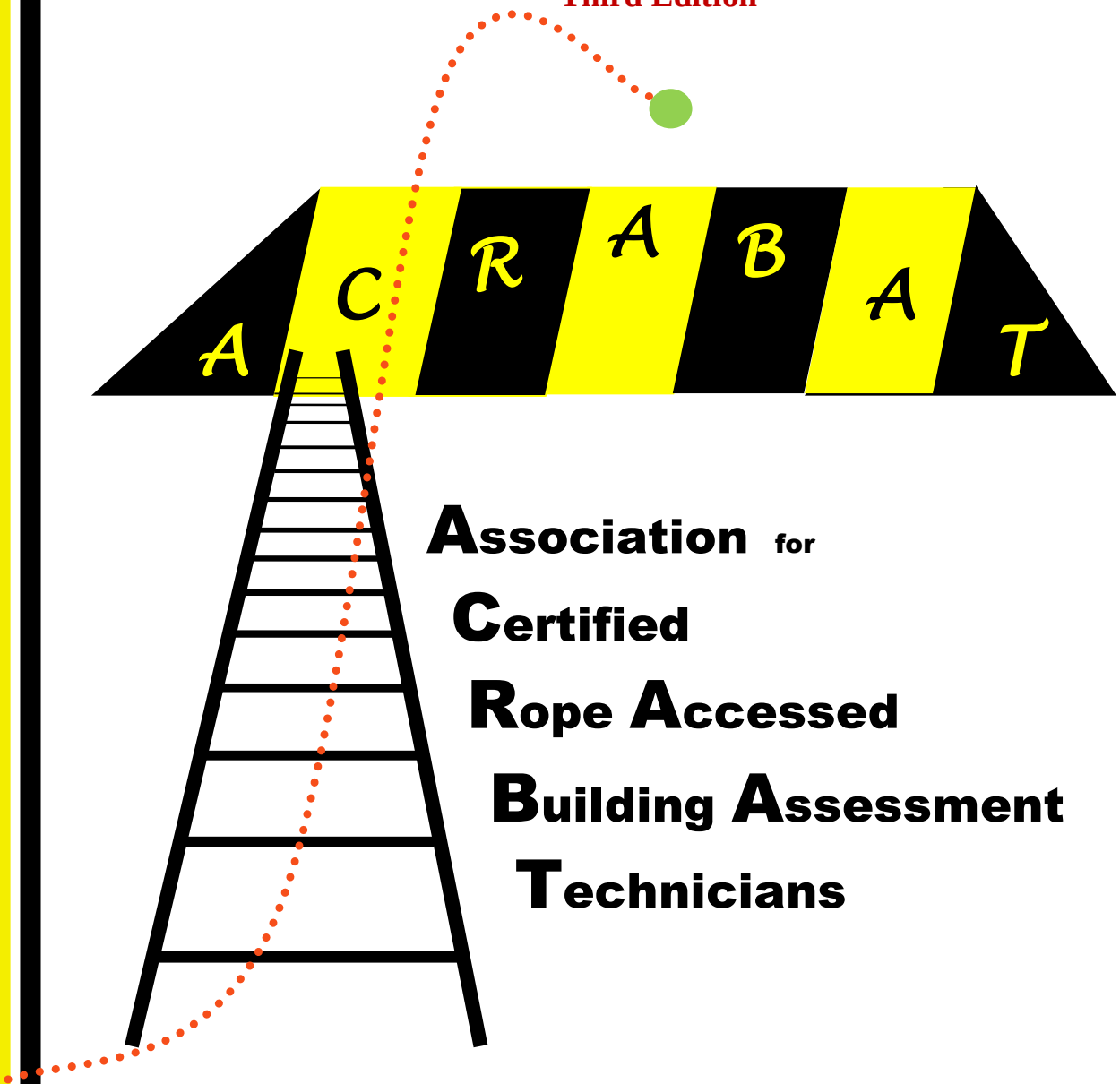
The **A**ssociation for **C**ertified **R**ope **A**ccessed **B**uilding **A**ssessment **T**echnicians

A Professional Association Serving the Building Inspection Trades Industries

ROOF INSPECTION SPECIFIC ROPE ACCESS STANDARDS

Third Edition



Association for Certified Rope Accessed Building Assessment Technicians

Who We Are

The Association for Certified Ropes Accessed Building Assessment Technicians (ACRABAT) was initiated in 2008 out of the deliberate actions of a handful of Property Claims Adjusters with growing concerns about the aggressive trends for pitched roofing systems within the modern housing industry.

What We Do

ACRABAT is a professional organization dedicated to reducing the threat of personal injury for pitched roof system rope access workers by promoting uniformity standards for practitioner skills and knowledge at a minimum level.

ACRABAT Mission Statement

ACRABAT seeks to solidify professional consensus on pitched roof inspection specific rope access guidelines for front line workers, the instructors that train them and the operations administrators that create and maintain such programs.

ACRABAT Vision Statement

The Association of Certified Rope Accessed Building Assessment Technicians (ACRABAT) is recognized as the ANSI / North American standard for safe building inspection practice, risk managed fall protection work programs and training.

Warning

The information contained within this document represents guidelines that are the result of a great deal of time, research and practice. These guidelines are intended for use by professionals within the Pitched Roof Rope Access Trades Industries who have specific experience and training in the process of Rope Access. Improper interpretation and/or misuse of these guidelines may result in incident, injury or fatality. No liability for loss or damage, direct or consequential, to readers or others from the use of standards contained herein will be assumed by ACRABAT, its administration, members, partners, or contributors.

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1.0 SCOPE, PURPOSE, EXCEPTIONS, AND INTERPRETATIONS

1.1 Scope:

This document initiates and sets forth acceptable practice for pitched roofing specific rope access, acceptable practice for the companies that employ those who are required to access pitched roofing systems and acceptable practice for those who provide pitched roofing rope access training.

1.2 PURPOSE:

The purpose of this document is to provide an informational guide on acceptable work practices and procedures, within the frameworks of SPRAT's "Safe Practices for Rope Access Work", for pitched roofing system specific rope access. This document is written for the Pitched Roof Rope Access Worker, the companies that employ workers who are required to access pitched roofing systems and for those who provide pitched roofing rope access training. The content of this document is also recommended for use by all fall protection enforcement authorities. This is a working document that will receive continuous review and annual revisions to incorporate information on emerging products and process in order to maintain the highest level of effectiveness and integrity for those it serves.

