



TRAIL MAINTENANCE MANUAL

**Developed April 2016
Revised March 2017**

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INTRODUCTION

Building an ATV trail is a challenging proposition for the All Terrain Vehicle Association of Manitoba (ATVMB) and affiliated Clubs. ATVMB's goal, in partnership with Manitoba Conservation, is to design, construct and maintain a trail that is safe, enjoyable and sustainable.

Sustainability in trail design should minimize the ecological impact of the trail and should retain the trail's basic stability and shape through time without abrupt changes recognizing that there are both human and natural forces at work on the trail surface. The concept of sustainability also recognizes that appropriate maintenance and management are also necessary. To these ends, ATVMB has developed a maintenance checklist to assist trail managers through the process of considering, laying out and constructing an all-terrain vehicle trail.

This Manual will provide background information on trail design and guidance on the maintenance of the ATV designated trail system as required under the Land Use Agreement.

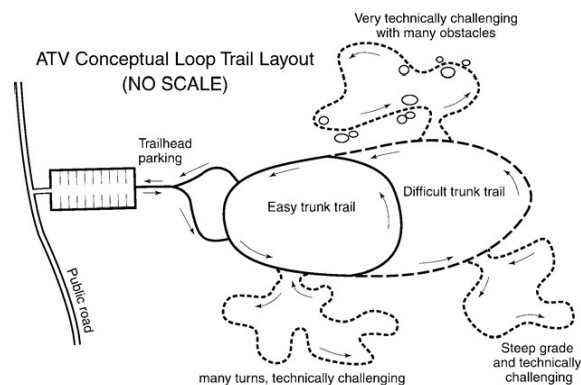
ATV TRAIL DESIGN

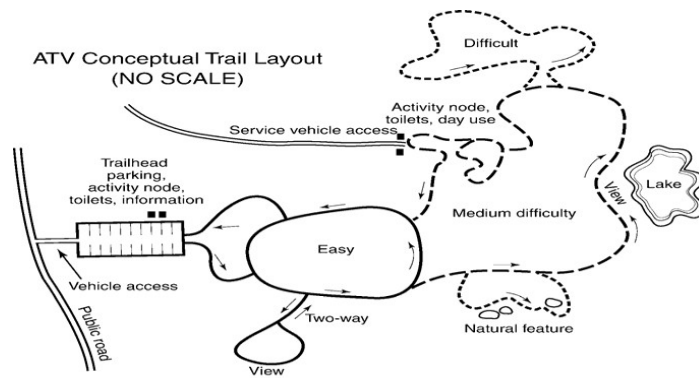
In general, there are two types of ATV trails: Loop Trails and Regional Trails.

Loop ATV Trails

Loop ATV trails are typically 15-30 km's long or more and are composed of a series of looped trails (see graphics below). These types of trails are designed to provide for a range of recreational riding experiences, with the first loop for beginner skill level, second loop for moderate skill level, and third loop for advanced riding experiences. The layout allows the rider to loop back to the trailhead on a trail he/she judges to be appropriate for his/her skill level. This type of trail system will be designed principally for ATV use and will usually have a trailhead with support facilities, including toilets, drinking water and car trailer parking dedicated to ATV use. In addition, this type of trail can be modified to provide scenic corridors with vistas and/or overlooks and provide activity nodes that include day use, camping, fishing, etc., in addition to a riding recreational experience.

Two Conceptual Loop Trails





Regional ATV Trails

Regional ATV Trails are long trail systems that can be several hundred miles in length and cross multiple jurisdictions—often a combination of private lands, municipal lands and crown lands. Because regional trails require a very large geographic area, ATV trails may share the trails with other motorized—and even some non-motorized—recreational uses, e.g., winter snowmobile trails, utilities corridors, ORV roads, logging roads, and abandoned railroad corridors.

Public access is provided at strategic points—usually at 20-to-50 km intervals along the trail. This may consist of a gravel parking area that can accommodate cars and ATV trailers and may also include information kiosks, drinking water, and toilet facilities. However, these support facilities are often more typically provided by private sector businesses in towns and villages on or near the ATV trail. Short spur ATV trails from the main trail may be needed to access services. A typical regional trail network will cross public roads at grade with some high-volume, high-speed roads usually having either above-grade or below-grade crossings.

Generally, regional ATV trails are designed to accommodate ATV riders of basic-to-average skill and do not usually provide the advanced ATV rider with a challenging recreational riding experience.

TRAIL ALIGNMENT

Assuming you have secured appropriate land rights to construct an ATV trail, the first step in laying out the trail is to walk and GPS the trail you have mapped out and stake and flag the centerline of the trails if needed. The process will require minimal clearing of the centerline—this is the best time to make final field adjustments in the centerline to avoid large trees and other obstacles, taking care that the trail is still properly aligned. A combination of wooden stakes at the centerline and plastic flagging to mark the extent of the clearing of the ATV trail should be used. The goal is to align the trail along a smooth arc so as to provide visibility ahead of and behind the rider.

ATV TRAIL WIDTH

The normal straight or slightly curved trail tread for a one-way ATV trail should be a minimum of 5 feet wide for a one-way trail and 6 - 7 feet wide for two-way ATV trail, with 2 feet on either side cleared of hazards for both trail sizes. The trail tread will require additional widening of the tread at turns, bridges, water crossings, and intersections. In addition to the guidelines for the recommended trail widths consideration should be given to the removal of hazards past the two foot buffer

zone for safety reasons. Such examples would be broken trees (commonly known as widow makers) where part of the tree may fall onto the trail creating potential safety hazards resulting in injury to riders.

EVALUATING ATV TRAILS

The construction of an ATV trail has many of the design considerations typical of laying out a light-duty road. The principal difference is that ATV trails are often designed to provide a recreational experience.

The following are major items to consider in the analysis of a potential ATV trails:

Topography

Topographic maps at 1:50,000 scale are the single most useful tool in laying out and evaluating an ATV trail. The maps provide preliminary information on an overall trail system, water features, elevation change, roads, railroads utility corridors, and cultural features.

