal combustion engines, type 2 and 3 electric bicycles, segways, etc.

Mixed-use – a trail that permits both non-motorized and motorized modes of travel.

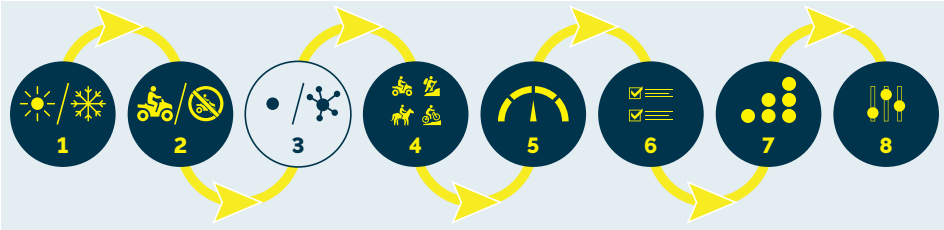


Trail Tip!

Mode of Travel Can Vary by Season

The mode of travel selection may vary by season. For example, during the summer a trail may be designated as a non-motorized trail, but in the winter the designation may shift to mixed-use to support snowmobiling in addition to non-motorized activities.

City of Barrie, ON



2.3.3 Type of Use

With the mode of travel identified, the next step is to determine whether the trail accommodates single or multiple trail activities. Select from one of the following options:

Single-use – trail is designed and managed to permit a single trail activity.

Multi-use – trail is designed and managed to permit multiple activities in compliance with the permitted modes of travel. Note: all mixed-use trails are, by definition, multi-use as they permit more than one activity.

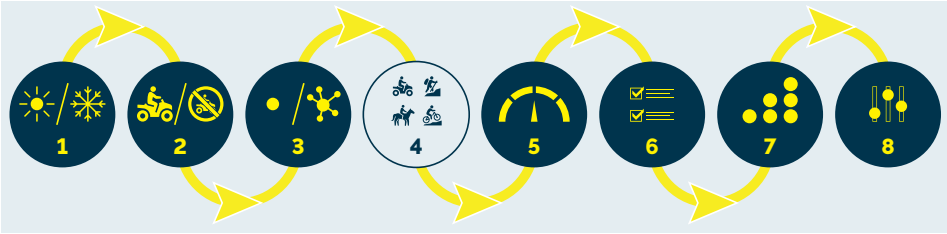
For a multi-use trail, a determination needs to be made as to whether it is optimized to enhance the experience for a specific activity or not.

Activity-optimized – a trail that permits multiple activities but has been designed and is managed to optimize the experience for one specific activity. Activity-optimized trails are multi-use trails that contain purposeful features, routings or elements that enhance the experience for one of the approved activity types. For example, a non-motorized trail may permit hiking and mountain biking, but the trail could be designed with appropriate activity-optimized technical trail features to enhance the experience for mountain biking.

Activity-Optimized Features

Activity-optimized features are developed to enhance the experience of a specific trail activity. These features should be strategically placed in the trail corridor where they can be enjoyed as a preferred activity, but remain relatively unnoticed by other permitted trail users.

City of Saint-Lambert, QC



2.3.4 Activity Type

The next step is to determine which activities are permitted on the trail. Note that different activities may be chosen for different seasons. For convenience, trail activities are presented by mode of travel: non-motorized and motorized.

Non-Motorized

- Pedestrian - walking, hiking, running
- On-road cycling*
- Leisure cycling*
- Mountain biking*
- Adaptive cycle, mountain biking
- Small-wheeled
- Equestrian
- Equestrian drawn vehicle (buggy, cart, wagon, sleigh)
- Cross-country skiing (classic, skate)
- Snowshoeing

* includes self-propelled and type 1 electric assist – see section 2.3.4.1 for definitions

Motorized

- On-road cycling**
- Mountain biking**
- Off-road motorcycle, dual sport motorcycle
- Motorized vehicle – width 1.5m (60") or less
- Motorized vehicle – width greater than 1.5m (60") but less than 1.83m (72")
- Motorized vehicle – width greater than 1.83m (72")
- Snowmobile or snowbike – width 1.5m (60") or less
- Snowmobile – width greater than 1.5m (60")

** includes type 2 & 3 electric bicycle – see section 2.3.4.1 for definitions

Note - this is a list of common trail uses at the time of this document being developed. If the trail operator has additional permitted uses they can certainly be added to their TMO.

2.3.4.1 Power-Assisted Bicycles (electric bicycles)

The popularity of power-assisted bicycles, more commonly known as e-bikes or electric bicycles, has grown rapidly in the past few years. Electric bicycles have brought many benefits as well as some new management and policy challenges for trail operators. Some electric bicycles simply assist a rider by making pedalling easier while others allow the rider to travel without any pedalling through a throttle control. From a trail management perspective, this new technology begins to blur the traditional definitions of non-motorized and motorized activities, and consequently which activities are permitted on which trails.

Electric bicycle technology is highly variable and is rapidly evolving. National and provincial/territorial governments are responsible for establishing clear definitions, classifications and regulation of power-assisted bicycles. Currently, these elements are not consistent across Canada. Where definitions do exist, they are broad and do not provide detailed stratification to support trail management. In response, some jurisdictions (e.g., British Columbia) have refined their policies to enable clear trail management decisions.