ACRABAT Definitions

Access Zone – the area in which people are at risk of falling such as on-rope or near a working edge. This area requires protective measures such as verbal warnings, signs, barriers, safety lines, or other devices designed to prevent or arrest a fall. *(SPRAT "Safe Practices for Rope Access Work" 2.2)*

Anchor, anchorage – a critical component of support within a rope access system utilized as a secure point to attach a lifeline.

Anchor, deviation – deviation anchors change the direction of the rope system. In common practice, the rope does not connect to the deviation anchor but runs through a carabiner or connector. *(SPRAT "Safe Practices for Rope Access Work" 2.4.2)*

Anchor, fixed – a secure point or combination of load sharing points fixed to the earth or structures that meets the strength required for rope access work.

Anchor, load sharing – several anchors connected together to make a single anchor that meets the strength required for rope access work. *(SPRAT "Safe Practices for Rope Access Work" 2.4.4)*

Anchor, primary –the anchor that is currently providing resistance and potential fall arrest safety to the rope access worker.

Anchor, weight based - a secure point of attachment consisting of weight encapsulated / contained / securely attached to by a load rated system of connectors and/or nylon cordage, that meets the strength required for rope access work on a pitched roofing surface.

ANSI - (American National Standards Institute) American Based Committee for Standardization. Professional US organization that establishes standards for a wide ranging variety of products.

Approved – accepted as appropriately sound by duly appointed administrative or regulatory authority.

Ascender – a belay device best suited for climbing upward by gripping a rope when loaded in one direction and sliding freely in the opposite direction when pushed forward.

Authorized Person – an individual who has the approval of their employer to perform duties at a location where they will be exposed to high angle fall hazards. *(ANSI Fall Protection Code Definition 2.11)*

Belay Device – a critical component (equipment or hardware) of a rope access system. A piece of equipment (ex. ascender, descender , fall arrestor) designed to secure a climber to a lifeline when used in a manner consistent with the manufacturers recommendations.

Belay Transfer – the act of transitioning from one rope access anchor system to another. Most commonly known in pitched roof rope access as the action performed by an ascending climber to re-orient a belay device to transition over a ridge cap in order to descend down a separate slope that will require a separate anchor .

Body Harness – a single or multiple piece nylon based component system of straps that encapsulate both the upper and lower torso and provide a point of attachment for connectors or belay devices, designed to evenly distribute arresting forces across the chest, shoulders, waist and thighs.

Carabiner – a form of connector consisting of a complete loop with a spring-loaded entry gate. *(SPRAT "Safe Practices for Rope Access Work" 2.8)*

Carabiner, locking – a carabiner with a mechanism that reduces the possibility of a gate being opened inadvertently. *(SPRAT "Safe Practices for Rope Access Work" 2.9)*

Carabiner, two-stage locking – a locking mechanism that requires at least two different consecutive manual actions to open the gate. *(SPRAT "Safe Practices for Rope Access Work" 2.9.1)*

Carabiner, three-stage locking – a locking mechanism that requires at least three different consecutive manual actions to open the gate. *(SPRAT "Safe Practices for Rope Access Work" 2.9.2)*

Carabiner, self-locking – a gate that locks automatically when it closes. *(SPRAT "Safe Practices for Rope Access Work" 2.9.3)*

CE – a mark or logo placed on a piece of equipment by the manufacturer to indicate compliance with the laws and standards for safety, environment and consumer protection established by the European Union (EU).

CEN – European Committee for Standardization. Professional European organization that establishes standards for a wide ranging variety of products.

Competent Person – an individual designated by the employer to be responsible for the immediate supervision, implementation and monitoring of the employer's managed fall protection program who, through training and knowledge, is capable of identifying, evaluating, and addressing existing and potential fall hazards, and who has the employer's authority to take prompt corrective action with regards to such hazards. *(ANSI Fall Protection Code Definition 2.30)*

Competent Trainer – a person with the appropriate training, education, knowledge and experience in rope access, capable of delivering a quantifiable educational program in a safe and effective manner.

Connector – a device (ex. carabiners, snap hooks, rapid links) used to combine components of a rope access system.

Critical Component – an anchor, body harness, belay device or other piece of equipment essential to the creation of a rope access system.

Decelerator – a component of a personal fall arrest system either by design or inherent qualities, capable of reducing the shock load experienced by a person from free fall.

Descender - a manually operated belay device best suited for controlled downward movement along a lifeline.

Dynamic Belay / Team Belay – an active system consisting of a at least two people (a climber and a ground belay person) who work together as components of a rope access system.

Dynamic Rope – a rope that is specifically designed to absorb the energy of a fall by extending in length thereby minimizing the shock load to the worker, rope system and anchors. *(SPRAT "Safe Practices for Rope Access Work" 2.11)*

Element – a structure with inclined surfaces utilized for the purpose of pitched roof rope access training.

Employer – a corporation, partnership, proprietorship, government agency, or other organization that authorizes its employees to perform rope access work. *(SPRAT "Safe Practices for Rope Access Work" 2.12)*

Energy Absorber / Shock Absorber – a component of a personal fall arrest system designed to dissipate / limit shock related energy to the human body imposed during the fall arrest process.

Fall Arrest – equipment, system or structure that arrests the fall of a worker. *(SPRAT "Safe Practices for Rope Access Work" 2.13)*

Fall Factor – the maximum distance a person could fall, divided by the length of the rope attaching to the anchorage point. *(SPRAT "Safe Practices for Rope Access Work" 2.14)*

Fall Protection – any equipment, device or system that prevents an accidental fall from elevation or that mitigates the effect of such a fall. *(ANSI Fall Protection Code Definition 2.67)*

Hand Line / Secondary Lifeline – an additional line placed next to primary lifeline used by a worker to assist in the process of ascending and descending a pitched roof slope in a dynamic belay process.

Hazard Zone – any area where a person may be at risk as a result of the work being performed. *(SPRAT "Safe Practices for Rope Access Work" 2.16)*

Incident – an unplanned or unintentional occurrence that produces significant threat to personal injury or property damage. Sometimes referred to as a close call or near miss.

Job Hazard Analysis / JHA – A written statement prepared by the rope access worker and/or employer that outlines job specific health and safety issues required to minimize the threat for injury to self and others.

