22-10. Checklists and Forms.
Not Applicable.

Chapter 23
Rope Access

This chapter applies to industrial rope access when utilized as a means of working at height, typically using a two-rope system and associated equipment, to gain access to, be supported at, and/or as a means of egress from structures, either man-made or natural. It applies to cases where ropes are used as the primary means of support and/or primary means of positioning whereas workers descend or ascend on a rope or traverse along a tensioned rope where the use of hands and feet can no longer be used to fully support the body in order to perform a primary function, such as inspection or maintenance.

Note. This chapter is not intended to apply where rope is utilized for technical rescue techniques by emergency first responders or where only a single rope is used for support without a backup system such as used in tree maintenance.

Note. This chapter does not apply to other methods of working at height that are not specifically described above as industrial rope access, such as steeple jacking, suspended scaffolds, steelwork erection, boatswain's chairs or "rope descent systems" as defined by 29 CFR 1910.21.

23-1. References.

a. ANSI/ASSP Z359, The Fall Protection Code (https://www.assp.org/standards) (23-1.a)

b. ANSI/ISEA Z89.1, American National Standard for Industrial Head Protection (https://webstore.ansi.org/) (23-1.b)

c. ANSI Z459.1, Safety Requirements for Rope Access Systems (https://webstore.ansi.org/) (23-1.c)

d. ASTM E2505, Standard Practice for Industrial Rope Access (https://www.astm.org/Standard/standards-and-publications.html) (23-1.d)

e. Cordage Institute (CI) 1800, Test Methods for Life Safety Rope and Accessory Cords for Life Safety Applications (https://ropecord.com/publications-catalog/) (23-1.e)

f. CI 1801, Performance Requirements for Low Stretch and Static Life Safety Rope (https://ropecord.com/publications-catalog/) (23-1.f)

g. ISO 22846-2, Personal Equipment for Protection Against Falls- Rope Access Systems- Part 2: Code of Practice (https://www.iso.org/standards.html) (23-1.g)

23-2. Definitions.

a. Rope Access. A variety of advanced access techniques where ropes and specialized equipment are used as the primary method for providing access and support to workers in their jobs at high or hard-to-reach places. (23-2.a)

b. Rope Access Lead Technician/Competent Person (CP) for Rope Access. An experienced Rope Access Technician who has completed training and certification to identify, evaluate, and address existing and potential hazards involved with rope access, including fall protection and rescue, and who has the employer's authority to take prompt corrective action with regard to such hazards. The Rope Access Lead Technician/CP for Rope Access must work under the direct supervision of a Rope Access Supervisor/Qualified Person (QP) for Rope Access. (23-2.b)

c. Rope Access Supervisor/Qualified Person (QP) for Rope Access. An experienced Rope Access Technician with extensive practical experience and has completed training and certification to perform complex rigging, advanced rescue, and advanced rope access skills. The Rope Access Supervisor/QP for Rope Access is responsible for the entire rope access work site, including management and oversight of Rope Access Technicians on the work site and designing, analyzing, evaluating, and specifying the rope access work systems. They must have knowledge and experience to direct rescue operations from rope access systems and be able to perform advanced rescue from rope access systems. (23-2.c)

d. Rope Access Technician/Authorized Technician. An individual who has completed training and certification to perform standard rope access operations including operating ascent and descent systems, using fall protection, and have the skills necessary to perform limited rescue from rope access systems. They may only work under the direct supervision of a Rope Access Lead Technician/CP for Rope Access or Rope Access Supervisor/QP for Rope Access. (23-2.d)

23-3. Personnel Required Qualification/Training.

a. Rope Access Supervisor/QP for Rope Access. As a minimum, Rope Access Supervisor/QP for Rope Access must meet and possess documentation of certification/training requirements for a Rope Access Supervisor/QP (for example, advanced, level 3) for Rope Access according to current industry standards for rope access (for example, ANSI Z459.1, ISO 22846-2, ASTM E2505). (23-3.a)

b. Rope Access Lead Technician/Competent Person (CP) for Rope Access. As a minimum, Rope Access Lead Technicians/Competent Persons for Rope Access must meet and possess documentation of certification/training requirements for a Rope Access Lead Technician/Competent Person (for example, intermediate, level 2) for Rope Access according to current industry standards for rope access (for example, ANSI Z459.1, ISO 22846-2, ASTM E2505). (23-3.b)

c. Rope Access Technician/Authorized Technician. All persons performing rope access must at least meet the qualifications/training as a Rope Access Technician/Authorized Technician. As a minimum, Rope Access Technicians must meet and possess documentation of certification/training requirements of a Rope Access Technician/Authorized Technician (for example, basic, level 1) according to current industry standards for rope access (for example, ANSI Z459.1, ISO 22846-2, ASTM E2505) in addition to the following: (23-3.c)

(1) Have a working understanding of the Rope Access Work Plan (see para 23-7) and all applicable policy and procedures.

(2) Be capable of identifying work zones and preparing JHAs.