TCT wants to maximize trail use and does not believe that the definition of "motorized vehicles" should be so broadly construed as to automatically prohibit the use of bicycles or other devices equipped with electric-assist motors. Decisions as to which classes of e-device should be permitted on a trail are best made by provincial/territorial and local trail organizations given the great variability of trail conditions, facilities and uses. However, a primary consideration in determining the appropriateness of electric bicycles should be the compatibility of trail uses and the trail's design parameters to better ensure visitor safety and meet visitor expectations.

TCT encourages trail operators to use trail classification as an opportunity to clarify management and policy decisions on the use of electric bicycles on their trails. To help inform this exercise, a number of jurisdictions[i & ii] have classified electric bicycles into three categories, based on a number of defining characteristics. At the time of preparing these guidelines, TCT encourages the use of the following electric bicycle classifications to help clarify management and policy decisions regarding the appropriateness of electric bicycles on their trails:

Crow Wing Trail, MB
Actif Epica

Class 1 Power-Assisted Bicycle Classification

A Class 1 electric bicycle is one that is equipped with a motor that provides assistance only when the rider is pedalling (pedal assist), ceases to provide assistance when the bicycle reaches 32 kilometres per hour, and has a maximum continuous wattage output of 500 watts.

Class 2 Power-Assisted Bicycle Classification

A Class 2 electric bicycle is one that is propelled by a motor (throttle equipped) with no pedalling required and ceases to provide assistance when the bicycle reaches 32 kilometres per hour.

Class 3 Power-Assisted Bicycle Classification

A Class 3 electric bicycle is one that is equipped with a motor that provides assistance only when the rider is pedalling (pedal-assist) and ceases to provide assistance when the bicycle reaches 45 kilometres per hour.

Class 1 electric bicycles are typically considered to be a non-motorized mode of travel and are often permitted where self-propelled bicycles are permitted. Meanwhile, Class 2 and 3 electric bicycles are typically considered to be motorized modes of travel and are permitted on trails that permit motorized activities. Electric personal assistive mobility devices are typically considered to be a non-motorized mode of travel.

TCT recognizes that some major urban trails are intended to serve as active transportation corridors and, though generally considered to be for non-motorized use, they may permit the use of the three classes of electric bicycles as a low carbon-emitting mode of transportation. In these instances, trail operators should clearly articulate the classification and permitted activities, ensuring appropriate trail design parameters are applied.

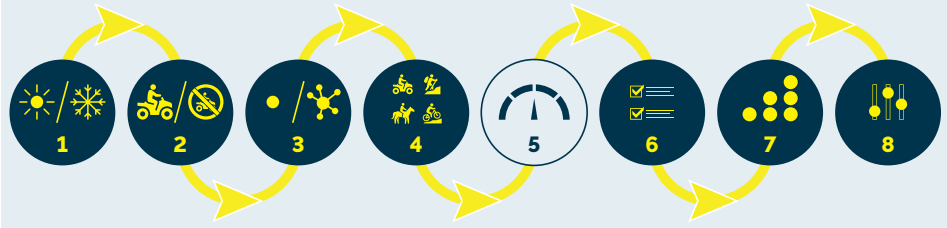
2.3.4.2 Adaptive Cycles and Mountain Bikes

Adaptive cycles and adaptive mountain bikes are a large category of wheeled recreational cycles consisting of hand cycles, recumbent leg cycles, tandem bicycles, etc. They are intended to provide specifically-adapted opportunities for individuals who cannot use a two-wheeled bicycle. Electric adaptive bicycle technology has evolved and has significantly increased market share, and has become a desired alternative for many users.

Adaptive cycles and adaptive mountain bikes with electric motors should be exempt from electric bicycle class restrictions as long as they meet the following criteria and are being operated on trails designated for an adaptive cycle activity:

- have three or four wheels
- have a maximum nominal power wattage set at 800W or less
- have pedal assist, hand cranks and/or direct throttle power

Capilano River Regional Park, BC



Trail Tip!

A difficult rating is one parameter of the classification, and should not be interpreted to represent the degree of accessibility of a space.

2.3.5 Technical Level of Challenge

Trail operators should now determine how technically challenging the trail is, or in the case of a new trail, how challenging the trail is intended to be. Is the trail appropriate for all skill levels? Is it appropriate for only the most experienced visitors? Or is it something in between?

Rating the level of challenge is one of the most important components of the classification system. Matching visitors with trails that have an appropriate level of challenge for their needs is fundamental to ensuring quality visitor experiences, and it is also a critical component in managing risk and liability for trail operators.

Rating the technical challenge of a mixed or multi-use trail is a relative categorization of how difficult the trail is to travel. The physical characteristics of a trail, not the length or elevation, determine the technical challenge of a trail. More specifically, the technical challenge is rated based on the following physical characteristics (also known as design parameters):

- tread surface type and compaction
- travelled surface width
- maximum and target grade
- tread obstacles
- technical trail features

It is important to recognize that rating the technical difficulty of a trail is not an evaluation of the physical exertion that is required to travel the trail due to its length or elevation change.