Ladder Stabilizer – any device designed specifically by manufacturer to enhance a ladder's resistance to the forces of kick-out and/or lateral slippage during roof access use.

Lanyard – a component of a rope access system consisting of a flexible rope, flat cordage strap or webbing typically utilized to attach a lifeline or harness to a connector, arrestor, energy absorber or anchor.

Lifeline - a component of a rope access system consisting of rope cordage secured on or over a structure by at least one anchor point.

Line Placement – the act of positioning a main line or main line and safety line in place across the ridge cap of a pitched roof structure.

Line Placement Device – a tool or collection of tools / tag line system, employed from ground level to position a lifeline in place across an object or structure.

Low-Slope Roof – a roof having less than or equal to 4 in 12 (vertical to horizontal). (OSHA 1926.500 (b))

Low Stretch Rope – a rope with a maximum elongation greater than 6% and less than 10% at 10% of its minimum breaking strength. (ref. CI 1801-98)

Main Line – the primary rope used for ascending, descending or positioning. *(SPRAT "Safe Practices for Rope Access Work" 2.20)*

Minimum Tensile / Minimum Breaking Strength – An expression of foot pounds that represents the point where individualized equipment components begin to fail based on testing results listed by the manufacturer.

Newton / Kilonewton– a unit of force listed in the SI system (The International System of Units), which is comparable to pounds of force (lbf) in the US System. 1 kilonewton (kN) = 1000 newtons = 224.8 lbf.

NFPA – The National Fire Protection Association / NFPA is an authoritative source that serves as a leading advocate on public safety. Establishes consensus codes and standards recognized by ANSI.

On Belay – secured to a lifeline.

OSHA – The Occupational Safety and Health Administration. An agency of the United Stated Department of labor created by congress on December 30th 1971 to prevent work-related injuries, illnesses, and occupational fatalities.

Participant – an individual student or trainee taking part in an instructor facilitated pitched roofing rope access training.

Pivot Line - a component of a rope access system consisting of rope cordage attached to a MAIN LINE or MAIN LINE and SAFETY LINE that is secured by two anchor points for the purpose of allowing for rope access secured work to take place away from the primary lifeline.

Primary Belay Device – a belay device that serves as the primary means by which a climber is secured to a lifeline.

Qualified Person – an individual who, by possession of approved professional standing, recognized degree, extent of knowledge, training and experience in the field of FALL PROTECTION and rescue is capable of designing, analyzing, evaluating and specifying FALL PROTECTION and Rescue systems to the extent required by these standards. (ANSI Fall Protection Code Definition 2.129)

Rappel – the controlled descent down a roofing slope or building structure.

Redundancy – a procedure and/or device designed to serve as a fail-safe back up process to all primary components (as determined by a qualified person) of a rope access system that present the possibility of failure primarily associated with user error.

Redundant Belay Device – a multi-directional belay device that does not need to be removed from main line to re-orient to active anchor during slope to slope transfers, utilized as a back up to a primary belay device.

Rescuer – a person performing a rescue other than the rescue subject of a rescue. *(SPRAT "Safe Practices for Rope Access Work" 2.24)*

Rescue Service – organization determined by the employer to be capable of safe and effective rescue of rope access workers. *(SPRAT "Safe Practices for Rope Access Work" 2.25)*

Retrieval – procedure for rescuing rope access workers without placing a rescuer on-rope. *(SPRAT 2.26)*

Retrieval System – the equipment used for rescue of rope access workers without placing a rescuer on-rope. *(SPRAT "Safe Practices for Rope Access Work" 2.27)*

Rope Access – A means of ascending and descending a main line while the worker is protected by a safety line. Rope access also includes the use of climbing and aid climbing techniques with fall protection. *(SPRAT "Safe Practices for Rope Access Work" 2.28)*

Rope Access Program Administrator – a person authorized by their employer to be responsible for managing the employers rope access program, who is suitably knowledgeable, experienced and qualified to manage the rope access program, including matters relating to safety, training, regulations, staffing, equipment selection and management, and other program responsibilities as designated by the employer. *(SPRAT "Safe Practices for Rope Access Work" 2.29)*

Rope Access Technician – A person who has completed a rope access certification program and has the proper training and experience to perform duties required according to the assigned level of responsibility. *(SPRAT "Safe Practices for Rope Access Work" 2.30)*

Rope Access System – a means of fall protection requiring the assembly of anchors, rope, body harnesses, lanyards, connectors and belay devices to provide for maximum access of a hard to reach area.

Risk Management – is the identification, assessment and prioritization of risks followed by coordinated and economical application of resources to minimize, monitor and control the probability and/or impact of unfortunate events. *(Wikipedia)*

Safe Zone – any area outside the hazard zone or access zone. *(SPRAT "Safe Practices for Rope Access Work" 2.33)*

Safety, or Backup Line – rope used as a secondary line of defense against falls should the main line, anchor or belay device fail.

Safety Factor – the minimum strength of the system divided by the maximum anticipated load expressed as a ratio. *(SPRAT "Safe Practices for Rope Access Work" 2.35)*

Safe Working Load (SWL) – manufacturer's designated maximum working load given a certain / particular set of environmental or situational conditions.

Self Rescue – the incorporation of equipment and techniques necessary for a rope access worker to regain mobility along a lifeline following an incident.

Shall – the word "shall" is to be understood as denoting a mandatory requirement.

Shear Reduction - the act of selecting, combining or employing components or naturally occurring elements to reduce the cutting force of cordage by increasing the bend radius over which the cordage is subject to.

Should – The word "should" is to be understood as advisory, or a recommendation.

Static Belay / Solo Belay – a process of pitched roof specific rope access performed by a single rope access worker using a pitched roof specific rope access system with mainline or main line and secondary line secured by anchors established on both sides of the roofing system perpendicular to the ridge cap that the lifeline (s) are placed across.

Static Rope – a rope with a maximum elongation of 6% at 10% of its minimum breaking strength. (ref. CI 1801-98)

Tensile Strength / Breaking Strength – sometimes referred to as tensile breaking strength represents the amount of load force required to bring material or combination of materials to failure.

UIAA – International Mountaineering and Climbing Federation (formerly known as the Union of International Alpine Associations). UIAA standards are commonly adopted as EN (European Norm) or CEN standards.

