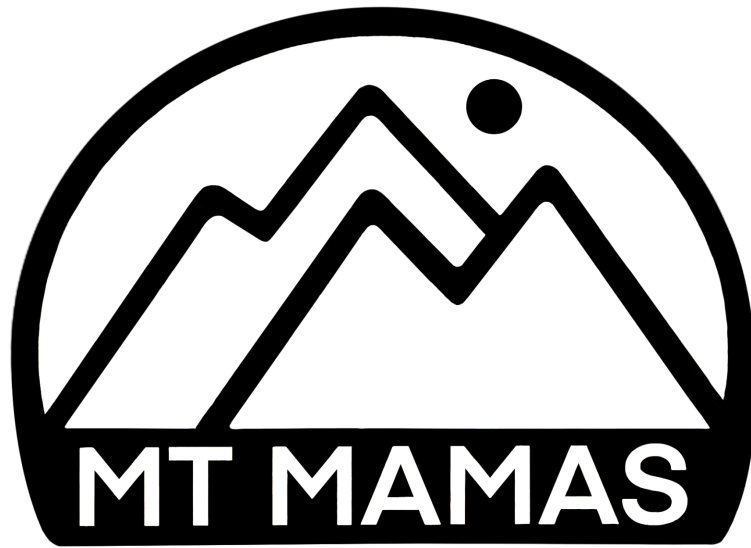




Canyoneering Manual

Canyoneering

TRIP LEADER REQUIREMENTS

- **Assistant Trip Leader I** – 5 canyons; Completed Assistant Trip Leader 1: lecture skills, assigned knots, anchors, on the rope skills; swimming skills (see Appendix K); ACA Sovereign (optional); First Aid/CPR certified
 - Assists in fitting and checking gear and participants for safety
 - First rappeler down if needed (familiar with self-belay)
 - Manages Fireman Belaying from bottom of rappels
 - Assists in setting up anchors and rappel systems (must be checked by Lead Trip Leader)
 - Carries first aid kit and administers basic first aid if needed - can be designated Medic Guide
 - Carries 2-way radio for communication
 - Wears Trip Leader handkerchief to designate as a Trip Leader
 - Wears whistle to communicate in emergencies
- **Assistant Trip Leader II** – 10 canyons; Completed Assistant Trip Leader 2: lecture skills, assigned knots, anchors, on the rope skills; swimming skills (see Appendix K); ACA Aspirant (optional); First Aid/CPR certified
 - Assists in fitting and checking gear and participants for safety
 - First rappeler down if needed (familiar with self-belay)
 - Manages Fireman Belaying from bottom of rappels
 - Assists in setting up anchors and rappel systems (must be checked by Lead Trip Leader)
 - Carries first aid kit and administers basic first aid if needed - can be designated Medic Guide
 - Carries 2-way radio for communication
 - Wears Trip Leader handkerchief to designate as a Trip Leader
 - Wears whistle to communicate in emergencies
- **Lead Trip Leader** – Serving as main Trip Leader of the group; 25 canyons; Completed Lead Trip Leader: anchors, on the rope skills; swimming; special skills (see Appendix K); ACA Assistant Canyon Leader, Canyon Leader (optional); Can demonstrate how to set up anchor system and top belay safely; 20 hrs experience leading activity; Wilderness First Responder Certified
 - Recons area for activity within 1-2 months prior to activity or in same season
 - Completes Trip Report prior to and after activity
 - Checks gear for safety prior to, during and after activity
 - Checks participants for safety and leads safety discussion
 - Carries first aid kit if not designated to Assistant Trip Leader

- o Carries 2-way radio for communication (if needed on approach)
- o Sets up all anchors and rappel systems or manages setting up and checks for safety
- o Performs top belays as needed for Participants (REQUIRED for all first time Participants)
- o Wears Trip Leader handkerchief to identify as a Trip Leader
- o Wears whistle to communicate in emergencies
- o Communicates with Base Commander at the beginning, middle and end of activity via phone or In Reach Beacon
- o Completes Incident Report and/or SOAP Note if any concerning situation occurs on activity
- o Reports any damaged gear or safety concerns from trip

Canyoneering - Activity Plan

PRIOR TO ACTIVITY

GEAR

- **Provided by Mt Mamas:**
 - First Aid Kit per activity
 - Whistle per Guide
 - 2-way radios
 - Emergency Beacon (if needed)
 - Static ropes
 - Anchor systems, rappelling gear (webbing, quick links, Totem, locking carabiners, 8's, slings, ascenders)
 - Several additional harnesses, helmets, rappel devices/carabiners to borrow
- **Provided by Participants:**
 - Helmet
 - Hair tie (long hair)
 - Harness
 - Rappel device with locking carabiner (ATS/Critter/Prana/Sqwurel)
 - Pants
 - T shirt and Long sleeve shirt
 - Fleece or puffy coat (if cool weather)
 - Waterproof jacket
 - Thick gloves (leather only)
 - Daypack
 - 1-2 L water (water bottles best)
 - 1 snack per hour on activity
 - Running shoes, boots or approach shoes
 - Sunscreen
 - Sunglasses
 - Camera
 - Sun hat or winter hat (depending on temperatures)
 - Headlamp
 - Hand Warmers
 - Personal first aid kit
 - Knife
 - Wetsuit/Drysuit (wet canyons)
 - Neoprene socks (wet canyons)
 - Canyoneering neoprene boots (wet canyons)

POSSIBLE ACTIVITY LOCATIONS

- Red Ledges, Diamond Fk Cyn (Training)
- Medieval Chamber, Moab (Extreme)
- Yankee Doodle/Boltergeist, St George (Extreme)
- U-Turn/No U-turn, Arches NP (Extreme)
- Cassidy Arch, Capital Reef NP (Extreme)
- Rocky Mouth Falls, Draper (Extreme - wet)
- Benson Creek, Cedar City (Extreme – wet)
- Birch Hollow, near Zions NP (Extreme)
- Dianas Throne, Mt Carmel Junction (Extreme)