The technical challenge of trails can be rated as follows:

Rating	Experience	Rating Symbology	Class
Easiest	Beginner	●	1
Moderate	Intermediate	■	2
Difficult	Advanced	◆	3
Very Difficult	Expert	◆◆	4

To improve and maintain national consistency, trail operators are encouraged to adopt the standard challenge rating symbology and integrate this symbology into appropriate signage, trip planning tools, websites, etc. This system has been adapted from the International Mountain Bike Association's Trail Difficulty Rating System and the International Trail Marking System, which are applied in ski areas throughout the country and beyond.

Though rating the technical challenge of a trail is guided by transparent criteria, it is not a completely objective exercise. It requires informed and sound judgement by trail operators. To support the objectivity of the process, we have developed tables that outline the general design parameters by level of challenge for the most common trail activities. These tables are available in **Appendix C**. The following process should be used to rate the technical challenge:

1. **Review the design parameter tables in Appendix C for each of the activities permitted on the trail.**
2. **Reflect upon or inventory the trail to collect data on the current physical characteristics (design parameters).**
3. **Assemble a committee to review and contrast the current physical characteristics of the trail against the design parameter tables in Appendix C and determine an appropriate technical challenge rating. If multiple organizations have rated the technical challenge of a trail and those ratings vary, the organizations should be engaged directly to identify an agreed upon technical challenge rating through this process.**

   It may be possible that the level of challenge for one permitted activity type is substantively different than that for another permitted activity type. In these instances, trail operators may need to communicate the level of challenge for both activities to visitors through trip planning materials as well as trailhead and on-trail signage.
4. **Seek input from trail users on the proposed challenge rating.**
5. **Finalize the technical challenge rating and document it in the Trail Management Objective form.**
6. **Communicate the technical challenge rating to visitors through signage, trip planning tools, websites, Destination Management Organizations, etc.**

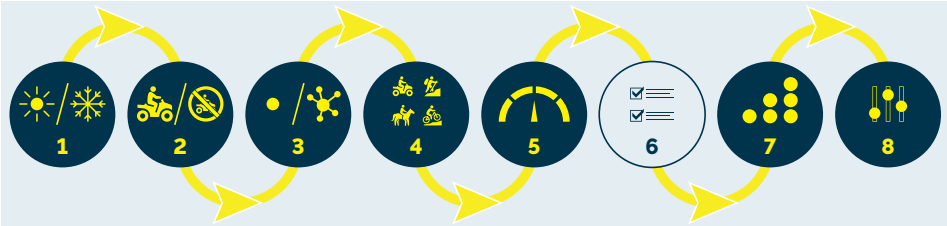
TCT has developed an audit tool that can help trail operators determine a suggested technical challenge rating for their trail. Contact TCT at **info@tctrail.ca** for support. This tool is available to both TCT partners and other trail groups.

Technical Trail Features

Technical Trail Features (TTF) are constructed or natural obstacles that are purposefully integrated or built into a trail to deliver specific user objectives and require visitors to negotiate them. In addition to rating the overall level of challenge of the trail, the level of challenge of TTFs should also be rated and signed. Trail operators are encouraged to identify industry accepted TTF difficulty rating standards that are applicable to the activities the TTFs are serving and apply these rating systems.

As a general guideline, the level of challenge of a TTF should match the level of challenge of the trail and should not exceed more than one challenge level higher than the trail's challenge rating. As an example, a green activity-optimized mountain bike trail can include blue rated TTFs but should not include black diamond TTFs.

Uxbridge, Durham Region, ON



2.3.6 Preparedness

In addition to the technical challenge of the trail, the level of preparedness required to travel it safely must also be determined. The preparedness level is a relative categorization of what the visitor needs to travel the trail safely.

All visitors are expected to take standard preparedness measures to ensure a safe experience (e.g., leave a trip plan, and – take the essentials such as seasonally appropriate clothing, appropriate footwear, water and snacks, etc.). However, it is possible that a trail may be technically easy to travel (e.g., flat rail to trail section), but that its remote location, technical terrain, the inability to get off the trail and/or lack of amenities may require visitors to have a higher level of preparedness for their outing.

It is also possible that visitors may be exposed to hazards along the trail that they need to be aware of in advance; or they may require specialized training and equipment in order to manage risks from the hazard (e.g., avalanche training). In these cases, trail operators are encouraged to use the trail classification to communicate the recommended preparedness level.

Preparedness triggers should be used to identify when an enhanced level of preparedness is required to safely navigate the trail due to the need for special equipment, special skills, increased level of fitness or unique hazards. Trail operators are encouraged to use the definitions and preparedness triggers outlined below to select the appropriate preparedness level for the trail:

Standard – visitors should make standard preparations to travel the trail safely (e.g., trip plan, clothing, water, etc.)