Another useful source of information is recent satellite photos. They can provide information about current vegetation, wetlands, local development, and, in some cases, evidence of abandoned road or rail corridors that can prove useful for ATV use. The proposed trail and alternatives should be plotted on these maps.

In addition, historic railroad maps may prove useful in locating abandoned railroad corridors. In Manitoba, many short spur railroad lines were built and abandoned during the logging era of the late 1800's and early 1900's.

Soils

To evaluate soil conditions along a proposed trail corridor, consult soil maps and/or contact Manitoba Conservation's Mines Branch officials. University or public libraries may also have local soil maps.

The ideal ATV trail would be located on upland well-drained soils; coarse, gravelly soil would be least expensive to develop for an ATV trail.

The second most desirable soil types are sandy and loamy soils. They may require gravel fill and/or limestone screenings, along with armouring to prevent erosion, particularly on heavily used trails and moderate slopes that might exceed 6%.

The least desirable soil types are peat and other wet organic soils that are water saturated at least part of the year. These will always be the most expensive to develop and will require bridging or some types of special construction.

Solid ledge rock can be found at or near the surface in some parts of Manitoba. It can make a desirable trail, provided the area is reasonably smooth—free of fissures or faults. A word of caution: some rock surfaces can become quite slippery when wet, however, with cautionary signing these areas may still be appropriate for ATV trail use.

Almost all soil conditions can be developed into ATV trails with the expenditure of money, however, development of these difficult areas will also require long-term maintenance costs. In short, these trail segments with adverse conditions should be kept to a minimum for both long-term cost and environmental reasons.

WATER FEATURES

Many trail users highly value proximity or access to lakes, streams and wetlands. However, these resources are easily degraded and a comprehensive set of federal, provincial and local requirements must be taken into consideration when planning trail development in these areas.

Water access is a magnet for trail users. Access points should be carefully identified and designed to prevent erosion and sedimentation problems and unauthorized off-trail operation on banks or beds of waterways and wetlands. Where any of these potential impacts are likely, the trail should be routed away from water features.

Manitoba Water Stewardship, Water Management Specialists should be consulted regarding water law issues related to trail development. Additional details and recommendations for trail development are provided in following sections.

In Manitoba, permits are required to cross all navigable bodies of water and wetlands including marshes, ponds, lakes, streams, rivers, some intermittent streams, and even some drainage ditches that may be navigable only part of the year. The permit will require a detailed review of alternatives and may require rerouting the trail if an alternative can be found that would not impact water features.

If the permit process indicates that no suitable alternatives exist and that a water feature must be crossed, the crossing should be designed to minimize impacts on the water feature. Bridges are recommended for open water crossings. Culverts are less desirable but may be acceptable in certain circumstances. Water fords are the least desirable type of water crossing and should only be used in limited circumstances.

Trail managers and designers should anticipate that trail users may be tempted to go off- trail at water crossings. Techniques such as additional signs, design considerations such as boulders or brush next to a bridge for example and law enforcement will be needed to prevent damage.

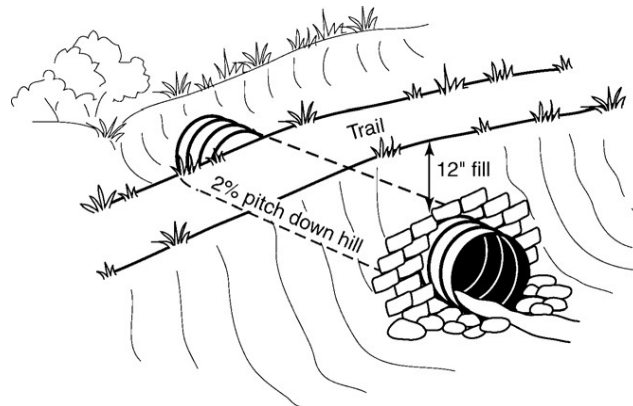
Bridges: Bridges are the most effective and environmentally friendly way to cross a water feature. Things to consider in siting a bridge on an ATV trail:

- All bridges and fords should cross at right angles, if at all possible, to the water feature or flow to minimize environmental impact, provide a safe crossing, and reduce costs.
- Bridge should not be located near a sharp bend in the stream or a river channel. Look for a straight section with natural narrowing with moderate flows.
- If possible, choose a site with upland (higher) bank as opposed to a section with a wetland edge. This will minimize the impact to wetland along the stream.
- Navigable waters require five feet of boat navigation clearance for normal water levels to bottom of the bridge. This will also be required on relatively small waters suitable for canoe and kayak use, even though canoe use may not be common. This may mean that the bridge and approaches will be raised, arched, or elevated above the normal bank height.

- Bridge carrying capacity should allow for mowing equipment (tractor and mower)— 10,000 lbs. at mid span. In addition, in some situations, larger capacity (14,000 lbs.) may be required to do development and maintenance (e.g., gravel truck). In place of heavy bridge construction, a water crossing ford may be used on small to mid- sized streams to provide maintenance access, or means of access other than the ATV trail that would not involve a bridge crossing but could provide the appropriate access.

