

Alpine Climbing Trip Leader Standards – Northern Colorado Group

December 2024

Introduction

The skills and guidelines in this document are intended to provide standards for the “**mountain skills**” needed to be a successful CMC technical trip leader (TTL) for this activity. These skills are in addition to those outlined in the CMC Trip Leader Manual.

Scope and Terrain

Alpine climbs are challenging to characterize and vary in difficulty due to the variety of terrain features and required techniques. Alpine climbs may involve moderately steep snow, water or alpine ice, 3rd, 4th or 5th class (or more) rock, or glacier climbing. A given alpine climb may involve any or all of these and each environment requires specific skills and techniques. Additionally, climbs may be in a remote setting and may involve approaches and/or descents with significant navigational or terrain challenges. A climb that includes only terrain that is no more technically challenging than 3rd class or easy 4th class rock scrambling or easy snow travel would not require a leader to have a TTL qualification.

Given the breadth of technical proficiencies falling under the Alpine climbs, leaders must be especially careful to lead rock, ice, or snow climbs only on terrain for which they possess the required technical skills and proficiency.

Training and Experience

Training:

CMC Northern Colorado Group’s Basic Mountaineering Course and Alpine Scrambling Course.

The CMC recognizes that there are many avenues to climbing education, such as informal mentorship, professional instruction, or volunteer peer-based instruction (via organizations like the CMC, Mountaineers, Mazamas, etc.). Candidates that meet these activity standards are encouraged to become Tech Trip Leaders, too.

Experience:

Candidates have at least one year of snow climbing experience in a variety of conditions, including hard snow.

- Candidates are confident climbing 35 degree snow slopes at the time of assessment.

- For climbs involving fourth or fifth class rock climbing, candidates are confident leading rock and constructing anchors from natural features, passive, or active rock protection and protecting themselves and participants from consequences of a fall.

Assessment

Candidates will be evaluated by experienced CMC mentors according to these standards. The assessment is three-fold:

- (1) The Technical Trip Leader Committee (TLC) will review a resume that outlines the climber's experience in leading and co-leading alpine climbs.
- (2) Candidates take a written assessment to evaluate their understanding of these standards.
- (3) Candidates display their knowledge and skills in the field on a Technical Leader-in-Training Day.

After completion of steps 1-3, the TLC will review the entire assessment and formulate a recommendation on certification to forward to the NoCo Group Council. The NoCo Group Council will have final approval for the TTL.

Skills and Knowledge

Climbing Movement:

When climbing and placing protection, leaders are fluid, effective, and efficient on 35 degree snow and short sections of 3rd/4th class rock in mountaineering boots with or without crampons. They are versed in climbing on a variety of snow conditions and features. Leaders are proficient in executing all orientations of self-arrest positions.

Equipment:

Leaders are knowledgeable about the variety of tools available to accomplish any relevant task, and their particular advantages and disadvantages. They appreciate the design, intended uses, and practical applications of each tool, and make selections and recommendations based on that knowledge. Equipment that Leaders need to be familiar with include:

- Fixed anchors (bolts, hangers, rappel rings, webbing, pitons, etc.)
- Removable protection (pickets, etc.)
- Ropes (i.e. static and dynamic; singles, halves, twins)
- Harnesses
- Personal protective equipment (helmet, harness, gloves, etc.)
- Hard goods (belay/rappel devices, carabiners, ice axes, crampons, microspikes, snowshoes, poles, etc.)
- Soft goods (slings, cord, tethers, etc.)
- Snow and avalanche safety equipment, including transceiver, probe, shovel, inclinometer, and snowpack evaluation tools

Leaders also display an understanding of non-climbing-specific outdoor equipment used on climbing outings. The Leader will, for example, choose an appropriate pack for any given excursion. The contents of this pack will vary based on the venue but may include emergency supplies (first aid kit, headlamp, etc.), human waste disposal kit, communication devices, navigational aids, additional food and layers, and other items.

Leaders ensure equipment is applicable for its intended use.

Rope Management, Knots, and Hitches:

Leaders proficiently manage rope when working with one rope by keeping organized workspaces and managing the ends of the rope. Belay systems manage slack appropriately to secure climbers and mitigate a fall and its consequences.