INDIVIDUAL DEFINITIONS

- **Participant** – Individual participating in activity
 - Notify Mt Mamas of any health concerns or injuries prior to activity
 - Report if activity appears too strenuous or difficult
- **Assistant Trip Leader I and II** – Assists Lead Trip Leader with activity
- **Lead Trip Leader** – Leads activity with Assistant Trip Leaders (if needed due to group size)
- **Medic Trip Leader** – Trip Leader designated per activity with first aid/CPR certification
 - Main Trip Leader in charge of minor accidents or injuries
 - Designated Trip Leader to stay with injured individual if case of evacuation
 - Last in group and will assist any in the back of the group with any concerns
 - Carries 2-way radio for communication (during hike in and out)
- **Base Commander** – Individual not participating in activity that Trip Leader Guide is to report to prior to before, during and after activity of safe completion of activity.
 - Will notify emergency contacts and/or Search and Rescue if group is late or lost

BEGINNING ACTIVITY

WEATHER - Always check local areas for rain forecast and ENTIRE drainage area for any chance of rain. NOTE - Central/Southern Utah gets flash floods during their monsoon season (June-Sept)

SAFE GEAR (GEAR CHECK)

- Check Mt Mama gear for safety: first aid kit, 2-way radios, emergency beacon (if needed), static ropes, webbing, quick links, Totem, locking carabiners, 8's, ATS, Squwrel rappelling devices, harnesses
- Check Participants gear for safety - helmets, harnesses, rappelling devices, gloves
 - Gear
 - Helmets - fits snugly - have look up, down and shake side to side (Appendix A)
 - Harness - doubled back, not fraying (Appendix B)
 - Rappel device/locking carabiner (Appendix C)
 - Gloves (must be leather)
 - Trip Leaders are NOT required or responsible to size or fix broken gear - participants should ensure gear is safe and sized correctly prior to activity
 - Trip Leaders can refuse participation of any Participant if gear is determined to be unsafe.
- Trip Leaders can demonstrate how to adjust gear
 - Helmets - can change positions of side tabs to move attachment more to the front or back for comfort; adjustments for size are usually in the back
 - Harnesses - discuss and show buckling **single (double back) and double plate harnesses**
 - Rappel device and locking carabiner attached to belay loop (rock climbing harnesses) or rappel loop (rappelling harnesses)

SAFE PARTICIPANTS

- Trip Leader to Participant Ratio 1:6
- Check Participants for safety: appropriate clothing, appropriate health, appropriate gear

SAFETY TALK

- **Circle Up** - when participants arrive, gather them together in a circle and have them share 3 things:

- Name
- Experience in the activity
- Goal for the activity
- **Safety talk:** describe the activity and safety items for participants to be aware of (5 items):
 - Environment – weather, flash flood risk and exits, trail and rappelling area conditions, approach distance and route, time expected, bathrooms/cell phone service
 - Canyon ratings (see Appendix D)
 - Gear – what gear we will be using and how to use it
 - Helmets (see Appendix A)
 - Harnesses (see Appendix B)
 - Rappelling Devices (see Appendix C)
 - People – sunscreen/hat/sunglasses, food/water, appropriate clothing
 - Wear helmets/harness/gloves at all times throughout the canyon
 - Keep rappel device attached to belay loop at all times
 - Hair tied up and under helmet
 - No necklaces, bracelets, hanging earrings
 - No clothing with loose ties
 - Tuck jackets, shirts into harness
 - Wet Canyons - Wetsuits/drysuits or clothing appropriate for wet canyons with dry bag
 - Dangers – describe any dangers that could occur
 - Canyon Safety - Rapid weather changes, flash flooding, hazards along the route (rock slides, river crossings, cliffs, wrong turns, etc); route will require some scrambling/stemming/chimneying/bridging
 - Rappel Top Area - always wear helmet, stay back from cliff area unless clipped into anchor, must be clipped in if at least 3 ft from edge
 - Rappel Bottom Area - always wear helmet when within 20 ft of bottom of rappel
 - Falling rock - if someone kicks a rock, drops a bottle, or any item falls from above, yell “ROCK”; when someone yells “rock”, look straight ahead, lean close to rock wall, and shrug shoulders to protect neck
 - Ropes - don’t step on rope
 - Safety – what you will be doing to mitigate those dangers (see above)
 - Always have a PAS (personal anchor system) for each participant to use on their harnesses or on the anchor before attaching themselves to the rope

- Once entering the canyon, helmets/harnesses/rappelling devices must be kept on at all times

CANYONEERING LESSON (PROGRESSION) - Trip Leaders can use their own discretion to determine which drills and skills would best meet the goals of the Participants. A progression is a series of steps that logically build on one another, increase in difficulty, and are focused specifically on participants. There are always several ways to teach a lesson. Every Participant needs different things, some will need to spend time on a skill and others can skip ones.