Working Load Limit (WLL) – represents the maximum allowable load of a component, system or belay device as determined by the manufacturer. Working load limits define the boundaries of force that all load rated rope access equipment should operate within in order to avoid damage or compromise. The determination of WLL is normally the expression of 15% of minimum breaking strength however, should also incorporate consideration of outside forces of the operating environment.

Roof Inspection Specific
Rope Access
TRAINING OPERATIONS STANDARDS

INTRODUCTION TO TRAINING OPERATIONS STANDARDS

ACRABAT recognizes that the demands and risk assumed by building assessment trades workers, though similar to other work at height trades professionals are distinctive enough to require an independently organized set of standards to effectively curtail the threat of personal injury. Training Operations Standards cited within this document are based on relevant industry practices and standards established by but not limited to: Occupational Safety & Health Act (OSHA), American National Standards Institute (ANSI), National Fire Protection Association (NFPA), Cordage Institute (CI) as well as other professional organizations.

PURPOSE:

- Define critical knowledge, skills and components necessary for training building assessment field technicians to recognize and effectively mitigate personal risk;
- Establish a measurable record of technical structure and competencies required to improve and refine the risk managed building assessment field practice and training process;
- Provide an educational platform for program administrators to capitalize on successful risk management training processes and avoid the hazards of building their own program through the process of trial and error.
- Promote effective program design and informational delivery within the outline of consistently sound technical practice.

SCOPE:

- This document intended for use by competent rope access personnel whose specific job requires both knowledge and skills based proficiency in roof specific rope access techniques.
- The ACRABAT certification process is intended to establish a minimum criteria of knowledge and skills that a candidate should possess. Employers of roof specific rope access workers must evaluate their workers skills and knowledge base to verify suitability to a given job and provide additional training when necessary.

SECTION A: TRAINING OPERATIONS MANAGEMENT

A1 PROGRAM RESPONSIBILITIES

A1.1 The training organization *SHALL* provide services consistent with its mission, goals and objectives.

A1.2 The training organization *SHALL* accurately represent its products and services to the general public.

A1.3 The training organization *SHALL* respect the confidentiality, health and safety of its clients.

A1.4 The training organization *SHALL* incorporate additional safety measures to prevent the injury of their trainees and *SHALL* not operate outside the limits of their competencies or control.

A1.5 The training organization *SHALL* disclose all training *INCIDENTS* in the form of a written detailed narrative that includes all pertinent events leading up to and resulting from the incident.

A1.6 The training organization *SHALL* appropriately establish and implement written policy, procedure and practice that meets the minimum criteria for risk managed building assessment guidelines within the framework of this document.

A1.7 The training organization *SHALL* establish site and program specific *RISK MANAGEMENT* procedures that includes reasonable protocol for emergency response.

A1.8 The training organization *SHALL* designate a *COMPETENT TRAINER* to complete all rope access trainings and a *QUALIFIED PERSON* to manage all training personnel and program operations.

A1.9 The training organization *SHALL* maintain appropriate amounts of general liability and workers compensation insurance.

A1.10 The training organization *SHALL* complete regular and periodic internal program reviews.

A1.11 The training organization *SHALL* submit to regular and periodic external program review.

A1.12 The training organization *SHALL* take appropriate actions based on recommendations of external reviews.

A1.13 The training organization *SHALL* employ an appropriate screening process for all program participants prior to actual training to determine *PARTICIPANT'S* risks for personal injury during training process.

A1.14 The training organization *SHALL* maintain a 1 to 5 *INSTRUCTOR* to *PARTICIPANT* ratio for all training activities that take place above ground level.

A1.15 The training organization *SHALL* complete a thorough inspection of all climbing / training platforms and equipment prior to beginning a new class.

A1.16 The training organization *SHALL* keep and maintain accurate records of equipment usage and retire equipment according to manufacturer's recommendations

SECTION B: ROPE ACCESS TRAINING STANDARDS

B1 TRAINING PROTOCOL

B1.1 All training organizations *SHALL* recognize the inherent risks associated with facilitating rope access trainees by the appropriate sequencing of their trainings that will include classroom instruction, fully equipped ground level rehearsal, and above ground pitched slope climbs.

B1.1a All individual *PARTICIPANTS SHALL* be evaluated by their *INSTRUCTORS* for competencies prior to being allowed to progress to any above ground training activities.

B1.2 All training programs *SHALL* include instruction on appropriate selection, use, maintenance and retirement of all rope access equipment based on the manufacturer's recommendations.

B1.2a No rope access training program *SHALL* use or provide instruction on the use of any *LIFELINE* related equipment *COMPONENTS* in any manner other than which is specifically recommended by the equipment manufacturer.

B1.3 All rope access training programs *SHALL* include instruction on how to minimize the threat for shock and suspension related trauma.

B1.3a Rope access training programs *SHALL* not allow for more than six (6) foot of *LIFELINE* slack line between anchors.

B1.3b Rope access training programs *SHALL* not allow for more than two (2) foot of *LIFELINE* slack line between *PARTICIPANT* and active anchor.

B1.4 All rope access training programs *SHALL* include instruction on *WORKING LOAD LIMITS*.

B1.5 All rope access training programs *SHALL* include instruction on *LINE PLACEMENT* equipment and techniques that do not require any activity above that of ground level to employ.

B1.5a *LINE PLACEMENT* devices *SHALL* be selected and used in a manner that represents a respect for minimizing the threat for property damage.

B1.5b *LINE PLACEMENT* devices *SHALL* be selected and used in a manner so that the average adult can learn to effectively employ them to a minimum height of a two and a half story structure for residential use training and six stories for commercial use training.

B1.6 All rope access training programs *SHALL* involve the use of both single story and two story extension ladders.

B1.6a All rope access training programs *SHALL* include extension ladder training specific to the safety needs of the rope access worker.

B1.6b All rope access training programs *SHALL* include roof specific *LADDER STABILIZER* use training.

B1.6c All rope access training programs *SHALL* include demonstrated ladder use skills within their trainee evaluation process

B1.7 All rope access training programs *SHALL* include information on knots and knot tying. Knots used should be selected based on reducing *SHEAR*, simplicity, consideration for rope wear, rope loading and consistency with North American standards for similar rope access usage.

B1.8 All rope access training programs shall include information on the proper identification and appropriate use of *FIXED ANCHORS*, *PORTABLE ANCHORS* and *HUMAN ANCHORS*.