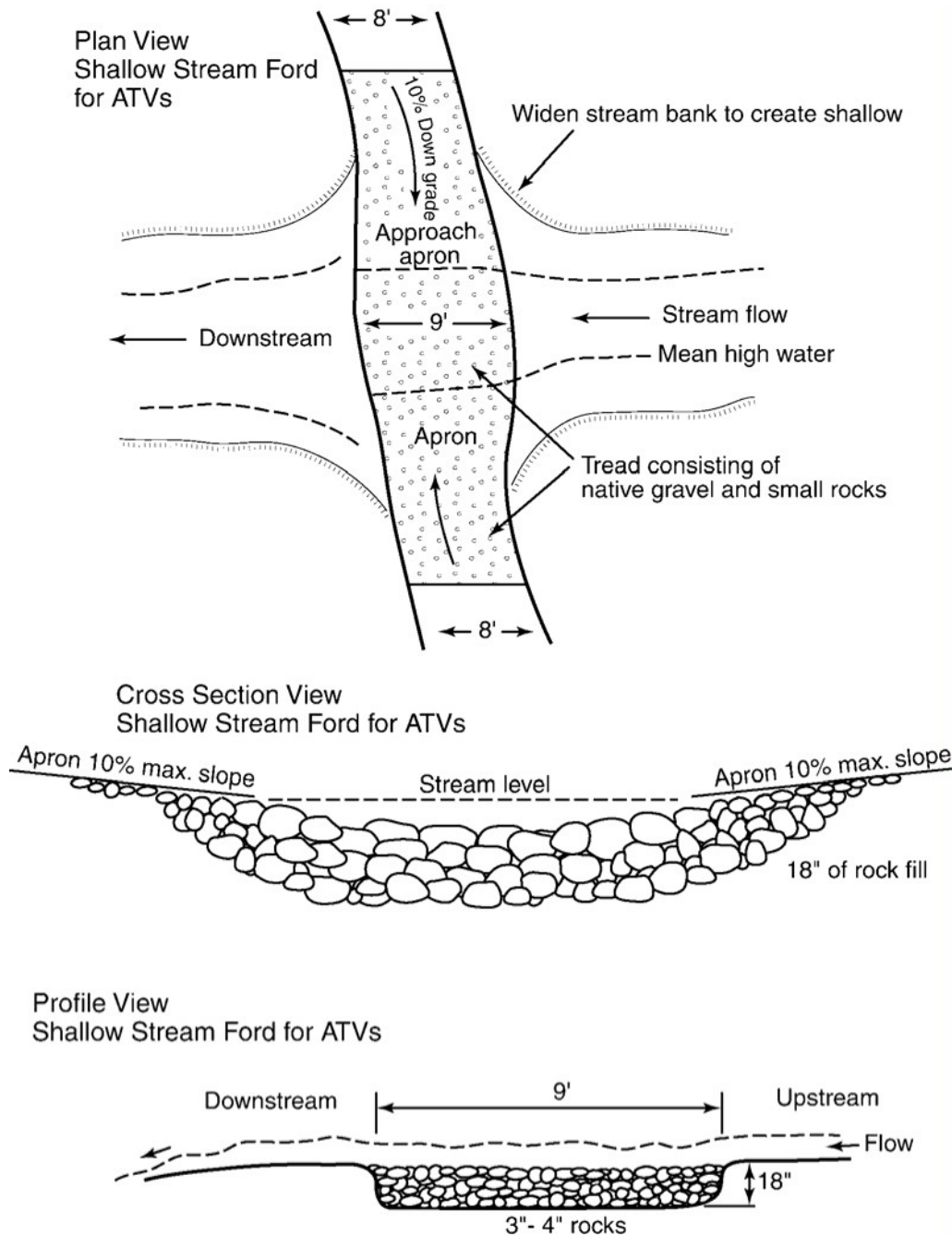
Culverts: Culverts can be an effective means of crossing on only small to moderate streams. Some analysis of the watershed is needed to provide properly sized and placed culverts. Culverts of corrugated steel, plastic or concrete usually require considerable amounts of fill on both sides and one foot of fill above the top of the culvert to provide structural strength. In addition, culverts can be a barrier to some types of fish and aquatic invertebrate migrations. The minimum size culvert should be 18" in diameter to facilitate maintenance, even though a smaller culvert might suffice.

This may mean raising the trail bed as much as 30" above the surrounding grade to accommodate the 18" culvert (see below). All culvert work requires a permit from MB Water Stewardship, and rules and guidelines must be followed as per permit instructions.



Water Fords: Water fords will be considered only on very small streams where ATV use or other vehicle use would be infrequent; otherwise a bridge will be required on most navigable water and intermittent drainage ways that will receive frequent use (more than six crossings per day). The graphic below details the proper construction of a small stream ford.

Construction Detail



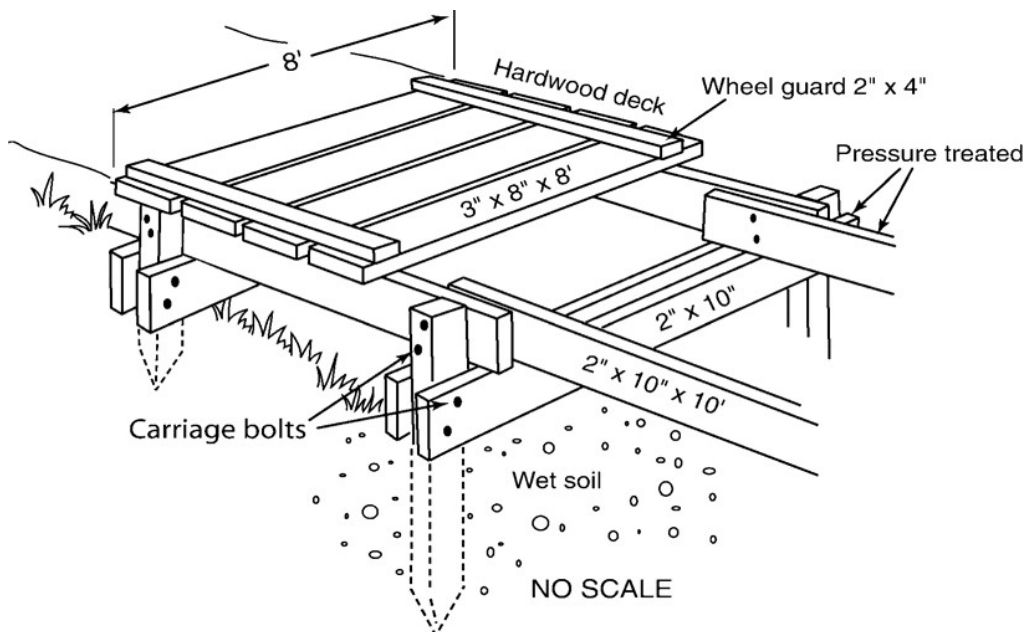
Wetland Crossings: In Manitoba, wetland crossings and modifications (including filling) are regulated activities. The permit application process will require a detailed review of alternatives that would avoid wetland impacts, including a “no action” alternative. Trails may require rerouting if an alternative can be found that would not impact wetlands.

Wetland maps are available through MB Conservation. In dry years, it may not be obvious that a trail is passing through a wet area. Some of the more reliable indicators of wetland conditions are the presence of wetland plants, mottling in the subsoil, or the presence of very dark organic soils and dry peat soils.