- Teaching Tips
 - Trip Leader Body Language
 - Posture - relaxed, stand and face them
 - Hand Gestures - waving, thumbs up, hand shakes or high fives
 - Facial Expressions and Eye Contact - make eye contact, smile
 - Teaching Theory
 - Understand the Teaching/Learning Cycle (see Appendix E)
 - Understand Different Learning Styles (see Appendix F)
- Choose which skills would be appropriate for your group in the selections below

IN THE CANYON

- Scrambling
 - Scrambling Techniques
 - Stemming – stepping on either side of a crack/slot
 - Chimneying – using back against one side of larger crack/slot and feet flat on the other. Better without a pack on your back (clip below, carry on front, or toss ahead).
 - Bridging – hands on one side and feet on other side facing down on largest cracks/slots. Move hands and feet slowly. Fully committing and can be scary for Participants.
 - Partner Assists
 - **Partner Capture – going down** obstacles that would otherwise be too difficult for one person by themselves. Especially useful for the last person down.
 - One person can act as meat anchor for everyone else

- Then when everyone else is down, the last person is captured by the group.
 - Group holds up hands and assists person in sliding down slope safely.
 - Can step onto shoulders or thighs of other Participants
 - Always have a spotter (see below)
- **Partner Assisting – going up obstacles**
 - **The Boost** - One or more people boost the climber up. It works best to have one person support each foot. (This can be hard to do if the water is too deep in wet canyons)
 - **The Return Hand** - Once one person makes it out, they reach down and list the next person out.
 - **The Handline** - Once one person makes it out, they act as a meat anchor or sit on a pack that has a tether tied to it. This gives the next climber a handline to use when climbing.
 - **A 2-to-1 Haul** - Once one person makes it out, they attach one end of the rope to an anchor, lower the middle part of the rope to the person in the pothole, and hold onto the other end. The person in the pothole runs the rope through a carabiner on their harness (short easy hauls) or through a Progress Capture Device (Grigri, prusik, Micro Traxion) on their harness (long hard hauls). The person below grabs onto the strand of rope attached to the anchor and pulls up while the person at the top also pulls their strand. The mechanical advantage makes the haul fast and easy. (Reference [“Partner Assist”](#) Dye Clan)
- **Spotting -**
 - Keep hands up with a staggered stance for best balance
 - Follow below them as they move across rock sideways
 - The higher they climb, the further out they need to be. Don’t climb higher than can be spotted safely (ex: 10-15 ft)
 - If someone falls, push body against rock as they slide down. Do NOT attempt to catch them.
- **Rappelling**
 - **Setting up Rappels**
 - Lead Trip Leader or Assistant Trip Leader monitored by Lead Trip Leader will set up anchor and rappel system at the top of all rappels
 - **Anchors** - bolts will be used when at all possible, followed by redundant multi point natural anchors and then single point natural anchors (see Appendix G)

- **Rappel Systems** - A releasable rappel system will be used whenever possible (see Appendix H)
- **Rappelling Review**
 - **Tying in –**
 - The Participant will clip into the anchor system via PAS (personal anchor system or sling and carabiner) when within 3 ft of the rappel station.
 - Trip Leader will set up courtesy rigging if needed if the top of rappel requires more protection for Participants.
 - Trip Leader will assist Participants in putting rope on a rappel device safely and setting up top belay.
 - **Top Belay** - (REQUIRED for new rappellers or anyone the Trip Leader feels needs additional support)
 - The Lead Trip Leader attaches belay device (figure 8, Munter hitch, ATC) to anchor and then is anchored to the rappel station anchor themselves.
 - Can attach a second belay device to Lead Trip Leader if needed for extra support on belay or redirect. Monitor rope rubbing and edge protection. (see Appendix I)
 - **Fireman (Bottom) Belay** - For additional security, ALL Participants must have a Fireman Belay.
 - The Fireman Belay is provided by the Assistant Trip Leader or managed by the Assistant Trip Leader once Participants are taught how to perform safely.
 - The Fireman Belay holds the rope and pulls if the participant is descending too quickly.
 - Rope should be straight from belayer to rappeler with a little “wiggle” in the rope. No “J’s” or slack in the rope.
 - **CRASH Safety Check** - Before rappelling, the Lead Trip Leader and Participant must perform a safety check of all critical points.
 - Carabiner → Squeeze the carabiner to ensure the gate is locked
 - Rope → Check that the rope is tied correctly into the climber’s harness, running freely to the masterpoint of the anchor & oriented correctly through the belay device
 - Attitude → Assess the team’s mental readiness for the climb
 - Shoes & Stuff → Check for any extraneous stuff on the climber that should be removed. Check that they are wearing properly fitted climbing shoes.

- Harness & Helmet → Check that all harnesses are secure and correctly buckled. Check that helmets are on and correctly fitted. Hair tied back.
- **Belayer-Participant Commands:** (using walkie talkies, yelling, or whistles – see Appendix J)
 - Before rappelling –
 - “Belay On?” asked by Participant after they are attached to rappel device and clipped into anchor system.
 - “Belay On” from Belayer when they are on belay. Trip Leader or Participant unclips from anchor system.
 - “Rappelling” from Participant when ready to rappel.
 - “Rappel On” from Belayer when ready to assist in belaying as Participant rappels.
 - While rappelling - the following commands can be called by rappeler if needed from belayer: “Take” - for a tighter rope. “Slack” - for a looser rope.
 - After rappelling – when rappeler is on the ground safely, rappeler yells
 - “Belay Off” - from Participant when rappeler is on the ground safely.
 - “Off Belay” from Belayer (2-way radios may be needed to communicate this for long rappels or rappels with noise) Participant removes rope from rappel device.
 - “Off Rope” from Participant when rappeler is detached from rope.
 - “Off Rope” from Belayer. Lead Trip Leader (on top) pulls up top belay rope for next Participant.
- **Balance/Footwork while rappelling –**
 - Feet shoulder width apart or will spin
 - Knees bent and sitting in harness when rappelling for better balance in case obstacles are encountered along rappel
 - Flat feet on the rock or they will hit their knees
 - Keep checking over shoulder and below to note any obstacles or water below
 - Feet below hips or Participant will flip
- **Tips for scared Participants -**
 - Describe the safety and function of the anchor
 - Reiterate multiple belay options

- o “Take a step, let out some rope, take a step, let out some rope”
- o Can offer a tandem rappel (Trip Leader can rappel next to participant on another rope)