B1.8a All individual *LIFELINES SHALL* be secured by an anchor that is independent of other *LIFELINES* or *HAND LINES*.

B1.8b All weight based / *PORTABLE ANCHORS* and *HUMAN ANCHORS SHOULD* be set up directly beneath eave line of roofing system.

B1.9 All rope access training programs *SHALL* include information on the appropriate set-up and use of *STATIC* and/or *DYNAMIC BELAY* building inspection systems.

B1.9a *STATIC BELAY* training *SHALL* incorporate the use of redundant friction producing *BELAY DEVICES*.

B1.9b *STATIC BELAY* training *SHALL* include curriculum on slope to slope *BELAY TRANSFERS*.

B1.9c *STATIC BELAY* training *SHALL* include curriculum on the appropriate set-up and use of *PIVOT LINES.*

B1.9d *DYNAMIC BELAY* training *SHALL* incorporate the use of both a primary *LIFELINE* rope and a *SECONDARY LIFELINE / HAND LINE* rope.

B1.9e *DYNAMIC BELAY* training *SHALL* incorporate the use of a *PERSONAL ANCHOR* .

B1.9f Both *STATIC* and *DYNAMIC BELAY* training *SHALL* incorporate instruction on and use of a *RIDGE PROTECTION DEVICE* to minimize the threat of damage to *LIFELINE* and / or property.

B1.10 All rope access training programs *SHALL* provide for above ground level belayed ascending and descending activities that allow for *PARTICIPANT* understanding of personal strengths and limitations.

B1.10a Above ground level belayed activities *SHALL* be completed on both steep (7/12 – 11/12) and extra steep (12/12 – 18/12) pitched surfaces.

B1.10b All rope access training programs *SHALL* provide appropriate curriculum on the appropriate selection, set-up and use of life line *ASCENDERS, DESCENDERS* and *FALL ARRESTORS*.

SECTION C: EQUIPMENT STANDARDS

C1 ROPE ACCESS EQUIPMENT STANDARDS

C1.1 Equipment will not be specified however should be appropriate for the purpose, application and standards consistent with manufacturer's recommendations.

C1.2 All components assembled to create a roof specific rope access system *SHALL* be compatible with one another and used in a manner that is consistent with the manufacturer's recommendations.

C1.3 All components of a roof specific rope access system *SHALL* be inspected for function and wear prior to use.

C1.4 All components of a roof specific rope access / *PERSONAL FALL RESTRAINT SYSTEM* (work positioning system) *SHALL* be selected, assembled and utilized in a manner which prevents a *CLIMBER* from a free fall of more than two (2) feet.

C1.5 All *BELAY DEVICES* should be such that they cannot be accidentally removed or unfastened from a *LIFELINE* while a person is attached to it.

C1.6 All roof specific rope access equipment *SHALL* incorporate equipment and procedures that limit the maximum arresting force on the *CLIMBER* to 900 lbf when secured at waist level of a *BODY HARNESS*.

C1.7 *RIP STITCH SHOCK / ENERGY ABSORBERS SHOULD* be utilized on all BELAY DEVICES that are compatible with such based on manufacturer's recommendations.

C1.8 All *LIFELINE* components subject to impact loading that produces forces in excess of the *WORKING LOAD LIMIT* should be removed from service and not reused until inspected by a *QUALIFIED PERSON* and determined to be suitable for re-employment within a rope access system.

C1.9 All manufactured components assembled to create a roof specific rope access system *SHALL* be *TENSILE STRENGTH* rated by the manufacturer to a minimum 5000 LBF (22.2kN) or determined sufficient for use by a *QUALIFIED PERSON*.

C1.10 All harnesses *SHALL* consist of either a one piece (full body) or two piece (combination seat and upper torso) full *BODY HARNESS* system that meets *UIAA*, *NFPA*, *ANSI*, *ASTM*, or *EN* standards and have a *TENSILE STRENGTH* of at least 5000 lbf / 22.2 kN.

C1.10a All harnesses utilized to facilitate *STATIC BELAY* building inspections *SHALL* incorporate either a stitched belay loop or other suitable attachment point (as recommended by manufacturer) centered at waist level in front of the *CLIMBER*.

C1.10b All harnesses used by the *GROUND BELAY* person to facilitate a *DYNAMIC BELAY* building inspections *SHALL* incorporate either a stitched belay loop or other suitable attachment point (as recommended by manufacturer) centered at waist level in the front and the rear of the *GROUND BELAY* persons harness.

C1.11 Helmets that meet *UIAA* 106 or CE 12 492 standards *SHALL* be appropriately used to protect *PARTICIPANTS* from impacts with ladders, climbing elements and falling objects.

C1.12 *LIFELINE* rope *SHALL* be consistent with that of *LOW STRETCH* or *STATIC* Kernmantle cordage that has a breaking strength of at least 5000 lbf / 22.2 kN and meets one or more of the following standards: *UIAA* 107, *NFPA* 1983, *EN* 1891 (Type A) or *CI* 1801-07.

C1.12a All *LIFELINE* rope and cordage *SHALL* be composed of synthetic fibers.

C1.12b *LIFELINE* accessory cord utilized as a *REDUNDANT* belay component within a roof specific rope access system *SHALL* meet *UIAA* 102, *EN* 564, or *CI* 1803-03 standards or meet design factor requirements as determined by a *QUALIFIED PERSON*.

C1.13 Appropriate *FIXED ANCHORS* and/or *WEIGHT BASED* ANCHORS *SHALL* be utilized on all roof specific rope access inspections.

C1.13a All *FIXED ANCHORS* in a *WORK POSITIONING SYSTEM SHALL* be capable of withstanding 3000 lbs of force.

C1.13b All *WEIGHT BASED ANCHORS SHALL* be positioned at ground level directly under the roof's eave and of a weight that is equal or greater to that of the intended climber.

C1.13c All anchors used within a roof specific rope access system or systems *SHALL* be independent from other *ANCHORS*.

C1.13d All anchor webbing *SHALL* have a minimum tensile breaking strength of 17.5 kN (4000 lbs) and composed of Spectra, Kevlar, Vectran or similar fibers.

C1.13e All anchors *SHALL* be assembled in such a fashion that will prevent the possibility for both horizontal and vertical slippage along the axis of the connection point.