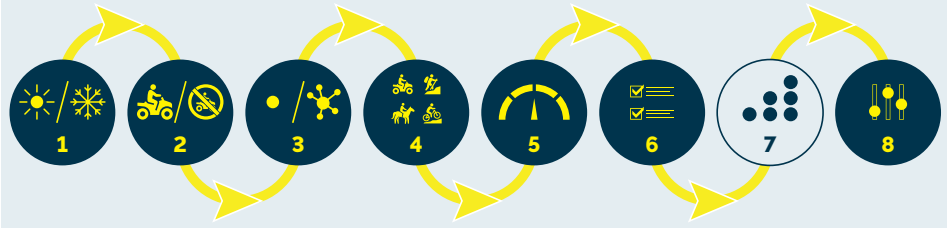
Enhanced – visitors need to make enhanced preparations in order to travel the trail safely. Triggers include, but are not limited to:

- specialty equipment required to travel the trail safely (water purification, avalanche beacon/probe/shovel, etc.)
- specialty skills required in order to travel the trail safely (navigation, wildlife awareness, backcountry travel, mountaineering/route selection, avalanche, etc.)
- enhanced fitness required in order to travel the trail safely
- hazards on or near the trail (avalanche, swift water crossing, etc.) that require visitors to be aware of, and prepare for, in advance of their trip in order to travel the trail safely. This does not require the identification of all inherent hazards on the trail, just those that a visitor needs to pre-plan and prepare for

For trails that do not have an enhanced level of recommended preparedness trail operators are encouraged to provide a standard preparedness statement to their visitors. There are activity-specific considerations to take into account, however at a minimum, trail organizations should advise visitors to know the local conditions, leave a trip plan and take the essentials, such as food, water, clothing, communication and emergency equipment. There are many organizations that provide outdoor safety and education materials, contact TCT at **info@tctrail.ca** for more information on local and national organizations.

For trails that are classified as an enhanced preparation level, trail operators should be sure to communicate which enhanced preparations are required in addition to the above standard preparations.

K&P Trail, ON
Sonya Richmond



2.3.7 Level of Development

The level of development of the trail also needs to be determined. Does the trail provide visitors with access to all the comforts and conveniences of home? Are visitors expecting to rough it with few comforts and conveniences? Or does the trail offer visitors something in between?

When determining the intended level of development of a new trail, or looking to enhance the level of development of an existing trail, it is important to be aware that decisions about the trail's level of development can complement or contradict the recreation setting in which the trail travels. Misalignment between the level of development of a trail and the recreation setting can result in undesirable impacts on the visitor's trail experience.

Figure 4 Level of development should align with the recreation setting

In most cases, the level of development should be guided by, and complement, the trail's recreation setting (see **Appendix B** for a description of recreation settings from the Recreation Opportunity Spectrum). For example, if the trail is travelling through a remote backcountry setting, visitors are unlikely to expect, or want, frequent comfort and convenience amenities and, where provided, will expect these amenities to be of a lower level of service. However, in more front-country and developed areas, visitors may expect more frequent and higher level service amenities.

In determining the level of development, trail operators should be mindful of the level of visitation. Efforts should be taken to ensure that the amenities provided are appropriate for the level of use. In addition, making decisions about the level of trail development affords the opportunity to provide justification to establish or take management actions in order to manage the volume of visitation. This ensures the level of use remains consistent with the intended level of development.

When making decisions about the level of development for a trail, it is recommended that the level of development of nearby trails, in the larger network, also be considered. Just as not all trails provide for the same activity types, not all trails should provide the same level of development. To meet the broad range of desired trail experience, it is important that purposeful decisions be made about the level of development to ensure diversity in the broader trail system.

Three commonly-used terms for levels of developments are:

- developed
- moderately developed
- minimally developed

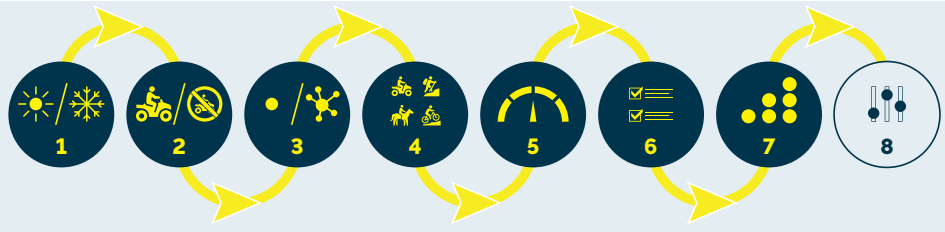
To determine the level of development, the table on the following page should be reviewed. The matrix is provided to assist in determining which amenities are, more or less, consistent with each of the three levels of development and to help ensure that the level of development aligns with the recreation setting through which the trail travels.

The following table is provided for guidance only and trail operators should determine the supply of amenities with due consideration of the mix of activity types, the volume of use, the recreation setting, the supply of trail experiences, and capital and operational resourcing and capacity.