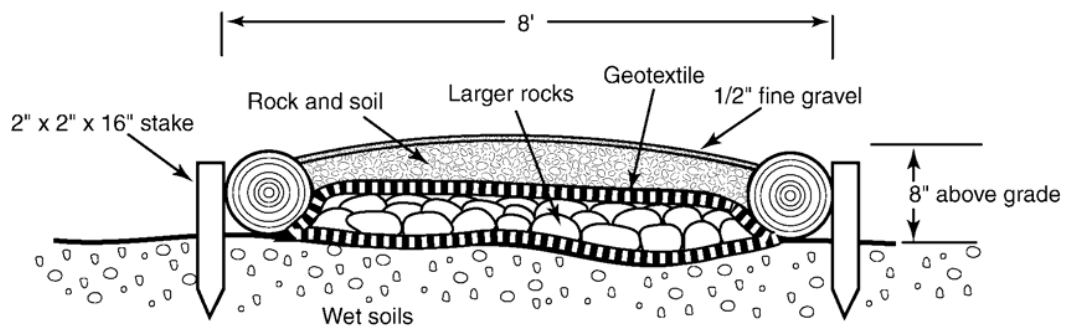
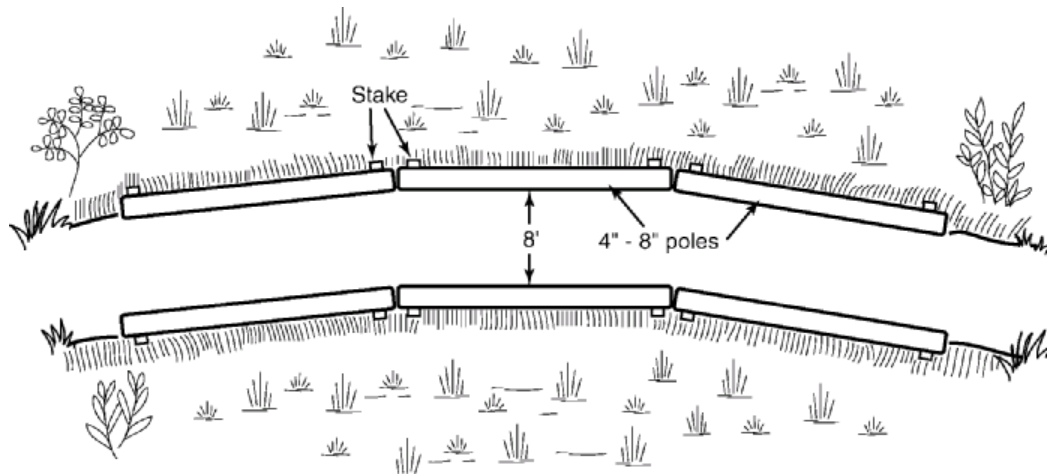
If the permit process indicates that no alternatives exist and that a wetland must be crossed, the Water Stewardship Branch will require use of special construction techniques to help reduce the impacts. Elevated boardwalks (raised plank decking) are preferred; they are considered an avoidance alternative depending on how they are constructed and may be unregulated.

Again, trail managers and designers should anticipate that trail users will be tempted to go off-trail at water and wetland crossings. Techniques such as additional signs, design considerations, boulders, and dense shrub planting next to a bridge, along with enforcement will be needed to prevent damage.

Raised Plank Decking: Raised Plank Decking consists of heavy wood deck planks supported by a low piling. This type of construction minimizes impacts to the wetland but can only be used where underlying soil will support upright pilings. The big advantage of this type of construction is that it utilizes wooden planks and beams that are readily available at commercial lumberyards; they can all be pre-cut and are easy to assemble and fasten in place. However, transportation to remote trail sites can be costly.



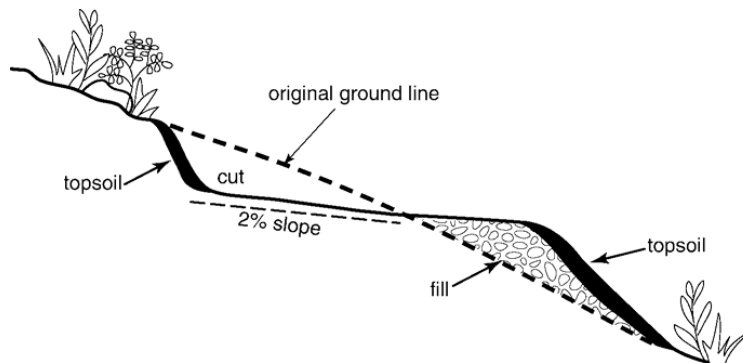
Turnpike or Raised Fill: The use of a long, narrow raised bed of fill to cross wetlands should be avoided if possible. In wetlands, they can collect water and alter the natural surface flows, even with the use of culverts, and can cause significant changes in the surrounding vegetation. It is possible with the use of special geotextiles with larger rock base to design a pike that better accommodates modest water flowing through the base of the structure.



TRAIL DRAINAGE AND EROSION PROTECTION

Surface water runoff is one of the significant impacts of trail development. The more recent thinking is to minimize the collection or concentration of surface water to the greatest extent possible. The following are techniques that can help minimize water problems by the maintenance of natural surface flow across the trail, the frequent use of drainage dips, and proper use and placement of culverts. See details below.