WRAP UP AND CLOSING

- **Review**
 - o Review Lesson - how the days went, clarify any questions
 - Have participants review their trip
 - Focus on positives
 - o Review skills - ask questions on new skills acquired
 - o Review Goals and Progress - successes and struggles
 - o Make a plan for practice at home - discuss skills to work on or upcoming trainings
- **Preview** - what they could learn next
 - o Build on new learning
 - o Invite them back - look up upcoming trips online

(based on the Professional Ski Instructors Association/American Association of Snowboard Instructors (PSIA/AASI) certification courses "Delivering the Beginner Experience -Alpine" and "Alpine - Level 1")

Risk Management Plan

Canyoneering has large inherent risks. Without good Risk Management it is impossible to create the “safe and joy-filled environment” that Mt Mamas seeks to offer every Participant. Managing risk involves using good judgment to make sound decisions in a dynamic environment. This section contains a general overview of common risk factors on Canyoneering trips as well as an outline of expected practices for activities. Additionally, you will find the Emergency Action Plan detailed step by step on what to do if you are faced with some common injuries while during the activity and also for emergency situations.

Objective Risk Factors exist inherently in the activity itself

Subjective Risk Factors exist as a result of human engagement in the activity

RISK MANAGEMENT PRACTICES

- **Ratios:** Trip Leaders should maintain a **1:6 Lead Trip Leader to Participant ratio** for each Canyoneering group and groups can be increased with additional Assistant Trip Leaders to maintain the Trip Leader to Participant ratio.
- **Training:** Mt Mamas requires all Lead and Assistant Trip Leaders to be able to demonstrate proper technique and skills listed at the beginning of this manual.
- **Gear Safety:** Helmets, harnesses, rappelling gear, gloves, etc will be brought by Participants and Trip Leaders will assess generally for safety.
- **Gear Inspection:** Trip Leaders will assess gear for safety prior to trip. Trip Leaders are NOT required or responsible to size or fix broken gear - Participants should ensure gear is safe and sized correctly prior to activity. Trip Leaders can refuse participation of any Participant if gear is determined to be unsafe.
- **Planning & Preparation:** Good risk management begins with good planning and preparation. Trip Leaders will select an appropriate activity site and route that takes into account (among other things) expected weather, flash flood risk, terrain, temperatures, timing, other users, group size, background, experience, physical condition, and goals for the day. Trip reports, waivers, and checklists will all be utilized online prior to the activity to ensure the group is prepared before each trip.

- **Participant Fitness Level:** Must be able to participate in athletic activity without difficulty. Individuals are responsible to notify Trip Leader PRIOR to the trip if they are not feeling their fitness level is adequate.

Emergency Action Plan

Canyoneering

PREVENTION

- Trip Leader
 - Trained in First Aid/CPR and/or Wilderness First Responder/CPR
 - Completes Trip Report prior to activity (office will update medical and emergency contact information on Participants)
 - Carry First Aid Kit at all times during activity
 - Use walkie talkies (one for each Trip Leader for approach)
 - Carry In Reach Beacon (if needed)
 - Check for safe gear, safe participants and have safety chat prior to activity
 - Sets up and runs rappels using approved techniques
 - Notify Base Commander of group status and the beginning, middle, and end of activity by phone or beacon
- Base Commander
 - Receive notifications from Trip Leader at the beginning, middle and end of activity
 - Be available during activity to notify emergency contacts of tardiness of group or assist in emergency evacuation or contacting emergency services if needed
- Office
 - Update Trip Report with medical and emergency contact information on participants
 - Email Trip Leader and Base Commander the Trip Report and Emergency Contact and Medical Information prior to activity

LOST OR LATE RETURNING GROUPS

- Prior to activity
 - The Trip Leader will fill out a preliminary **Trip Report** complete with proposed location of activity, possible evacuation routes, and expected times for leaving and returning.

- o Every trip will have a **designated “Late Time”** the the Base Commander will notify emergency contacts of delay.
- o Every trip will have a **designated “Emergency Time”** when the Base Commander will notify Search and Rescue if the Base Commander has not been notified of the safe exit of all participants from activity.
- The Trip Leader can **notify the Base Commander during an activity if the predicted times need to be adjusted.**

INJURIES

- **Minor Injuries:** (minor scrape, sprain, etc.)
 - o The designated Medic Trip Leader (generally the rear Assistant Guide or Trip Leader with most medical experience) will administer first aid while the other Trip Leader manages the rest of the group. The affected participant should be kept calm and comfortable. A Trip Leader, or volunteer with medical experience, should remain with the injured participant until they are able to return to the rest of the group. An **Incident Report** should be completed on site if possible or after and signed by both patient and Trip Leader. Take clear **photos** of any wounds or injuries when it is convenient.
- **Major Injuries:**
 - o The designated Medic Trip Leader will stay with the participant and assist while the Lead or Assistant Trip Leader manages the rest of the group. The Lead Trip Leader or designated Assistant Trip Leader will make phone calls to the appropriate emergency number below. **An Incident and SOAP Note** should be completed at the time of the event if possible. Take clear **photos** of any wounds or injuries when it is convenient.

COMMUNICATION

- In a Life/Limb Emergency or Property-threatening emergency
 - o Try the National Park/State Park/Forest Service/BLM-specific emergency numbers
 - o If no park-specific numbers exist, call 911
 - o If 911 does not work, use emergency beacon to notify Search and Rescue
- In ALL Emergency Situations, after care has been secured, **notify Base Commander.** If Base Commander is not available, call Emergency Backup Personell (Emily Hacken 801-860-4591) or Marilyn Boucher (801-803-1398). Call each number three times in succession, if no one answers the three phone calls, wait 15 minutes, and move on to the next person.