Dutton-Dunwich Trail, ON
MP Prosser

Trail Setting & Amenities by Level of Development

AMENITIES		Level of Development		
		Developed	**Moderately Developed**	**Minimally Developed**
RECREATION SETTING	**Developed**	Appropriate	Appropriate	May be appropriate
	Frontcountry	Appropriate	Appropriate	May be appropriate
	Midcountry	May be appropriate	Appropriate	May be appropriate
	Backcountry	Inappropriate	May be appropriate	Appropriate
TRAIL INFRASTRUCTURE		Structures are frequent and typically constructed of imported materials. May include bridges, boardwalks, curbs, handrails, etc.	Structures of limited size, scale and quantity; typically constructed of native materials. Structures adequate to protect trail infrastructure and resources. Bridges as needed for environmental protection and appropriate access.	Structures minimal to non-existent. Drainage typically accomplished without structures. Bridges as needed for environmental protection and appropriate access.
ACCESS	**Major trailhead**	Appropriate – depending on degree of use/trail significance.	Appropriate – depending on degree of use/trail significance.	Appropriate – depending on degree of use/trail significance.
	Minor trailhead	Appropriate – depending on degree of use/trail significance.	Appropriate – depending on degree of use/trail significance.	Appropriate – depending on degree of use/trail significance.
	Rustic trailhead	Appropriate – depending on degree of use/trail significance.	Appropriate – depending on degree of use/trail significance.	Appropriate – depending on degree of use/trail significance.
SIGNAGE & WAYFINDING	**Major trailhead signs with maps**	Appropriate	May be appropriate	May be appropriate
	Minor trail signs with maps	Appropriate	Appropriate	May be appropriate
	Trail markers/ directional signs	Appropriate	Appropriate	May be appropriate – but bare minimum required to navigate
	Regulatory/caution/ advisory signs	Appropriate	Appropriate	Appropriate – but minimal
	Interpretive signs	Appropriate	May be appropriate	Appropriate – but minimal
COMFORT & CONVENIENCE	**Flush toilet**	May be appropriate	Inappropriate	Inappropriate
	Composting toilet	May be appropriate	Appropriate	May be appropriate
	Vault toilet	Appropriate	Appropriate	May be appropriate
	Waste receptacles	Appropriate	May be appropriate	Inappropriate
	Recycling receptacles	Appropriate	May be appropriate	Inappropriate
	Benches	Appropriate	May be appropriate	Inappropriate
	Picnic tables	Appropriate	May be appropriate	Inappropriate
	Off-loading ramps	May be appropriate	May be appropriate	Inappropriate



2.4 TRAIL DESIGN PARAMETERS

Trail design parameters describe the physical characteristics of the trail. The design parameters of a trail, whether new or existing, should reflect a) the needs of the activities permitted on the trail and b) the technical level of challenge of the trail. Once determined, trail operators should regularly inspect and maintain their trails to ensure that the physical characteristics remain in line with appropriate design parameters. In the case of new trail construction, trail designers and builders should ensure that the constructed trail aligns with the intended design parameters.

Whether managing an existing trail or building a new one, appropriate values for the following design parameters should be determined and documented on the TMO:

Clearing Limits

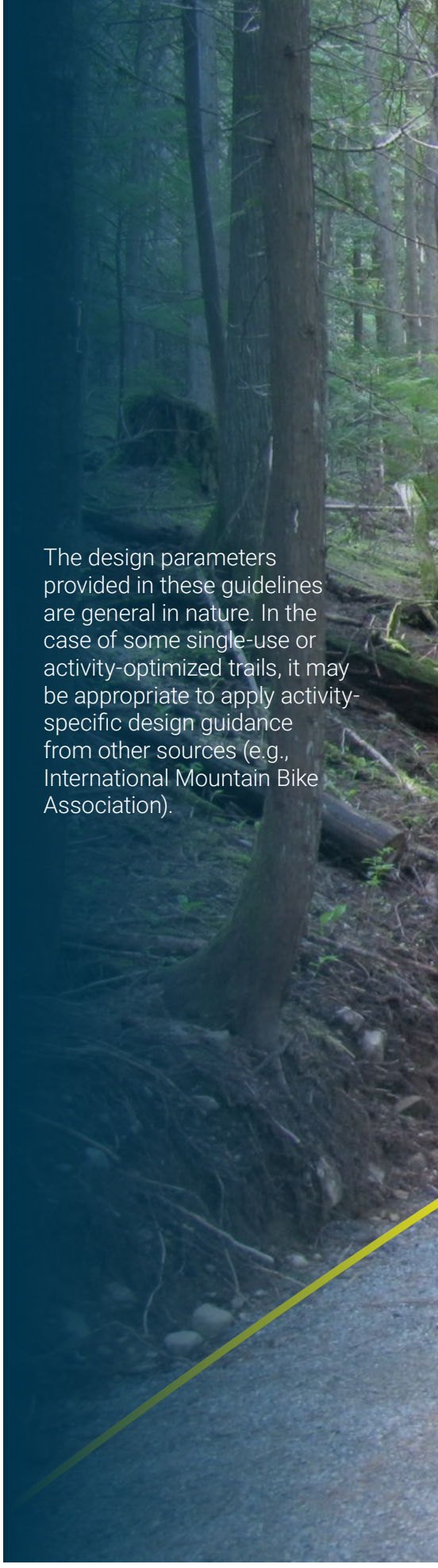
The area over and beside the trail tread that is cleared of obstructions that may impede use of the trail. There are two key clearing limit parameters:

Clearing Height

The minimum height of the clearing limit, measured from the trail tread to the lowest obstacle above the trail tread. Note, that for winter activities, the dimension is measured from the top of the average snow level (varies by location), not from the ground surface.

Clearing Width

The minimum width of the clearing limit, measured horizontally across the trail corridor at its narrowest point.



The design parameters provided in these guidelines are general in nature. In the case of some single-use or activity-optimized trails, it may be appropriate to apply activity-specific design guidance from other sources (e.g., International Mountain Bike Association).


Clearing Width
Clearing Height
Travelled Surface Width
Tread Surface
Type & Compaction

Travelled Surface Width

The travelled surface width is the minimum width of the trail tread, including structure width, on which the visitor directly travels. The travelled surface width varies based on the combination of permitted activities and the intended level of challenge.