Leaders have a mastery of the knots, hitches and coils most prevalent in Alpine climbing:

Knots	Coils	Hitches
Overhand on a Bight	Butterfly	Clove
BHK, aka “glom knot”	Mountaineer’s	Autoblock
Flat Overhand	Kiwi Coil (Rope Team Ends)	Prussik
Figure-Eight Follow-Through		Klemheist
Figure Eight on a Bight		Basket
Bowline		Girth
		Münter
Double Fisherman’s		
Barrel – Stopper knot		
Mule		
Water		
Alpine Butterfly		
Münter-Mule (for load release)		

Protection Systems:

Leaders are versed in selecting, placing, and evaluating a variety of protection types (See “Equipment”), including terrain itself, applicable to a wide variety of climbing environments. They understand the general principles behind a system's construction and functionality as well as common mechanisms of failure.

Leaders have a practical understanding of protection principles, the nature of forces (both theoretical and real) affecting a climbing system, techniques for building sufficient systems and safeguarding the integrity of those systems, including the use of double checks. Leaders should appreciate how a variety of factors can affect the functionality of equipment and systems, which could include, but are not limited to rope drag, user error, weather conditions, snowpack, and rock type. Leaders should have enough relevant experience to anticipate and manage possible detrimental factors in this realm.

Leaders construct strong, secure, and simple anchors. This is true for all media (i.e. rock and snow) and when incorporating their body into the anchor. They adjust their construction based on their knowledge of the many factors affecting climbing systems. Additionally, Leaders are versed in building, inspecting, and replacing “tat” and “bail” anchors.

Belaying:

Leaders belay in a fundamentally sound manner. The principles of fundamentally sound belay mechanics are:

1. A brake hand must be maintained at all times.
2. Hand transitions should happen in the position of maximum friction, again, with a hand ALWAYS on the brake strand.
3. The hands and limbs should be positioned ergonomically.
4. Leaders need to understand and perform proficiently all the principles of a *DYNAMIC* belay, whether it's required either on snow or ice.

This is true whether the Leader is belaying with their body, terrain features or a mechanical braking device, from above and/or below. Leaders need also be competent in identifying appropriate situations in which to employ belays in steep terrain for climbing team follower(s). Leaders understand the need for vigilance, positioning and the ability to anticipate changing belay needs.

Technical Descent:

Leaders are knowledgeable about a variety of rappelling, non-down-climbing lowering, belayed down-climbing, back-up and transition strategies. Leaders should assess and use relevant strategies based on the situation, including, but limited to, friction hitches, their extensions and back-up belays.

In those cases where minor injuries are present, Leaders should be competent to stabilize and secure the injured party as best as possible, following all safety protocol laid out in this document. This is all in an effort to get the injured party lowered to a safer and more secure level on the slope as fast as possible in order to administer further medical attention, if required.

Rescue and Assistance Skills:

Alpine Climbing Leaders are familiar with the following skills:

- Improvised systems for belay, rappel and ascension
- First aid and emergency medical care, including demonstrated skills in:
 - Patient assessment, stabilization and transport/evacuation
 - Treatment of minor injuries and illnesses
 - Communication and cooperation with advanced medical care

Climbing Communication:

Leaders utilize communication techniques that accommodate a variety of environments and situations, including effective verbal and non-verbal strategies.

Objective and Terrain Identification:

Leaders are adept at identifying the safest and most appropriate routes and terrain for gaining an objective as well as being aware of and identifying potential hazardous avalanche and corniced terrain. Some of the terrain falling under the most scrutiny could be 3rd and 4th class rock, steep knife-edge routes, couloirs and mixed routes.

Leaders should also be particularly cognizant of:

- Critical slope angles
- Terrain features, shape and size
- Slope aspect and elevation to sun and wind
- Avalanche start zones, tracks and run-outs
- Critical terrain: traps, convexities and trigger points

Leaders are also aware of environmental hazards and the management thereof, including altitude, lightning, water crossings, rock fall, exposure to elements and precipices, flora and fauna hazards and avalanches associated with routes and/or terrain, to name a few.

A Leader should also make use of (when appropriate) a variety of route selection tools (e.g. online resources, maps, guidebooks and peer input) in order to find desired climbs and/or undocumented but climbable lines.

Finally, based upon ALL points made in this document, Leaders should feel very confident in assessing terrain features and conditions as they pertain to a safe, relevant and enjoyable climbing experience for all skill levels in a climbing group.

General Policies for Technical Trip Leaders:

All trips led by the TTL must be within a reasonable range of the conditions assessed in the LIT for TTL approval, including: type of climb, season, anticipated weather and terrain conditions, etc.

Technical Trip Leaders must also possess the fortitude to completely call off a climb (on location) should any of the terrain, environmental and/or climber conditions warrant it.

Staying Current with Skills and Knowledge:

The expectation is that technical trip leaders will maintain their skills and will only lead climbs within their competency level. Furthermore, the expectation is that technical trip leaders will stay current with best practices in climbing as knowledge and equipment evolve.