EVACUATIONS

- If a participant is injured and requires evacuation, follow these procedures based on the situation:
 - The participant can walk - Trip Leaders will assist the participant in walking/skiing/ hiking out.
 - The participant can't walk – Trip leaders will assess if the participants will need to be carried out (if this can be done safely).
 - The participant can't be carried – if due to a possible head/neck injury or other injury, then notify 911 and/or search and rescue.
- Trip Leaders will assess all locations in an activity to determine easy access to vehicles and alternate escape routes prior to activity. Trip Leaders will document this in the Trip Report and discuss this with Participants at the beginning of activity.

Updated:12/3/24

APPENDICES

APPENDIX A

Helmets

Helmets protect our heads from anything that might fall from up above such as rocks or carabiners and also in case we bump our heads on the wall while climbing. Helmets must be worn by everyone at all times within the designated helmet zone. Helmets should be sized and fitted correctly (Helmet size can also be adjusted by twisting the dial located at the back of the helmet. Chin straps should be strapped all times and tightened so the helmet is secure but still comfortable. Check that the helmet is secure by shaking head gently back and forth. If you are going to set a helmet down, make sure to set it with the dome facing up so that it does not roll away.

APPENDIX B

Harnesses

Harnesses are made from super strong materials and are specially designed to catch us and keep us safe while rock climbing. Loosen the the buckles fully before trying to put the harness on. Step through the leg loops making sure the webbing is not twisted and pull the harness up so the waist strap is above the hip bones. Pull to tighten the waist strap. (It should be tight enough that you are not able to fit more than 2 fingers between your body and the harness). Tighten the leg loops so they are comfortable and not loose. **If the harness has 1 buckle you MUST make sure you feed the webbing back through itself, known as “doubling back”. If the harness has 2 buckles then it automatically doubles back** - make sure the webbing is through both appropriately.

APPENDIX C

Rappel Devices

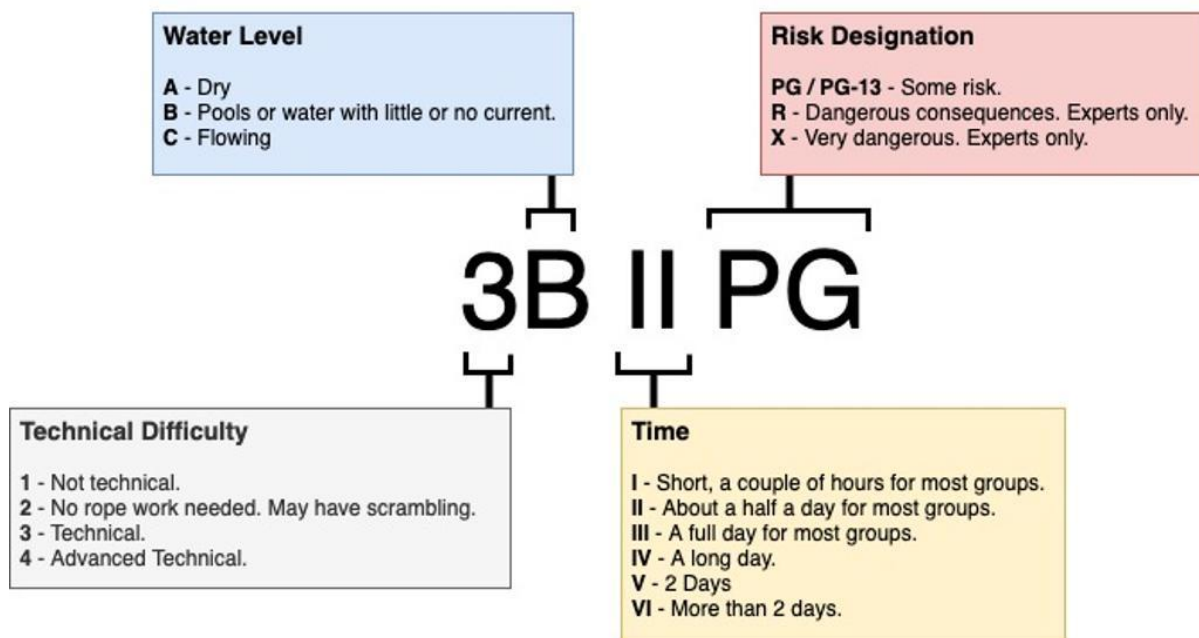
Each participant will have their own rappel device and locking carabiner for rappels. Trip Leader will review use of each different rappel device used prior to rappels and double checks participant can safely use.

Approved rappel devices:

- ATS, Prana, Squwurel, Crittr, Hoodoo, Hannibal
 - [“Introduction to Rope Decending Devices”](#) Celessense

APPENDIX D

Canyon Rating System



The rating is broken up into 4 parts, the technical difficulty (3), the water level (B), the time (II), and additionally a risk designation if needed (PG).

Technical Difficulty

- 1 - Not technical. Think of this as a hike suitable for most. Should not have a risk designation.
- 2 - No rope work needed, but may involve some scrambling. If this has an associated risk designation, falls or slips may have serious consequence or be fatal.

- 3 - Technical. This is the vast majority of canyons on the Colorado Plateau. This defines technical canyons that will require rappelling and possible anchor skills.
- 4 - Advanced Technical. This is used to denote canyons that require more advanced technical skills, such as difficult anchors, keeper potholes, big multi-stage rappels, etc..