Trail operators should ensure that structure widths are, at minimum, equal to the tread width to enable trail visitors to travel over or through the structure without a narrowing of the trail tread width. The structure width must provide additional clearance space to allow the widest permitted activity type to easily pass through and to limit the potential of contacting other visitors or the structure (e.g., handlebars against the handrails of a bridge). Structure width and loading should also be sufficient to accommodate maintenance equipment (e.g., groomers).

Tread Surface Type & Compaction

This parameter is a general description of the type of material used to surface the trail tread, and the firmness and stability of that surfacing material. The most appropriate surfacing description for the following general categories of tread surface type should be selected:

Asphalt, Concrete, Pavers

The trail tread has been surfaced with permeable or non-permeable asphalt, concrete or interlocking pavers. The tread surface is very firm, stable and slip-resistant.

Aggregate – Firm surface

The trail tread has been surfaced with crushed angular aggregates and fines (crusher fines). The tread surface has been compacted, is firm, stable and slip-resistant.

Aggregate – Loose surface

The trail tread has been surfaced with loose gravel or other aggregates without fines. The tread does not compact and remains loose and unstable.

Natural – Firm surface

Tread is composed of native soils with an appropriate mixture of clay, loam and sand. The tread material has been compacted, is firm, stable and does not displace when travelled on.

Natural – Loose surface

Tread is composed of native soils with less appropriate mixture of clay, loam and sand or utilizes other unconsolidated natural materials such as wood chips. The tread material is unconsolidated, may displace when travelled on and/or may be slippery (e.g., clay).

The firmness and stability of a trail tread affects the physical accessibility of the trail.

Firmness

The extent to which the trail tread material compacts or gives way while under pressure from the visitor's mode of travel (e.g., foot, wheelchair, mobility device). As an example, when travelling or turning on sand, the visitor's foot or wheel sinks, making travel difficult.

Stability

The extent to which the trail tread material shifts from side to side when the visitor travels on it. As an example, when a cyclist is travelling on sand and turns their wheel, the wheel displaces the sand, making turning difficult.

Obstacles & Accessible Trails

In most cases, obstacles are barriers and reduce the accessibility of a trail.

Attention should be given to obstacles that are larger than 2.5 cm on aggregate surfaces and larger than 1.27 cm on paved or wooden surfaces.

Trail Tread Obstacles

A tread obstacle is anything that interrupts the evenness of the tread surface and is unavoidable without leaving the trail tread. Common examples of tread obstacles include roots, rocks, water/erosion channels, uneven boards, openings in the tread (e.g., drainage grate) or "lips" created where two different tread materials meet (e.g., crusher fine tread meets bridge decking). Obstacles may be intentionally included or built into a trail to make it more challenging or exciting, or they may emerge overtime as the tread settles and visitation displaces/compacts tread materials or tree roots grow above the surface. Obstacles can limit the accessibility of a trail and, if visitors are not expecting them, introduce tripping hazards. Whether classifying an existing trail or considering the development of a new trail, deliberate decisions should be made as to the intended frequency of trail tread obstacles and the intended height that obstacles will protrude above the tread. This information should be clearly and conveniently communicated to visitors (e.g., trailhead signage, trip planning materials, etc.).

There are two major design parameters relating to trail tread obstacles:

Obstacle Frequency

Obstacle frequency is a general and qualitative description of how often visitors are intended to encounter a trail tread obstacle, and is expressed as:

- none
- occasional
- frequent

Obstacle Height

Obstacle height is an approximate measure in centimetres of how pronounced obstacles are above the tread surface.

Temporary obstacles such as fallen trees are not considered permanent obstacles as they are intended to be removed through maintenance regimes.

Grades

Grade is the vertical difference in elevation (ascent and descent) of a trail. Grade is expressed as the percentage of change in elevation or as a ratio of vertical distance (rise) to horizontal distance (run). There are three major design parameters relating to a trail's grade:

Target Grade

The typical grade of a trail over its entire length (or section of trail) that is deemed to be appropriate for the permitted trail activities and intended level of challenge.

Maximum Grade

The steepest acceptable vertical grade permitted on the trail (or section of trail) that is deemed to be appropriate for the permitted trail activities and intended level of challenge.

Maximum Grade Proportion

The proportion of a trail with grades that exceeds the target grade but is less than or equal to the Maximum Grade. For example, if a trail meets its target grade over 80% of its length but exceeds the target grade for the remainder of the trail, its maximum grade proportion is 20% (grade exceeds target but is less than maximum grade).

mysticmountainadventures, trailforks.com


Grade
Rise
Run

Cross Slope

The grade of the trail tread measured perpendicular to the direction of travel. Treads can be out-sloped (sloping toward the downhill side of the trail) or in-sloped (sloping toward a ditch on the uphill side of the trail). There are three major design parameters regarding cross slope:

Target Cross Slope

The average horizontal grade of the trail tread, measured perpendicular to the centre line, over the trail's entire length (or section of trail) that is deemed to be appropriate for the permitted activities and intended level of challenge of the trail.

Maximum Cross Slope

The steepest acceptable horizontal grade, measured perpendicular to the centre line, permitted on the trail (or section of trail) that is deemed to be appropriate for the permitted trail activities and intended level of challenge of the trail.