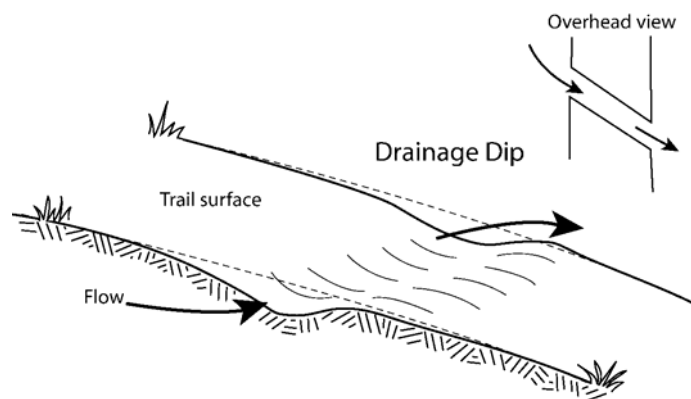
Drainage Cross Section



Drainage Dips

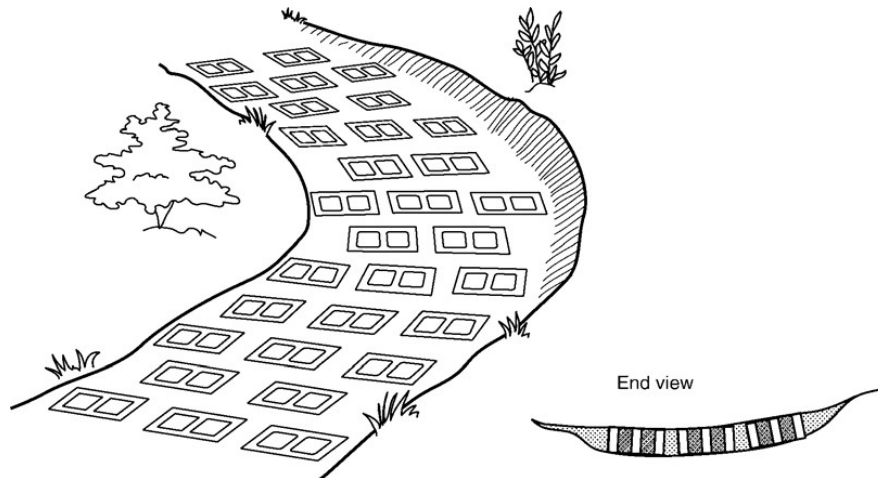
Drainage dips are shallow diagonal depressions in the trail surface that are used to move small amounts of surface water across the trail. They should be used at frequent intervals, i.e., every six feet on the steeper sections of the trail to avoid the collection of water on the uphill side of the trail.

Shallow Drainage Dip 1"-2" Depth



Armouring ATV trails

Even modest turns on level ground are subject to a significant degree of rutting action over time and potential erosion. The rutting action is compounded on sloping ground and if left unchecked can lead to serious erosion. To deal with this situation, it is possible to use cinder blocks or other deeply bedded pavers laid out in a banking pattern to greatly reduce the normal rutting action and reduce long-term maintenance costs (see drawing below).



Trail Maintenance

Grading

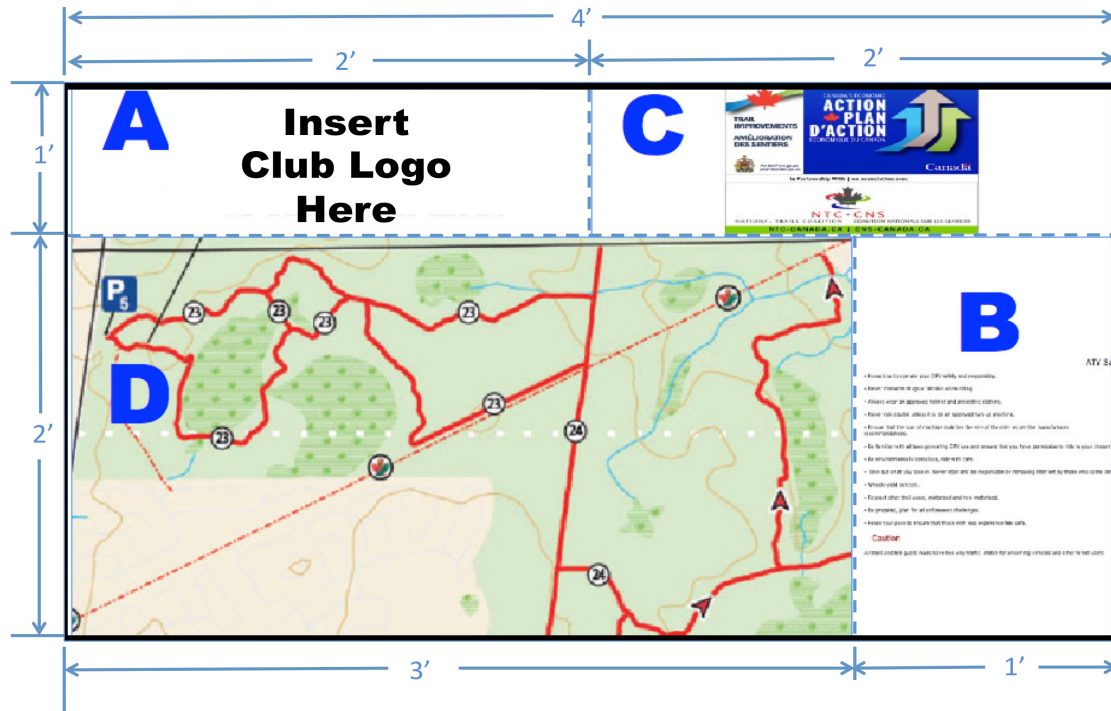
Grading and/or grooming will be required on most new ATV trails. The grading out of a trail usually involves taking down higher spots to be used in nearby low spots of the trail—a process called “balancing out cut and fill.” The goal is to minimize the movement of soil and create a trail that blends with the topography and create generally smooth arcing trails designed for the average ATV rider. Disc and harrow methods have proven to be a useful way of maintaining a trail using the existing soil to fill in ruts or holes that may cause hazards for ATV riders. The use of small equipment such as compact tractors with box blades is another useful tool and can be very effective without doing a lot of damage to the trail or the vegetation along the trail sides. This frequency and location of maintenance activities will be determined through regular trail inspections. Please note that any construction activity on the banks or slopes adjacent to navigable waters and wetlands is a regulated activity. Contact CWS water staff before proceeding.