Water Level

- A - Completely dry.
- B - Pools or water with no current. (Or very little.) This covers most canyons on the Colorado Plateau. A "B" canyon may have a few small pools, or require swimming for long distances. Be sure to check the description to see how much water is likely to be encountered and if a wetsuit is required. Some 3B canyons can be done without a wetsuit, but many will require a wetsuit especially in cooler times of the year.
- C - Canyons with flowing water. A good example of a "C" canyon would be Kolob in Zion. In most times of the year, it is flowing and requires flowing water skills. If you are not accustomed to flowing water canyons, get the skills before venturing into them, as they require a different skill set than "A" or "B" canyons. Most "C" canyons require thick wetsuits to insulate from the cold water exposure. All members of the group must be skilled. A stuck device or problem rappelling in a flowing water canyon can quickly lead to drowning or death by exposure.

Time

The time designation is a rough guideline. On this site, a more specific hour range is used, and in the description, specific time for the approach, canyon, and exit is generally used.

- I - Short, a couple of hours for most groups.
- II - About a half a day for most groups.
- III - A full day for most groups.
- IV - A long day. Bring a headlamp and avoid these in the shorter winter days.
- V - More than a day, generally two days.
- VI - Not frequently seen on the Colorado Plateau, these require 2+ full days.

Risk Designation (if needed)

This is an important one, and helps refine the difficulties encountered. In the slots on Southern Utah, many involve climbing, stemming, and squeezing above constrictions. The risk designation helps give a sense of the difficulty of the climbing, and what the consequences of a fall would be. Be very wary of canyons with risk designations. Even in a PG or PG-13 canyon, a fall very well may be fatal by the time a rescue is mounted. Any canyon with a risk designator requires sound judgement. NOT SUITABLE FOR BEGINNERS EVEN WITH COMPETENT LEADERSHIP.

- PG or PG-13 - These are canyons with some climbing or other difficulties that may have serious consequences, but are within most experienced canyoneers abilities.
- R-, R, R+ - Dangerous consequences. Experts only. An R+ is harder than an R, which is harder than an R-
- X-, X, X+, XX, etc. - Very dangerous. Experts only, with solid skills. At this level, climbing experience helps. Different people use the different X categories differently. Essential all X canyons require expert level skills. Read the description for specific difficulties of a canyon.

Climbing Ratings

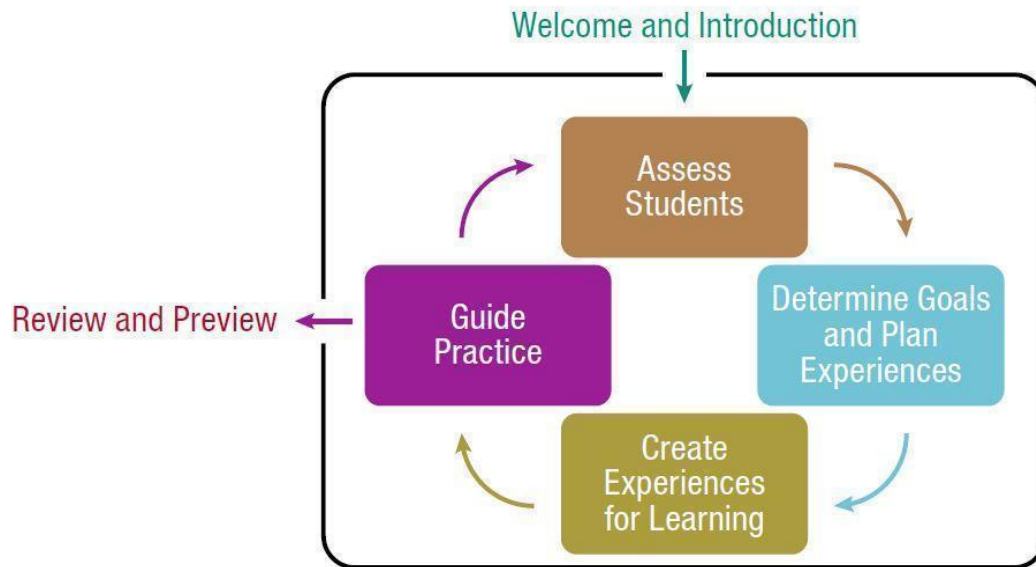
Some canyons will also include a climbing rating, for instance 3B II R 5.6. This (5.6 in the example) is meant to denote technical climbing level needed using the Yosemite Decimal System. Take this with a grain of salt. In my experience, the climbing rating in canyons varies WIDELY, and is generally not reliable at all. One mans 5.6 is another mans 5.0, and yet another mans 5.10. The movement is very different than climbing and often people specifying the rating don't have enough climbing experience to properly rate the difficulties.

(Reference ["Getting Started - Canyon Rating System"](#) Road Trip Ryan)

APPENDIX E

Teaching/Learning Cycle

Teaching/Learning Cycle



- **Assess the Student**
 - Before you can build a lesson plan for the day, you need to assess your student's physical abilities and technical understanding. Warm-up activities will give you an opportunity to see how comfortable your guests are on snow, while building good group rapport. Observe their movements, stance, balance, and agility.
- **Determine Goals and Plan Experiences**
 - Ask questions about their goals and motivations for taking a lesson.
 - As the lesson progresses, remember to make sure the group goals align with what each student wants to learn and their motivations for taking a lesson.
- **Create Experiences for Learning**
 - Organize students and the lesson environment by choosing appropriate terrain based on ability and snow conditions. Interact with support, and encourage your students.
- **Guide Practice**
 - Create space to spend one-on-one time with each of your students while others practice or explore movements. Repetition of movements anchors the actual learning and sliding experience. Guided practice also lets you handle an ability split. Challenge your more advanced students with difficult tasks while you spend individualized time on guests who may be struggling. This also gives students independence while allowing you individualize the lesson.

- **Review and Preview**

- At the end of the lesson, make sure to review the experience, preview the next lesson, and invite your students back to your school and the sport. The debrief is an opportunity for your students to discuss their progress and the goals they accomplished. This content should come from the student. It is your job to facilitate the debrief and make a link to what another day on snow would do for them.