Maximum Cross Slope Proportion

The proportion of a trail where the cross slope exceeds the target cross slope but is less than or equal to the maximum cross slope value. For example, if a trail meets its target cross slope over 80% of its length but exceeds the target cross slope for the remainder of the trail, its maximum cross slope proportion is 20% (cross slope exceeds target but is less than maximum cross slope).


Back Slope
Cross Slope
Centre Line

Turning Radius

The horizontal radius a trail activity requires to negotiate a curve (e.g., switchback, climbing turn or horizontal turn) in a single manoeuvre. There is one major design parameter relating to a trail's turning radius:

Target Turning Radius

The minimum horizontal radius required for a permitted trail activity to negotiate a curve in a single manoeuvre.


Radius
Centre Line

Sight Lines

The distance a trail enthusiast can clearly and safely observe the trail ahead or behind. Providing appropriate sight distance allows the visitor to have the time to recognize an obstruction such as debris, other trail users or intersections, and take the appropriate action. There is one critical design parameter regarding sight lines:

Sight Line Distance

The minimum distance that a visitor must be able to see that is appropriate for the permitted trail activities and intended level of challenge of the trail.


Sight Line
Direction of Travel

2.4.1 Selecting Design Parameter Values on Mixed-use and Multi-use Trails

In keeping with the visitor experience focused approach to trail classification, it is imperative that trail operators ensure that the physical dimensions of a trail, whether new or existing, meet the basic design parameters of all permitted trail activities, as well as the intended level of challenge. However, it should be recognized that some trail activities have more demanding trail dimension requirements than others. For example, the clearing height for equestrian users is much greater than that of mountain bikers. Known as "critical design parameters", mixed use, multi-use and activity-optimized trails should be designed in accordance with the most demanding (or greatest) design parameter value from the permitted trail activities.

To determine the design parameters:

1. **Review the TMO to identify the intended level of challenge and the activities that are permitted on the trail.**
2. **Use Appendix C, to identify the design parameter values for the permitted trail activities. If the trail is a multi-use, mixed-use or activity-optimized trail, it is important to identify which activity has the greatest demand for each design parameter and utilize that value from the respective activity table.**
3. **Document the required design parameter values on the TMO.**
4. **For an existing trail, determine whether any changes to the trail design should be made to address misalignment between the intended and actual trail conditions. Areas of misalignment can become focal points for maintenance and/or trail upgrades.**

See **Appendix C** for design parameters for each major trail activity and level of challenge.

Critical Design Parameter

The most demanding (or greatest) design parameters based on the permitted trail activities.

Selecting Critical Design Parameters

As an example, consider a summer non-motorized multi-use trail that is intended to provide a moderate technical challenge for pedestrian, equestrian and mountain bike activities. Appendix C provides the design parameters per activity. The activity that has the highest demand for each design parameter should dictate the design of that parameter.

Classifications

Activities

Design Parameter		Activity with Most Demanding Design Parameter
Clearing Limit	**Clearing Width**	
	Clearing Height	
Tread Width	**Tread Width**	
	Structure Width *(minimum width)*	
Surfacing	**Surface Type**	
	Obstacles *(max height)*	
Grades	**Target Grade**	
	Maximum Grade *(short)*	
	Maximum Grade Proportion	
Cross Slope	**Target Cross Slope**	
	Maximum Cross Slope	
Turning	**Target Turning Radius**	
Sight Lines	**Sight Line Distance**	

2.5 COMMUNICATING THE TRAIL CLASSIFICATION TO VISITORS

An effort should be made to integrate the most pertinent trail classification information into trailhead and on-trail signage as well as to communicate the trail classification details to visitors through trip planning information sources such as trail maps, brochures, websites, smart phone applications, etc. At a minimum, the following information should be made available to visitors before they arrive, as well as at the trailhead before they begin their trail experience:

- season of use
- mode of travel
- whether the trail is optimized for a particular activity
- permitted trail activities using standardized representational icons
- prohibited trail activities using standardized representational icons
- technical level of challenge using the class rating symbol
- preparedness rating, standard preparedness statement as well as any enhanced preparations
- physical design parameters of the trail including (see Figure 5):
  - » length
  - » elevation gain and loss
  - » typical and minimum tread and clearing width
  - » tread surface, firmness and stability
  - » typical grade, maximum grade and maximum grade proportion
  - » typical cross slope, maximum cross slope and maximum cross slope proportion
  - » tread obstacle frequency and height
- amenities available on/along the trail and whether they are universally accessible

Salt Marsh Trail, NS
Paul Tingley

"When we work together, nothing can stop us from creating an accessible world. It's an inclusion revolution."

Maayan Ziv, Founder
CEO, AccessNow

2.6 ACCESSIBLE TRAILS

Trails offer numerous physical and mental benefits. TCT believes everyone deserves access to trails as a means of improving their health and well-being, and is committed to making trail experiences available to all.

TCT's vision is to inspire everyone to embrace the outdoors, and accessible trails are an important component of developing meaningful access on trail networks. Accessible trails may fall under different designations: accessible, universally accessible, barrier-free or other regional/national categories. Each of these categories have different parameters, and it is important to note that some have legislated requirements, depending on the trail, as well as the province/territory.