Trail Signing

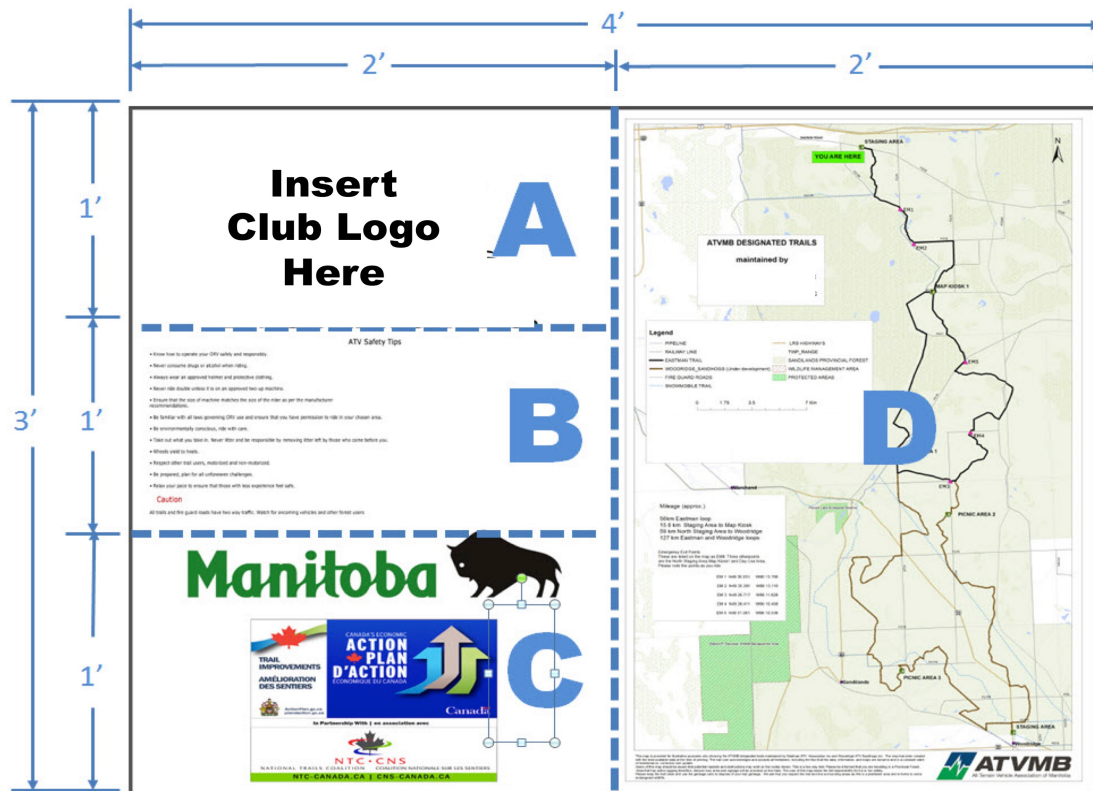
Posted and printed information will be clear, concise and readily available/visible to trail users. Locational signing will identify trail corridors, hazardous areas, emergency numbers, and the location of any associated support facilities (*e.g., rest rooms, camping, parking or staging areas*). Clubs may have information to direct trail users to gas, food, lodging via trail signing and/or printed visitor maps.

Kiosks will be required at key access points along an ATV trail including staging, picnic, and day use areas. Kiosks usually contain user information such as emergency numbers, trail maps, and any information about trail conditions.

The overall kiosk printed area size will be 4 feet wide and 3 feet high with the actual frame dimension varying from club to club due to different materials and construction. The kiosk can be configured in two ways to accommodate maps that are designed to be in landscape or portrait formats. The printed area consists of four zones:



Landscape Trail Map



Portrait Trail Map

A Club Logo (1'x2') – The club's logo which should be of high quality and color

B ATV Safety Tips (1'x2) - Each club will use the latest approved ATV Safety Tips as a minimum. However, if a club has a unique safety tip that pertains to their trail it can be added to the list that must be approved by the Trail Committee Chairperson.

C Acknowledgements (1'x2') - This area is to recognize significant resources and contributions from government or other organizations. Ensure the necessary approvals are obtained from these parties along with the proper logos and pertinent information.

D Trail Map (2'x3')- This area is for the detailed trail map which must:

- Be consistent with the other ATV club kiosk trail maps.
- Have the title- "ATVMB Designated Trail maintained by (full club name)".
- Have a "You Are Here" label on the map indicating where the kiosk is located.
- A legend with illustrations including:
 - Pipelines
 - Railway lines
 - Trails

- Fire guard roads
- Snowmobile trails
- LRS highways
- Ranges
- Provincial forests
- Wildlife management areas
- Protected areas
- Emergency pick-up areas
- Other pertinent map information
- Scale e.g. 0 to 7km
- Useful mileage distances from point to point.
- Emergency pick-up areas will require additional information which can either be included within the legend or separately indicating:
 - Emergency pick-up name e.g. EVAC-LBT-1
 - GPS coordinates – use Decimal Degree format with 5 decimals only. e.g. Latitude = 49.35551 Longitude = -96.16392 (ensure to use “-“ as required)

Emergency pick-up areas should be located in a relatively easy location for various EMS vehicles or helicopters can gain access.
- Include the current ATVMB logo on the bottom right side, which should be approximately 4” wide.
- Include the explanation of legal content. Contact ATVMB Trail Committee Chairman for latest content.

Note: If the kiosk is located in a provincial or federal park, the park’s guidelines could supersede these guidelines.

Informational signing should be placed in one designated area at each trail access point. Usually, a kiosk will be used at the trailhead to help reduce sign clutter and help visitors find crucial information.

Kiosk information will be updated annually or as needed in the case of trail closures due to fire or other hazards. Signage on the trails will include directional signage, information signage, trail hazards and detour signage due to forestry activities. (See Trail closure and Trail Detours).

Standard trail signing will be required on all ATVMB trails following the trail signage guidelines. Minimally, the following types of signs will be erected:

Directional Signs: Directional signs and arrows will be placed along the trail as needed at all intersections or at directional changes in the trail.

Stop Signs: Stop signs will be placed on ATV trails at all public road crossings or where the trail requires riders to turn onto another existing ATV trail.

Slow Signs: Slow signs will be posted as needed to give advanced warning on the trail to reduce speed at bridges, fords, turns, wetland crossing, and changes in speed due to trail conditions.