(Adapted from: “Delivering the Beginner Experience” Course, PSIA/AASI)

APPENDIX F

Different Learning Styles

- VAK Model - Learning Preferences - create multisensory lessons (describe a skill, demonstrate a skill, then have them try the skill)
 - V - Visual - pictures, images and demonstrations
 - A - Auditory - descriptions, talking about experiences
 - K - Kinesthetic - process through feelings and experiences

(Adapted from: “Delivering the Beginner Experience” Course, PSIA/AASI)

Appendix G

Anchors - Approved (use only anchor that have been passed off)

- Bolted anchors - 2 solid bolts for rappels; 1 bolt for short handlines/rappels
- Single point natural anchors
 - Boulders - big, non-movable, watch sharp edges
 - Tree Anchors - Alive, Bottom, Circumference (thick)
 - Webbing wraps/slings
 - Cinch wraps
 - 2 wrap/3 wrap 1 pull
 - Girth hitch
 - Basket hitch
- Multipoint natural anchors
 - Redundant wraps
 - Basket with overhand

- Deadman/Human/Meat (use only for short handline sections)
- Cairn/Chock
- Transient (pot shot/sand traps/hooks)
- Fiddlestick

Appendix H

Rappel Systems - Releasable

- **8-Block** - Preferred rappel system for most anchors. Set up with backup knot. [“Figure 8 Releasable Block”](#) by Canyoneering Chics
- **Totem “Jester”** - totem set up in jester mode allows for lowering and tandem rappelling (rappelling on second line) [“Rigging the Jester Contingency Anchor”](#) by North Wash Outdoors
- **Fiddlestick**
- **MMO** - Munter, Mule, Overhand. For use when you only have one carabiner. Can modify to also do top belay.

Appendix I

Top Belaying - The belayer uses a descender device or system to control the rope anchored above. The rappeler is already attached to a second rope for rappelling. The belayer is the backup if the rappeler loses control and lets go of the rope.

- Technique
 - Rappeler is attached to rappelling rope with rappel device
 - Top rope is a second rope attached to an anchor above
 - Rope is attached to the rappeler with a Figure 8 follow through knot tied through the rappellers harness or a Figure 8 on a bight attached to a carabiner and attached to the rappellers belay loop.
 - Rope moves through a descender device that is attached to the anchor NOT the belayer. Belayer slowly allows rope to move through the device as the rappeler goes down and stops it at any time the rappeler is going too fast or lets go.
 - Backup belay - have the rope redirected through another descender device attached to the belayer or use a “capture” device such as a prusik above the belay device
 - Be aware that there must be space between the moving top rope and the static rappel rope to prevent wear to either rope
 - Use edge protectors on top rope belay if needed to prevent rope wear

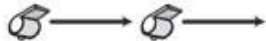
- Maintain smooth rope flow
- Approved descender devices or systems
 - MMO (Munter/Mule/Overhand) - [“Safest way to rappel/Belay rappel”](#) Summit Seekers Experience
 - Munter only - [“How to top belay a rappel”](#) Erik Holmes
 - Figure 8 (substitute device in for the Munter knot on video)
 - ATC (substitute device in for the Munter knot on video)

Appendix J

Communication - Whistles/Hand



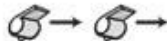
One Long Blast = Stop, Attention



Two Long Blasts = Off Rope



Three Long Blasts = Help, Emergency



Two Short Blasts = Up Rope

Remember: UP ROPE is 2 syllables



Three Short Blasts = Lower Rope

Remember: LOW-ER ROPE is 3 syllables

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Up Rope



Lower Rope



STOP



RELEASE

Rope is too short or
your partner is stuck.



Dangerous Obstacle

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APPENDIX K

Canyoneering Qualifications

Participants

Lecture
Rating system
Static vs Dynamic ropes
Establish rope lengths
Cause of accidents
Read/understand/interpret weather reports
Flash flood risks/high ground
SOS beacon
Low impact
Avoiding rope grooves/damage
Dealing with human waste
Rope and equipment Care
Commands (verbal, whistle, hand)
Discuss risks and tasks of being the first rappeller
Understand how to create and use flotation with gear
Water hazards
Discuss water depth checks (dipstick - no jumping, standard position - feet first arms slightly out)
Discuss wet rappel disconnect and rope length
Discuss water slide hazards and body position
Discuss different descenders
Discuss different belay techniques (self/top/fireman/hip)
Proper clothing and gear
Canyoning Bible - 10 elements to follow in a canyon
Read: ACA Canyons Booklet
Watch: Canyoneering Institute
- 101 Discover Canyoning (free online)
- 102 Weather for Canyoneers (free online)
Knots
Figure 8 follow through
Figure 8 on a bite
Water knot
Clove hitch

Munter hitch
Girth hitch
3 wrap prussik
Double fishermans bend
VT (Valdotian Tresse) prussik
Anchors
EARNEST
Single point natural anchors
- Webbing wrap/sling
- Cinch wraps (2 wrap 1 pull, girth hitch, basket hitch)
Releasable - understand hazards/risks
- 8 block
- Totem in jester
On Rope Skills
Stuff rope bag
Set rope length
Edge protection
Rope retrieval challenges (crossed ropes, edges)
Move on class 3, 4 terrain (scrambling)
Move on class 5 terrain (rock climbing terrain)
Chimney, stem, bridge
Spotting
Partner capture/assist
Handlines – use
Friction hitch on hand line (prussik)
Use proper communication rappelling
Proper rappelling technique
Rappel single and double strand
VT prussick self belay
Add brake, friction and lock off on rappel device
Sit start/body smear
Lock off with leg wrap
Fireman belay
Rappel with backpack
Rappel with hanging pack