C1.13f All anchor specific cordage *SHALL* be assembled in a manner that will limit lifeline connection point of anchor cordage angle to no more than 90°.

C2 Tools and Work Equipment

C2.1 All roof inspection tools and equipment *SHALL* be compatible with rope access work and not present a significant personal safety risk to the rope access worker.

C2.2 All roof inspection tools and equipment *SHALL* be properly secured to the Rope Access worker to prevent them from being dropped and causing damage to person or property.

PRACTITIONER CERTIFICATION STANDARDS

The goal of ACRABAT standards of practice is to encourage the continuous improvement of roof access safety and training standards by promoting uniformity within the roof inspection trades industry.

Certification is a credential achieved by an individual that indicates to the rest of the industry that the individual has completed specific training and successfully passed a series of knowledge and skills tests that comply with standards established by ACRABAT.

All ACRABAT Practitioner Certification Standards are written on a working document that will receive updated revisions to reflect new trends and best practices for the industry as needed.

SECTION D:

CERTIFICATION PROCEDURES FOR ROOF SPECIFIC ROPE ACCESS WORKERS

D1 General Certification Criteria

D1.1 Certifying Host: A certifying host is an organization that provides for individual certification. All certifying organizations must be able to provide for minimum levels of equipment, information and site specific standards consistent with Level I, II, & III Practitioner training requirements.

D1.2 Certification host shall submit request for certification provider status by completing host application form and forwarding it to ACRABAT home office.

D1.3 Certification host is responsible for forwarding all applicant's certification request paperwork to ACRABAT.

D1.4 Practitioner Certification Standards were created in order to establish common standards for identifying practitioner knowledge and skills at a minimum level. Additional evaluation may be required by the employer to verify the rope access worker's knowledge and skills comprehension relevant to a specific job site.

D2 Certification Prerequisites

D2.1 Minimum age of 18 years.

D2.2 Completed release of liability form with signature.

D2.3 Completed and signed statement indicating candidate is both mentally and physically capable to perform rope access work.

D2.4 Completed ACRABAT certification application.

D3 Grading System for both Written Testing and Skills Testing

D3.1 A certifying host is responsible for developing and administering practical skills and knowledge testing consistent with applicable practitioner level standards.

D3.1a Certifying host must maintain records documenting all class participants that they have tested and the results of those tests.

D3.2 Each written or skills based test is graded on P/F/D – indicating Pass/Fail/Discrepancy.

D3.2a Pass (P) indicates satisfactory performance during the activity.

D3.2b Fail (F) indicates failure to demonstrate satisfactory performance during the activity and failure of evaluation process.

D3.2c Discrepancy (D) indicates poor performance during the activity, three discrepancies constitute failure of evaluation.

D3.3 Fail (F) Examples: The following represents a partial list of errors that would indicate failure of overall evaluation.

D3.3a Unprofessional Conduct.

D3.3b Height phobias.

D3.3c Inability to use line placement tools to position a lifeline across a roof structure from the safety of ground level..

D3.3d Inability to correctly assemble a rope access system.

D3.3e Non completion of ground safety check.

D3.3f Use of ladders or rope access equipment in a manner which is inconsistent with manufacturer's use instructions.

D3.3g Inability to demonstrate appropriate hands free work positioning that incorporates the use of both primary and redundant belay devices.

D3.3h Inability to demonstrate appropriate techniques for avoiding shock related trauma.

D3.3i Inability to effectively complete a self-rescue from an ascender during true vertical suspension.

D3.4 Discrepancy (D) Examples: The following represents a partial list of actions that would indicate an evaluation discrepancy.

D3.4a Unlocked carabiner.

D3.4b Unfastened helmet.

D3.4c Inability to complete exercise in a timely manner.

D3.4d Improperly dressed knots.

D3.4e Trust issues with rope access equipment.

D3.4f Inability to properly care for rope access equipment or roofing system.

D4 Scope of Certification

D4.1 There are three different types of practitioners: Level I / *"AUTHORIZED PERSON"* , Level II / *"COMPETENT PERSON"* and Level III / *"QUALIFIED PERSON"* .

D4.2 To be certified, an individual *SHALL* complete an initial training program that addresses appropriate roof specific rope access safety standards for that level.

D4.3 Given the agreement of a certifying host, experienced practitioners may challenge into a level by providing documentation of experience and completed trainings and by passing both the documented skills and knowledge tests for that level.

SECTION E

Level I Practitioner / "Authorized Person" / Rope Access Worker

E1 Level I Certification Criteria

E1.1 No experience is required prior to entering a Level I training program.

E1.2 A minimum number of content appropriate training hours *SHALL* be completed for full Level I certification. Trainings may exceed time minimums in order to cover vendor or equipment manufacturer recommendations.

E1.2a Full Level I Certification: A minimum of sixteen (16) hours of level appropriate curriculum is required.

E1.2b Level I Classroom Activities: A minimum of four (4) hours of classroom activities that include curriculum on:

- ladder safety
- *WORKING LOAD LIMITS*
- deceleration, *FALL FACTORS* shock loading and shock trauma
- rope access equipment care, use and retirement.
- *STATIC BELAY SYSTEMS*

E1.2c Level I Ground School Activities: A minimum of two (2) hours of *GROUND SCHOOL* training that includes hands-on / experiential :

- *LINE PLACEMENT* activities that incorporates ridge cap / rope protection tools.
- *ANCHOR* selection, set up and use.
- assembly and use of *STATIC BELAY SYSTEMS*

E1.2d Level I Height Rated Activities: A minimum of six (6) hours of training that takes place above a minimum height of six (6) feet that includes hands-on / experiential:

- *LINE PLACEMENT* activities.
- *ANCHOR* selection, set up and use.
- assembly and use of *STATIC BELAY SYSTEMS*
- assembly and use of *PIVOT LINES*
- 7/12 – 12/12 pitched roofing surface access

- 12/12 – 16/12 pitched roofing surface access
- extension ladder assisted access of single and double story slopes of equal to or greater than a 9 in 12 pitch.

E1.2e Level I Self Rescue Activities: A minimum of one (1) hour of *SELF RESCUE* curriculum that includes *PARTICIPANT'S* demonstrated ability to free themselves from an ascending or fall arresting device from a position of true vertical suspension.