Trail head sign: Trail head signage is critical to the operation of ATV trail systems and will be used on all trail systems on Crown or Municipal lands,

where weather conditions (dry or travel restrictions), construction and maintenance activity may require temporary closing of ATV trails.

Entrance sign: These may be required along public access roads leading to the ATV Trailhead. In addition, Provincial and Federal highway directional signs may be required on major approach roads.

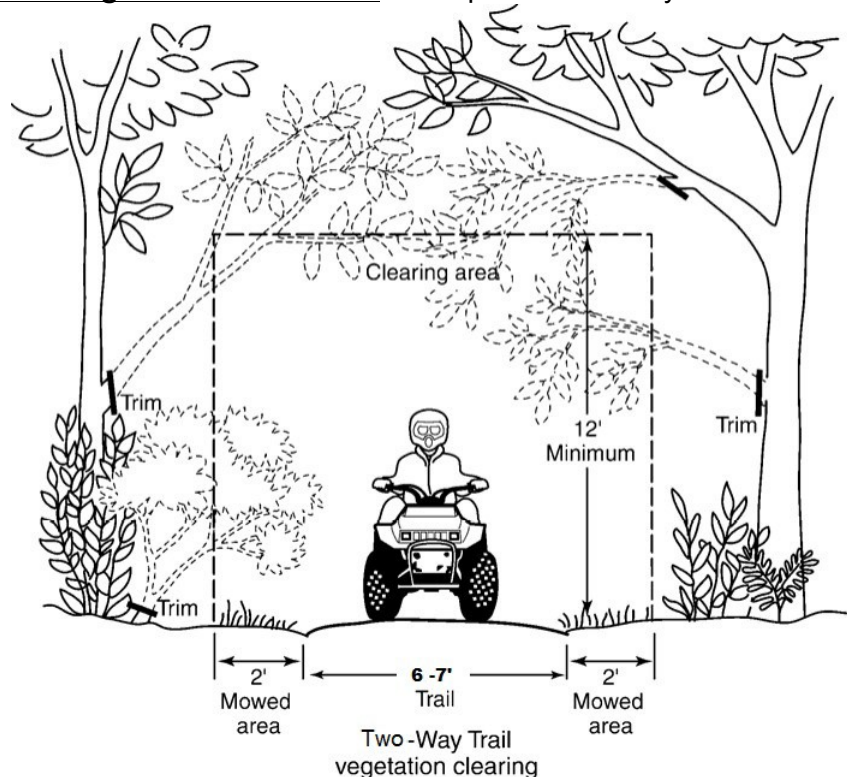
Emergency pick-up areas sign: These will be posted at the GPS locations as indicated on the kiosk trail map. These signs are red with white lettering including the following: Emergency Pick-Up Area, Pick-up area number, GPS coordinates, Name of club.

Note: For detailed information on signage installation requirements please reference the ATVMB Sign Installation Guide - Field Manual.

Trail Vegetation Maintenance

All ATV trails will require annual vegetation maintenance. The work is best accomplished in the dormant seasons of late fall or winter. Vegetation should be cleared to twelve feet over the trail and two feet on either side of the trail. Particular attention should be paid to hazard stumps, rocks, trees and limbs along the trail. Overhead and side limb clearing should take into account the wet and ice-covered limb vegetation that may block the trail. See diagram below.

Standard Trail Vegetation Clearances: example of a two way trail.



The two foot "mowed" areas on either side of the trail refer to the buffer zone that needs to be clear of hazards but does not need to be mowed as stated. These guidelines are to ensure rider safety and trail manageability, and should be used as best practices.

Trail Closure

The Trail Manager will be responsible for determining when an emergency, weather conditions, high fire hazards or repair and maintenance warrant trail closure, or when instructed by Manitoba Conservation. On Crown lands, a combination of legal notice (newspaper) for a non-emergency, social media, posted notice signing, along with trail closure signage will be used to officially close an ATV trail to public use, for example, Back Country Travel restrictions where high fire risk warrants the trail to be closed. Notification of closures may also be posted at staging areas to inform the riders.

Trail Detours

From time to time the trail may need to be detoured for various reasons, such as severe trail damage and subsequent trail repairs, flooding, logging operations, environmental issues, wildlife or other natural disruptions. If a detour is required either for a short term or long term the Trail Manager must have an alternate trail route planned. If a detour is agreed to be the best solution to the temporary or long term problem the Trail Manager will advise both ATVMB and Manitoba Conservation of the new detoured route. In cases where logging operations start without notice, the Trail Manager will contact the local forester immediately and advise that a detour is required for both the safety of the operation and ORV riders. In this case a detour should be put in place as soon as possible to ensure that riders are not in any danger from the logging operations. For the safety of riders, this action may need to be taken prior to holding a meeting for the purpose of determining a longer-term plan for the affected area.

Once the detour is no longer required and the trail can revert back to the original route, signage will be once again installed on the original route and this will be done prior to removing the temporary signs on the detoured section.

Trail Abandonment and Restoration

Occasionally it may be necessary to abandon all or parts of an established ATV trail. ATV trails on Crown lands that are no longer approved for recreational use will be restored to complement the surrounding natural landscape conditions or, in the case of an abandoned rail road or roadway corridor, to the conditions prior to the development of the original ATV trail.

Restoration will normally include the removal of all built structures such as fords, bridges, culverts, gates, and signing, including proper disposal of material from these structures in approved landfills or recycling facilities.

Safety

Proper trail signage and well maintained trails serve to ensure the safety of all trail users. A map illustrating evacuation points will be provided to both the local RCMP and EMS groups.

A spill kit, fire extinguisher and first aid kit will be available when using fuel powered, hydraulic operated equipment for trail work. Hand fuel powered tools such as chain saws, hedge trimmers and personal ATV/ORVs would be exempt from having the equipment on each unit. When multiple workers are performing trail maintenance the Coordinator or Trail Manager will determine the quantity of safety equipment

required. Ratio: 1 fire extinguisher, 1 first aid kit to 4 workers. Other appropriate safety and protective equipment will be made available.

