



Pioneering Safety and Best Practice

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Draft

Preamble

The Scout Movement is by its very nature an outdoor and adventure organisation and Scouters are encouraged to provide challenging and adventurous activities bearing in mind the capabilities of the participants.

Every day of the year –somewhere in the country, Cubs, Scouts or Rovers will be participating in Pioneering projects or similar activities during which injuries may occur. As a responsible organisation, SCOUTS South Africa is committed to ensuring that its members are protected as far as possible from injury and can plan, execute and enjoy their activities in a safe and responsible manner without unnecessary restrictions.

This policy provides Pioneering safety and best practices for all its members and where found to be necessary includes certain regulations.

Draft

Pioneering Safety and Best Practice

As always, in all Scouting activities, safety must come first. In and through the challenges, fun, and rewards that go hand in hand with pioneering, there can be no substitute for sensible behavior and common sense.

As you begin your pioneering activities, safety must be your first consideration. This policy is not intended to provide a set of rules but rather to suggest points which have been found to lead to incidents and that should be kept in mind when planning and doing pioneering. Always consider the level of experience and strength and numbers of the participants

It is strongly recommended that going for records such as highest tower, longest bridge etc. be discouraged as it easily leads to equipment being overstressed and failing catastrophically.

Design

Triangular frames are strongest

Rectangular frames are only stable when diagonals are included

The load must not be able to move outside the "footprint" of the base (unless securely guyed)

Spars will take large loads axially but only much lower sideways or bending loads e.g. bridge beams, platforms. Reinforce with diagonals when in doubt

Pre-construction

The project must be properly planned before commencing so that any specific safety issues can be identified, and also that:

- a. Leaders can ensure that all of the equipment is available.
- b. Leaders should inspect and pre-check all equipment before the project.
- c. Laid natural ropes must be twisted open so that the condition of the core can be checked out. If the condition is in doubt, remove it. Check that all ropes are secured at both ends.
- d. Pre-check poles before usage.
Dropping an end on hard ground and listening to its sound can check long poles.
Good poles should ring. Check visually for signs of white ants or rotting. Make sure that the poles will not bend under reasonable strain.

Ensure that a safety officer is appointed, who has the authorisation to halt a project if deemed necessary. The safety officer, along with the rest of the group, should constantly check the work area to keep it clean.

Equipment should be kept well organized.

Pioneering must be supervised at all times by an appropriate adult although a scout will probably be leading the activity.

All participants must be clear as to who the project leader is and that person is the one that will give the orders.

Everyone should know the plan and their role – use a model to demonstrate

Construction

One person in charge – preferably not doing anything himself

Do not work during rainy or wet conditions. Rope and spars become slippery, as does your footing. Knots can slip when wet and become unsafe.

Wear clothing to fit the season and wear gloves when necessary to protect your hands.

Take regular breaks to discuss the work in progress and ensure that everyone understands what is required of them.

Work to the plan. Do not rush. Do not panic Stop and think

When tying knots that will be out of reach, secure the running end with a piece of light cord.

When the bottom end of a spar, such as the leg of a tower, rests on hard ground, it should be "heeled in"; that is, set in a 4" to 6" deep hole to keep it from shifting.

When raising towers, have at least two hoisting lines on the opposite side to prevent over pulling past the proper position.

Do not try to manhandle heavy loads. Use guylines, shear-legs, block and tackle, anchors etc.

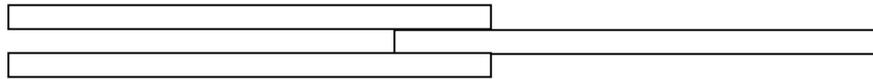
Manhandling of vertical spars longer than $\pm 4\text{m}$ should be discouraged as there is a strong possibility that control will be lost and the spar(s) will fall on the supporters. If unavoidable use guylines

Do not allow anyone under or within range of a structure which could fall while being lifted or swung

Do not allow anyone under or close to a structure while others are working overhead

When erecting tripods consider the figure of eight lashing shown below

(Better picture to be sourced still)



The two legs are then pulled out to create shear legs which can safely be raised by pushing in the third leg. The correct tensioning of the lashing does require some experimentation to avoid rope breakage.

Check all knots and lashings before the project is used by anybody.

Double-check all anchors and holdfasts on the pioneering project as strain is applied and then check continuously during use.

Use the correct knots and lashings for the specific weight related to the project. The lashing frapping must be done as tight as possible for square and diagonal lashing.

If the design calls for a certain size and type of rope or spar, do not substitute something of lesser strength.

When it is necessary to work at a height where a potential fall could result in an injury, consider using a safety harness to attach the participant to the structure. This should only be used when it is certain that the structure or parts are completely secure since it limits the ability to escape from a hazard. Ensure adequate supervision of the safety line.

Test the structure or bridge before allowing general use.

Ensure that you have good footing, use both hands to make the work easier, and do not lift more than you can handle.

General

- Spars resting on the ground are not for standing upon. They can unexpectedly roll causing injuries.
- Only one person at a time belongs on a ladder. Persons coming down from a project use the ladder first.
- Racing up or down a ladder can result in slipping and an accident.

- The number of people using a platform should be strictly limited to the maximum number established beforehand and announced by the safety officer.
- Jumping or playing around while on a platform is totally unnecessary and can have disastrous results.
- When lifting a spar to facilitate the frapping of a tripod lashing, care should always be taken to ensure that the person working the rope doesn't injure their fingers.
- There should always be plenty of room between the person carrying a spar and other people.
- When working with newer manila lashing ropes, rope splinters can be avoided by wearing gloves.
- When using heavy mallets to pound in pioneering stakes, pain can be avoided by being especially careful.
- All equipment should be treated with respect and used appropriately for its intended purpose.