Foot loop rope grab to free stuck gear (friction hitch or mechanical ascender)
Rappel 50+ ft
Prerequisites
Rappelled in the last 2 years
Resources:
ACA - Core
Canyoneering Institute - 101, 102, 103 online
12 Finger Guides - Intro to Canyoneering , Canyoneering 1

Assistant Trip Leader 1

Lecture	Done
Identify watershed on a map	
Escape routes in canyons	
Navigation - map and compass	
Navigation - nature	
Navigation - electronic/GPS (Gaia)	
Research online resources (Road Trip Ryan , Bluu Knome , Rope Wiki , Colorado Plateau Conditions Facebook , Canyoneering Utah Facebook)	
Find and interpret local weather (weather.gov)	
Basic first aid assessment	
Treating for shock	
Immobilize/stabilize upper extremity injury	
Hypothermia/hyperthermia	
Self evacuation	
Activating EMS non urgent (911, base commander, local SAR, emergency contacts)	
Activating EMS urgent (911, local SAR)	
Water hazards - foot entrapment, strainers, siphons, undercuts, recirculating currents, rope entanglement	
Knots	
Frost	
Alpine butterfly	
Directional 8	
Munter Mule Overhand	

Anchors	
DEAR	
Backup anchors	
Multipoint natural anchors	
Deadman	
Human/Meat	
On Rope Skills	
Buddy checks	
Courtesy rigging - set up and rappel	
Anchor pull side/stuck rope	
MMO	
Static block - biner block	
Double rope rappelling - risks, knots in ends	
Adjust rope lengths	
Redirect edges	
Handline - set up	
Retrievable safety line	
VT prussik above and below device	
Top Rope belay with hands free backup - hip belay and fixed anchor	
Stop rappeller on rope with fireman belay	
Dynamic belay (lowering while maintaining belay)	
Ascension	
- friction hitch (single/double strand rope)	
- metal ascenders	
- backups (clip into both ascenders, tie in short)	
Transition from ascension to rappelling and back	
Pass a knot ascending and descending	
Rappel on Guided rappel	
Lower incapacitated rappeller by Fireman Belay	
Zip line gear	
Shift rappel to top belay line (MMO or equiv)	
Rappel 100+ft adding friction and locking off	
Swimming	

Swim 50 yards with gear using flotation if needed	
Depth checks	
Safe jumping	
Waterfall rappelling	
Waterslide technique	
Prerequisites	
5 canyons	
Participant Clinic	
Resources:	
ACA - Sovereign	
Canyoneering Institute - 201 Canyoneer Course (can access once you have completed the 101-103 online courses)	
12 Finger Guides - Rope Skills Course , Canyoneering 2	

Assistant Trip Leader 2

Lecture	Done
Mark waypoints on GPS	
Review canyon topo map	
Knots	
Ladder with webbing	
Bowline with Yosemite finish	
Mule hitch	
Klemheist	
Anchors	
Redundant wrap (basket with overhand)	
Courtesy rigging	
Rope Retrieval	
On Rope Skills	
Anchor a partially retrieved rope (pull side)	
Ascend partially retrieved rope (rappel side)	
Set up 8 block and lower - pro and con	
Set up Biner block - pro and con	
Set up double rope rappel - pro and con	

Tension and tie off a guide rope and bottom anchor	
Release tensioned guide line	
Rappel 200+ft adding friction and locking off	
Swimming	
Swim/float 100 ft in full gear no floatation	
Jump into 8ft+ pool	
Prerequisites	
10 canyons	
Assistant Trip Leader 1	
Resources:	
ACA - Aspirant	
Canyoneering Institute - 301 Advanced Course	

Lead Trip Leader

Lecture	Done
Pack checks	
Safe Zones	
Safety briefing (medical conditions, weather, PLB (beacon), first aid kit location, egress)	
Fearful Clients - rappelling from top; downclimbing	
Timely instruction	
Splint lower leg	
Neck/Back injury	
Patient carries w/ 1 or 2 people	
Anchors	
Cairn	
Backup/test marginal anchors	
Sequencing/adding friction for marginal	
Bolt placement	
Chock	
Transient (pot shot, sand traps, hooks)	
Fiddlestick	

LMAR	
On Rope Skills	
Lift-shift systems	
Tie off guide rope with mechanical advantage	
Retrievable guided rappel system	
Set up retrievable safety line	
Counter weight rappel	
Drop Loop 2:1	
Tandem rappel	
Partner capture	
- Foot/partner/human ladder	
Teach how to rappel	
Teach how to stem/chimney/bridge	
Belay climber using hip belay and fixed anchor	
Potholes	
- partner assist	
- pot shot/counter weight	
- aid hooks	
- multiple ropes	
Redirect	
Combo rappel-lower	
PCD (progress capture device) - hauling	
Pulleys - hauling	
Cut and lower rescue on double strand	
Twin rope rigging to lower - stone knot	
Convert tailup rigging (fiddlestick) to lower w/ self belay	
Pick off rescue same rope w/ self belay	
Bottom rescue same rope via ascension, then lower	
Use guide, track or tag line when hauling or lowering	
Rappel 300+ft adding friction and locking off	
Swimming	
Assist swimmer	
Jumping "pencil"	

Cut off of rope in 10 sec	
Swim for 4 min	
Jumping into moving water	
Swim for 6 min no floatation	
Hold breath for 20 sec underwater	
Special Skills	
Horizontal evac	
Vertical evac	
Multipitch rappels	
Prerequisites	
25+ canyons	
Led 6 canyons	
Assistant Trip Leader 2	
WFR	
Resources:	
ACA - Assistant Leader/Canyon Leader	
Canyoneering Institute - 401 Rescue/501 Lead	
12 Finger Guides - Rope Rescue	

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