E1.3 Level I practitioners should be able to demonstrate all the knowledge and skills necessary to complete roof inspections within a *STATIC BELAY* environment.

E1.4 All applicants *SHALL* successfully complete and pass a practical skills test consistent with ACRABAT Level I testing standards.

E1.4a Skills evaluation *SHALL* be completed by an ACRABAT certified evaluator.

E1.5 All applicants *SHALL* successfully complete and pass a written exam with a minimum score of 70% consistent with ACRABAT Level I standards.

E1.6 The training organization *SHALL* provide program *PARTICIPANTS* with appropriate documentation of training curriculum completed with a copy of the class manual and syllabus.

E1.7 All *PARTICIPANTS* who have completed Level I curriculum, passed level I skills and knowledge testing *SHALL* be provided a certification document or card by the certifying body.

E1.8 The duration for *LEVEL I / AUTHORIZED PERSON* certification is for three (3) years.

E1.9 Level I Practitioner recertification process *SHALL* include an additional four (4) hours of ACRABAT approved Level I training and pass a written knowledge and skills test consistent with ACRABAT Level I testing standards.

E1.10 An experienced practitioner may "challenge in" to a certified *LEVEL I AUTHORIZED PERSON* status. This process requires that the Level I applicant present documentation of sixteen (16) hours of roof specific rope access system training and demonstrate the ability to meet or exceed minimum association standards for Level I written and skills testing.

E1.11 Full Level I Certification is one of the steps required to obtain Level II *"COMPETENT PERSON"* status however, in and of itself is insufficient to train others.

E2 Duties of The Roof Specific Rope Access Worker (Level I / Authorized Person)

E2.1 The Level I Roof Specific Rope Access Worker *SHALL* have the appropriate qualifications and training for completing rope access roof inspections.

E2.2 The Level I Roof Specific Rope Access Worker should work under the direction and supervision of a Level II Rope Access Supervisor.

E2.3 The Level I Roof Specific Rope Access Worker *SHALL* have a working understanding of employer's applicable policy and procedure.

E2.4 The Level I Roof Specific Rope Access Worker *SHALL* either be provided and maintain or possess and maintain the minimum amount of rope access equipment required to safely and effectively complete a rope accessed roof inspection that include:

E2.4a Rope placement tools capable of positioning a *LIFELINE* to a minimum height of a two and a half story structure for residential use and six stories for commercial use from the safety of ground level.

E2.4b A minimum of 200ft of *PRIMARY LIFELINE* rated rope compatible with the belay device components for its intended use.

E2.4c A minimum of 50ft of *SECONDARY LIFELINE / PIVOT LINE* rated rope compatible with the belay device components for its intended use.

E2.4d A minimum of two sets of anchor cordage at least twelve feet (12ft) in length.

E2.4e A *BODY HARNESS* that meets *UIAA*, *NFPA*, *ANSI*, *ASTM*, or *EN* standards and have a *TENSILE STRENGTH* of at least 5000 lbf / 22.2 kN.

E2.4f A minimum of (6) belay component compatible *CONNECTORS* (two stage or greater) with a 5000 lbf / 22 kN *TENSILE STRENGTH* rating along the major axis with gate closed and locked.

E2.4g A ridge cap and rope protecting device that can be put in place from ground level at the same time *PRIMARY LIFELINE* is put into place to prevent damage to rope access equipment and roofing system.

E2.4h A primary *BELAY DEVICE* capable of hands-free use and compatible with intended rope access components as specified by manufacturer.

E2.4I A secondary *BELAY DEVICE* capable protecting worker during a fall forward (over the ridge cap of initial slope ascent) or backwards (below the ridge cap of initial slope ascent) during a slope to slope transition.

E2.4j Single story and multi-story extension ladders in a state of safe functioning / working order as specified by manufacturer.

E2.5 The Level I Roof Specific Rope Access Worker *SHALL* utilize personal protective equipment as designated by the Rope Access Supervisor.

E2.6 The Level I Roof Specific Rope Access Worker *SHALL* work with Level II Rope Access Supervisor to create a *JOB HAZARD ANALYSIS* that will include the following:

E2.6a Site specific location and contact information.

E2.6b Rope Access Supervisor / Level II Competent Person contact information.

E2.6c Local emergency response contact information**.**

E2.6d Company specific rope access procedure and policy.

- Team member responsibilities
- Means for set-up, access and communication
- Level II Supervisor field safety and quality control inspections
- Weight sensitive roof surface inspection procedures

E2.6e Identifiable list of hazards present in the local fields of work.

E2.6f Rescue Plans and procedure for:

- Self-Rescue
- Company / team assisted rescue
- Local emergency response team rescue

E2.7 The Level I Roof Specific Rope Access Worker *SHALL* notify the Rope Access Supervisor of any task or responsibility beyond their training, skills, qualification or experience.

SECTION F

Level II Practitioner /"Competent Person" / Rope Access Site Supervisor

F1 Level II Certification Criteria

F1.1 All participants *SHALL* have successfully obtained a *LEVEL I TECHNICIAN* prior to beginning Level II *"COMPETENT PERSON"* training.

F1.2 A minimum number of content appropriate training and field related experience hours *SHALL* be completed for full Level II certification. Trainings may exceed time minimums in order to cover vendor or equipment manufacturer recommendations.

F1.2a Full Level II Certification: Forty (40) hours of Level II curriculum and eighty (80) hours total of documented field related experience. Training hours *SHALL* cover all areas contained in Operations Standards. Eight (8) hours of the forty (40) hours of Level II training can be completed as self-study provided that the material covered is consistent with Level II curriculum and documented within a personal training portfolio as proof of completion.

F1.2b Level II Training: A minimum of twenty (20) hours of classroom and experiential activities that include curriculum on:

- OSHA standards for the construction industry
- ANSI Z359.1 – Z359.12 Managed Fall Protection Standards
- *RISK MANAGEMENT* plans for training programs
- *JOB HAZARD ANALYSIS* implementation
- ladder safety training
- rope access equipment care, use and retirement.
- *STATIC BELAY SYSTEMS* training
- *DYNAMIC BELAY SYSTEMS* training

F1.2c Participant Rescue Training: A minimum of four (4) hours of rescue training curriculum that includes a simulated *PARTICIPANT* rescue where trainee demonstrates the knowledge and skills necessary to perform the following types of rescues:

- *SELF RESCUE*
- High angle *PARTICIPANT* rescue
- Rescue of *PARTICIPANT* from vertical suspension

F1.2d Competent Trainer Certification: Requires an additional one hundred and twenty (120) hours of supervised participant training curriculum instruction.