Ropes

Store rope dry: natural fibres are quickly weakened by rot. If wet after use hang up so that air can circulate freely to dry quickly.

Inspect ropes carefully before use. Open strands by twisting to examine inner fibres. Look out for broken or easily broken fibres.

The safe working load is also affected by:

- a) Weather conditions.
- b) Age of the rope.
- c) Knots used in the rope.
- d) The way that lashings are done.
- e) The edges that the rope is passing over.
- f) The strain that is being put on the rope by the project.
- g) The condition of the rope.

Be aware of the safe working loads for the type and size of ropes.

It is recommended that a safe load for a Manilla rope should be one-tenth of the manufacturer's stated breaking strength of a new rope. This is also the recommended factor used in industry for natural fibre ropes.

This factor can be explained by consideration of the following:

Weakening by knots	0.5
Impulse (dynamic) loading	0.5
Deterioration	0.4
Combination of factors	$0.5 \times 0.5 \times 0.4 = 0.1$

Strengths of various ropes are given in the table

Do not try to tension runway ropes too tightly. Some sag is necessary. The tension in the rope is roughly equal to half the span divided by the mid-span sag times the load i.e. $Tension = load \times span / (2 \times sag)$

Anchors

Select the correct type for the load and ground conditions.

--pickets do not hold well in soft or muddy ground

--log and picket type spreads heavy loads

--dead man requires a heavy log, adequate length, deep(>500mm) trench and a lead-out trench sloped so that the log is not lifted

Pickets must be stiff enough and long enough for the load

Beware of rockdrill "jumpers" , they are hard and may shatter violently

Ensure that the picket angle is at 90 deg to the load.

Load rope should not be more than 30 deg to ground

Mark, barricade and cover tops of pickets They have sharp edges

Hooks on pulley blocks are often thin and tend to cut rope. Round-off inside of hook, use a large shackle and heavier rope

A responsible person must be stationed to continuously check on every anchor while under load

Slack off load when not in use. Damp rope shrinks with enough force to damage itself and loosen anchors

Dismantling

Experience has shown that more serious accidents occur during dismantling than during other phases due to haste, over enthusiasm, reduced vigilance and lack of a proper plan

Allow adequate time to dismantle

As a general rule dismantle in reverse order to construction

Supervise closely and ensure that no enthusiastic premature loosening of critical lashings occurs and that nobody is within range of falling objects

Do not allow dropping or uncontrolled collapsing of structures as this leads to damage to equipment (9th Scout Law) and creates sloppy attitudes

When the day's work is complete, untie all knots, coil all ropes, check all hardware, and store everything in its proper place.

Here are some obvious but necessary additional safety measures that should be remembered:

Monkey Bridges

- There should only be one person on a monkey bridge at a time.
- While crossing the bridge, people shouldn't bounce or purposely swing or sway on the ropes, nor should anyone race to see how quickly they can get across, which can easily lead to losing their footing.
- Those waiting their turn to cross the bridge should stay off the ropes between the anchors and the bridge framework.
- Whenever the foot rope and/or hand ropes are being tightened, or the anchor ropes are being adjusted, everyone should stay completely off the bridge.

Aerial runways

These projects are potentially dangerous because height and speed will mean that any failure can lead to serious consequences

Because of the vast range of types and uses, ranging from small "Foofie" slides to large "Zip lines", it is not practicable to give specific guidelines although various codes have been proposed. However some points to note are listed below although it would be wise to get the advice of experienced persons when planning a significant project.

Do not allow over tensioning. Some sag is essential to keep the loads within proper limits (see above)

A broken or suddenly released wire rope can do tremendous damage.

A rope block and tackle is preferable to machines such as chain blocks etc. which can easily create large forces

Anchors and attachments need careful selection, proper installation and constant observation during use. Trees are not always as secure as they look.

A secure seat should be used except possibly on a small runway into water when a triangular (never a T) handle may be considered.

The runner pulley must not be able to derail and the attachment to the seat must be secure. A moused hook is not necessarily secure and a bolted connection is preferable.

Give careful consideration to stopping at the end of the run. A drag brake to slow down as well as an emergency stop are generally required. Ensure that there are no hard objects such as shear-leg crossbars or trees at the end in

case of overruns. Where possible the provision of sufficient slack to produce an “uphill” section at the end is the best way of stopping.

The start structure must be secure. If a shear-leg is used it must be securely guyed to withstand the tension in the runway rope.

A secure platform and safe ladder access must be provided to enable safe mounting onto the seat.

Test the finished runway before use by loading it statically at the midpoint using a rope to the ground and having two scouts gradually supporting their full weight while all critical parts are observed.

If a tail rope is used to return the seat either detach it for each run or ensure that it cannot entangle anyone.

Prohibit bouncing or other horseplay.

Revision Approval

This revision of the pioneering Safety and Best Practice document was approved for publication at the SSA RTC Scout Programme Meeting held on *{insert date}* by the committee comprising:

{insert RTC Scout Programme members in attendance at meeting}

Amendment Submission Contact Details

While every attempt is made to ensure that the contents of this policy are correct and consistent at the time of publication, the changing nature of SSA and the communities that we serve is acknowledged, and as living documents this Policy should and will require correction and amendment from time to time.

Any proposals for amendment of the contents of this policy should be submitted in line with the process described in the standing Organisation Rules in effect at the time of submission of the proposed amendment.

The proposed amendments for this document should be submitted to:

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