Trail Inspections

Trail inspections will need to be performed several times during the riding season. The Trail Manager will perform the first trail inspection in the spring to assess the condition of the overall trail after the winter season. An inspection log should be created to record each inspection and the hazards that need to be addressed. The frequency of inspections will be determined by several factors such as the amount of trail use, or damage due to weather such as heavy rain or wind storms. Inspections should be done at least once a month during the summer, with trail updates posted on the Club and ATVMB websites. Additional inspections may be required as the riding season continues, and all inspections must be logged and posted on the website. Severe weather events may be cause for additional monitoring to ensure trail conditions allow for safe, environmentally responsible operation of off-highway vehicles (OHVs) on the trail.

Proposed Inspection Schedule	
Season	Inspection Focus
Spring	Inspect for damage due to winter seasonal uses and freeze-thaw cycles. Check for erosion, plugged culverts, user- and maintenance vehicle-caused damage, unauthorized uses, and other visible signs of tread imperfections. Record all occurrences and schedule maintenance on a priority basis. Also clear debris from the trails as soon as possible in the
Summer	Conduct ongoing inspections to keep trail in a safe, usable condition. In addition to items listed for spring, also inspect vegetation growth and encroachment. Pay special attention to erosion issues, drainage-ways, and ditches that may have received heavy spring runoff. Record all
Fall	Conduct ongoing inspections to keep the trail in a safe, usable condition. Focus on maintenance issues that should be taken care of before winter to avoid further damage during spring thaw. Special attention should be given to tread dips, drainage crossings, culverts, and drainage-ways that must be
Winter	This is a good time of year to check low areas and drainages that cannot be easily accessed during the summer. This includes culverts, ditches, and beaver ponds.
Immediate Action will be taken if any of the following conditions are found to exist: 1. The main trail route is impassable, and riders have created an unofficial 'bypass' or 'short-cut' around the obstacle. This is commonly termed: "Trail Braiding". 2. Travel into sensitive areas is causing rutting, erosion or damage to surface waters or wetlands. 3. The primary tread surface is seriously rutted making the main route impassable to regular trail traffic.	

Trash/litter Removal

Trash and recycling containers will be provided at the north and south staging areas as well as the picnic/day use areas. The trash will be picked up on a weekly basis in the south staging area as per Provincial Parks policy. Trash in the other areas will be picked up on a bi-weekly or as required basis. A carry-in/carry-out trash policy will be encouraged on all ATV trails.

Volunteer Activities

Work performed by volunteers will involve one or more of the following: mowing, brushing, pruning, sawing, clearing culverts of debris, and litter pickup. Maintenance work may involve any or all of these specific tasks at various dates and times.

Mowing: May be accomplished using either a side-discharge lawn mower, motorized weed-eater, or non-motorized weed whips, depending on the size/complexity of job, and skill level/certification of the operator.

Sawing: For the purpose of clearing the trail of downed trees, large branches, or hazardous leaning trees, a chain saw or non-motorized saw will be used depending on the size/complexity of job, and skill level/certification of saw operator. Chainsaw operators must hold current certification through an approved course/instructor, and also have current certification in First Aid and CPR.

Culverts: Culverts are to be cleared of all debris to ensure proper water flow/drainage.

Litter: Remove debris from picnic/day use sites located along the trail, and/or pick up trash found in staging areas.

Tools

Tools commonly used in trail maintenance may include one or more of the following, depending upon complexity of the task and training/certification of the volunteer:

- DR Field Mower® or Trimmer
- side-discharge lawn mower
- chainsaw
- brush saw
- Pulaski, McLeod, Council Rake
- pick mattock
- cutter mattock
- Hazel Hoe
- Suwanee Sling
- shovel
- lopper
- hand pruner
- pruning saw
- bow saw
- crosscut saw
- pole pruner/saw
- axe

- weed whip
- crow bar
- wheel barrow
- fire extinguishers
- spill kits
- paint brush.

Physical demands of trail maintenance range from light exertion to arduous exertion depending upon the task. Volunteers and the work they perform will be appropriately matched depending on their personal interests and abilities. In general, trail maintenance often involves frequent stooping, lifting, reaching, bending, carrying, and repetitive motion. Distances walked may frequently exceed several miles per day, often while carrying tools or other equipment. Objects weighing more than 50 pounds may need to be lifted or otherwise moved.

Working conditions while performing trail maintenance may encompass all types of weather, from hot and humid to wet and cold. Work will occur across uneven terrain, including hills, slopes, grades, and wetlands in both forested and open areas, which may result in slipping and tripping hazards due to exposed rocks and tree roots, mossy stones or logs, mud and water, or loose gravel. Exposure to long periods of sunlight, wind, dust/dirt, insects, motor noise, exhaust, or gas/paint fumes is a possibility.

Personal Protective Equipment (PPE) for trail maintenance tasks includes: first aid kit, sturdy work gloves, and sturdy leather work boots. Use of any gasoline-operated power tool/equipment will also require the proper use of eye and hearing protection. Additionally, in the case of chainsaw operation, a hard hat and saw chaps are required for the faller; boots, gloves, hard hat, eye protection, and hearing protection are required for “swampers”. Individual volunteers and work crews are strongly encouraged to carry cellular phones, radios, or other communication devices whenever and wherever possible/practical in case of emergencies.

Before any work is started the Work Leader or VIP Coordinator will brief the volunteers on the specific work that will be performed by way of “tailgate” safety briefings. Additionally, safety considerations such as proper hydration, heat disorders, hypothermia, insect/animal bites & stings, and Lyme disease awareness may be discussed as appropriate given the local work environment, season, and geographic location.

Trail Meetings and Reviews

Trails on Crown Lands will require good communication between the Trail Manager and Conservation departments. This is to ensure that both parties are informed of issues such as forestry operations, logging operations, fire conditions, environmental issues, wildlife issues and special events. It is recommended that meetings be held quarterly or more frequently if required and may take place in person or through electronic means. This will ensure that any concerns are addressed in a timely manner and provides an opportunity for the Trail Manager to update Conservation on the status of the trail system.

Conclusion

This Manual is a living document and may be updated with additional information as the trail system develops. This Manual will be reviewed annually.

References

1. Minnesota Trails Assistance Program (GIA) Off-highway Vehicle Manual Appendix

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