TCT encourages and supports the meaningful development of accessible trails. All too often, trails are built with some accessible features, but with other inaccessible features. An example is an accessible trail with an inaccessible washroom. Or an accessible trailhead with an inaccessible trail. Meaningful access involves careful planning of all aspects of the trail experience to ensure that all users can enjoy full participation.

Providing accessible trail experiences requires deliberate planning and design, not only of the trail tread (e.g., tread width, tread firmness and stability, clearing heights/widths, grades, cross slopes), but of every component of the trail experience. Trail operators must build access into all amenities and services, from pre-trip planning (websites, maps) to parking, washrooms, signage, amenities, programming and other elements.

TCT also encourages the Universal Design of trails. Often accessible trails are designed using a narrow definition of accessibility. But all trail users, at some time, will require accessible trail elements – whether it is a washroom, seating, low grade changes, clear signage, guide ropes or audio tours. Planning for *everyone* will ensure that everyone belongs on trails.

2.6.1 Trail Information

Another important component of accessibility is providing accurate and timely information to visitors about a trail's physical characteristics and conditions. This information will help visitors make better-informed decisions about the suitability of a particular trail. However, currently, this information is not always being regularly or consistently communicated.

At a minimum, trail operators are encouraged to make the following Information readily available to visitors prior to using the trail:

- trail length
- surface type, firmness and stability
- typical and minimum tread width
- typical and maximum grade, and maximum grade proportion
- typical and maximum cross slope
- frequency and height of obstacles
- trail map
- washrooms and other facilities and amenities present along the trail
- infrastructure barriers to accessing the trail, such as width-limiting or right-angle gates
- any other barriers that could impact a visitor's experience

This information should be made available through trailhead signage but also through all trip planning channels so that visitors can make informed decisions before they arrive at the trail. Without this information, it is difficult to know what barriers may be faced on a trail and whether the trail is appropriate and safe.

TCT has partnered with AccessNow (**www.accessnow.com**) to map the accessibility of sections of the TCT across the country. The project will use the AccessNow platform and technology to highlight lived experiences of disability, and to provide users with a navigational resource to discover trail accessibility. The public can access this information, or map their own section of trail, using the AccessNow app.

Trail Information...

...will help visitors make better informed decisions about the suitability of a particular trail for their needs and abilities.

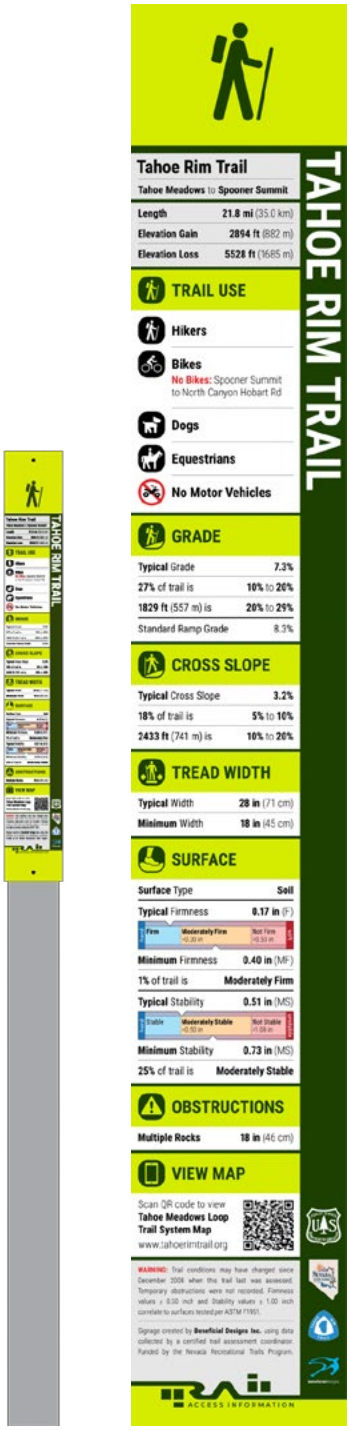


Figure 5 Example sign with trail accessibility information https://www.beneficialdesigns.com/assessment/trails/signage/

2.6.2 Accessible Design Guidelines

These guidelines are not intended to be design guidelines for the development of accessible trails. Given the breadth of provincial/territorial legislation, building codes and accessibility design guidelines across the country, TCT has not, at this time, specified design guidance for accessible trails, comfort and convenience amenities, or visitor services. Trail operators are required to adhere to, or exceed, applicable legislation. If none exists, trail operators are encouraged to refer to other accessibility legislation and municipal and/or sectoral accessibility design guidelines in the design of the trail and associated amenities and services. As an essential component of any accessible trail project, TCT encourages operators to engage trail users with diverse abilities to participate at each stage of the project – to review plans prior to construction, and to test the accessibility features prior to opening.

In some cases, trail users may seek to participate in adventure trail experiences while requiring some accessible elements. Adaptive mountain biking (aMTB) is a fast-growing sport that makes mountain biking available to riders with disabilities. For trail operators interested in developing adaptive trails for mountain biking, Kootenay Adaptive Sport Association (KASA) has developed standards and a rating system for building aMTB trails. Other organizations have created their own versions of aMTB guidelines, many available online.