F1.3 All applicants *SHALL* successfully complete and pass a practical skills test consistent with ACRABAT Level II testing standards.

F1.3a Skills evaluation *SHALL* be completed by an ACRABAT certified evaluator.

F1.4 All applicants *SHALL* successfully complete and pass a written exam with a minimum score of 80% consistent with ACRABAT Level II standards.

F1.5 The training organization *SHALL* provide program trainees with a copy of the class manual and syllabus.

F1.6 Certified Level II Practitioner *SHALL* be trained in and capable of carrying out site specific first aid procedures and/or protocols.

F1.7 All trainees who have completed Level II curriculum, passed Level II skills testing, written testing or supervised *PARTICIPANT* training *SHALL* be provided a certification document or card by the certifying body.

F1.8 All Certified Level II Practitioners *SHALL* work within the framework of a lifeline access building assessment training program directed by a certified Level III "*QUALIFIED PERSON"* .

F1.9 The duration for Level II *"COMPETENT PERSON"* certification is for three (3) years.

F1.10 Level II Practitioner recertification process *SHALL* include either 1) One hundred fifty (150) hours of Level I program training delivery and the documentation of Twenty four (24) hours of roof specific rope access system training or 2) retake Level II training and pass a written knowledge and skills test.

F1.11 An experienced practitioner may "challenge in" to a Level II certified status. This process requires that the Level II applicant present a portfolio documenting, one hundred (100) hours of practical field experience, sixty (60) hours of rope access training and pass both written knowledge and skills testing that meet Level II standards. Sixteen(16) hours of the sixty (60) hours of Level II training can be completed as self-study provided that the material covered is consistent with Level I, & II curriculum and documented within a personal training portfolio as proof of completion.

F1.12 Full Level II Certification is one of the steps required to obtain Level III "*QUALIFIED PERSON"* status however, in and of itself is insufficient to begin a roof specific rope access program.

F2 Duties of The Roof Specific Rope Access Site Supervisor (Level II / Competent Person)

F2.1 The Level II Roof Specific Rope Access Site Supervisor *SHALL* have the appropriate qualifications and training for completing rope access roof inspections.

F2.2 The Level II Roof Specific Rope Access Site Supervisor should work under the direction and supervision of a Level III Rope Access Program Administrator.

F2.3 The Level II Roof Specific Rope Access Site Supervisor *SHALL* be capable of the development, implementation, monitoring, review and revision of safe rope access work policy that provides the general goals and expectations for company's rope access program.

> **F2.3a** The Level II Roof Specific Rope Access Site Supervisor *SHALL* ensure that all foreseeable hazards be exposed, controlled or eliminated with the creation and maintenance of a risk management plan / *JOB HAZARD ANALYSIS*.

F2.4 The Level II Roof Specific Rope Access Site Supervisor *SHALL* ensure that all Rope Access Workers have the experience, equipment and training necessary to safely perform the rope access work to which they are assigned.

F2.5 The Level II Roof Specific Rope Access Site Supervisor *SHALL* be capable of recognizing abilities and limitations of Rope Access Workers and ensure that no work exceeds the limitations of the worker it is assigned to.

F2.6 The Level II Roof Specific Rope Access Site Supervisor *SHALL* be capable of the evaluation and site specific training of Rope Access Workers as needed.

SECTION G

Level III Practitioner / "Qualified Person" / Program Administrator

G1 Level III Certification Criteria

G1.1 All participants *SHALL* have successfully obtained a Level II Instructor status prior to beginning Level III "*QUALIFIED PERSON"* training.

G1.2 A minimum number of content appropriate training and field related experience hours *SHALL* be completed for full Level III certification. Trainings may exceed time minimums in order to cover vendor or equipment manufacturer recommendations.

G1.2a Full Level III Certification: Thirty (30) hours of roof specific rope access system program management training and three hundred (300) hours of Level II supervisory related activities is required. Training hours *SHALL* be consistent with Level III curriculum and documented within a personal training portfolio as proof of completion.

G1.2b Written knowledge test *SHALL* meet Level III training standards and be passed with a score of at least 80%.

G1.3 The training organization *SHALL* provide program participants with a copy of the class manual and syllabus.

G1.4 All trainees who have completed Level III curriculum, passed level III skills testing and written testing *SHALL* be provided a certification document or card by the certifying body.

G1.5 The duration for Level III "*QUALIFIED PERSON"* certification is for Five (5) years.

G1.6 An experienced practitioner may "challenge in" to a Level III certified status. This process requires that the Level III applicant present a portfolio documenting three hundred (300) hours of roof specific rope access field experience, three hundred (300) hours of Level II supervisory related activities , thirty (30) hours of program management training and pass both skills testing and written testing that meet Level III standards. All training material completed must be consistent with Level I, II, & III curriculum and documented within a personal training portfolio as proof of completion.

G2 Duties of The Roof Specific Rope Access Training Provider (Level III / Qualified Person)

G2.1 Certified Level III Practitioners "*QUALIFIED PERSON" SHALL* be able to supervise all aspects of the company wide rope access program operations.

G2.2 Certified Level III Practitioners "*QUALIFIED PERSON" SHALL* be capable of developing the following program policies, effectively communicating them to program personnel and ensuring that they are followed.

- All companywide protocol procedures for rope access work.
- Appropriate personal protective equipment to be used by rope access workers.
- Program and site specific *RISK MANAGEMENT* plans.
- Format for developing site specific *JOB HAZARD ANALYSIS* plans.
- Practitioner training programs as well as on site in-service trainings.

G2.3 Certified Level III Practitioners "*QUALIFIED PERSON" SHALL* have sufficient knowledge of both state and federal regulations that apply directly or indirectly to rope access / work at height in order to ensure compliance.

Referenced Material

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Society for Professional Ropes Access Technicians (SPRAT) 2007: Safe Practices for Rope Access Work

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Irata International 2009 General Requirements for Certification of Personnel Engaged in Industrial Rope Access Methods

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UIAA (2004) Mountaineering and Climbing Equipment 102: Accessory Cord

UIAA (2004) Mountaineering and Climbing Equipment 105: Harnesses

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