(3) Be familiar with rescue procedures and systems used.

d. In addition to initial and recertification requirements according to current industry standards for rope access, provide refresher training for all rope access personnel at least every two years, or when there are changes in procedures, equipment, or conditions that render previous training obsolete, or there are inadequacies in performance that indicates a lack of knowledge or skill. (23-3.d)

e. All rope access personnel that use personal fall protection equipment must have training in fall protection, at minimum, as an Authorized Person according to chapter 21. (23-3.e)

f. All rope access personnel must be at least 18 years of age. (23-3.f)

g. All employees conducting rope access work must be physically and medically qualified for performing the duties to which they are assigned. (23-3.g)

23-4. Roles and Responsibilities.

a. Rope Access Supervisor/QP for Rope Access. The Rope Access Supervisor/QP for Rope Access is responsible for the entire rope access work site to include the following: (23-4.a)

(1) Responsible for the development, implementation, and management of the Rope Access Work Plan (see para 23-7).

(2) Supervise rope access work activities and Rope Access Technicians to ensure compliance with the Rope Access Work Plan (see para 23-7).

(3) Design, evaluate, and specify rope access equipment to be used.

(4) Inspect rope access equipment (see para 23-5.b).

b. Rope Access Lead Technician/Competent Person (CP) for Rope Access. (23-4.b)

(1) Perform rope access work according to the Rope Access Work Plan and as directed by the Rope Access Supervisor/QP for Rope Access (see para 23-7).

(2) Identify hazards and take corrective measures to eliminate or control them to an acceptable level. Stop work if conditions are unsafe to proceed.

(3) Properly use, inspect, and maintain rope access equipment, tools, and PPE (see para 23-5.b).

(4) Perform and/or assist in rescue according to the rescue procedures in the Rope Access Plan (see para 23-7).

c. Rope Access Technician/Authorized Technician. (23-4.c)

(1) Perform rope access work according to the Rope Access Work Plan and as directed by the Rope Access Supervisor/QP for Rope Access or Rope Access Lead Technician/CP for Rope Access (see para 23-7).

(2) Adjust, inspect, maintain, care for, and properly store rope access equipment, tools, and PPE.

(3) Inspect and verify the integrity of anchor systems and components.

(4) Recognize work site hazards and notify the Rope Access Supervisor/QP for Rope Access of any such hazard.

(5) Understand and communicate any written or verbal warnings.

(6) Perform and/or assist in rescue according to the rescue procedures in the Rope Access Plan (see para 23-7).

(7) Utilize appropriate PPE as designated by the Rope Access Supervisor/QP for Rope Access.

23-5. Inspection Requirements.

a. Inspect all equipment prior to each use and maintain and use it according to the manufacturer's instructions. (23-5.a)

b. A Rope Access Supervisor/Rope Qualified Person (QP) for Rope Access or a Rope Access Lead Technician/CP for Rope Access must inspect equipment at least annually according to the manufacturer's instructions. Document the inspections. (23-5.b)

23-6. Activity Hazard Analysis (AHA) Requirements.
Develop AHAs according to paragraphs 1-6 or 2-6, as applicable, and submit as part of the Rope Access Work Plan (see para 23-7). The AHA must include the work methods to be used to include rope access systems, equipment, anchor points, and other materials, tools, and PPE, along with the controls used to eliminate or control the hazards to an acceptable level.

23-7. Minimum Plan Requirements.
A Rope Access Work Plan is required when rope access is performed. A Rope Access Supervisor/QP for Rope Access must develop the plan and accompanying procedures and submit to the USACE supervisor for approval or to the KO or COR for acceptance. The plan must be maintained at the work site and accessible to all affected persons. The plan must include the following:

a. Detailed description of activity being performed. (23-7.a)

b. Assignment of personnel and their roles and responsibilities, to include identification of a Rope Access Supervisor/QP for Rope Access or Rope Access Lead Technician(s)/Competent Person(s) for Rope Access responsible for direct supervision of rope access work. Include necessary information/documentation to support qualification/training of such persons. (See para 23-3) (23-7.b)

c. Consideration of the various rope access alternatives and their respective access advantages and hazards. (23-7.c)

d. Procedures for communication and coordination with the USACE supervisor/KO or COR regarding rope access safety and rescue procedures. (23-7.d)

e. An AHA developed according to paragraph 23-6. (23-7.e)

f. Rescue procedure and methods for prompt rescue (for example, self-rescue, assisted rescue, emergency service rescue, communication, rescue equipment). (23-7.f)

g. Inspection and oversight methods to ensure adherence to the plan. (23-7.g)

23-8. General Requirements.

a. Work Teams. (23-8.a)

(1) Rope access work teams must consist of a minimum of two Rope Access Technicians.

(2) Designate at least one member of the work team as the Rope Access Supervisor/QP for Rope Access and/or Rope Access Lead Technician/CP for Rope

Access. Either a Rope Access Supervisor/QP for Rope Access or Rope Access Lead Technician/CP for Rope Access must be present and directly supervise all rope access activities.

(3) A Rope Access Supervisor/QP for Rope Access worker may supervise no more than six workers (for example, Rope Access Lead Technician/CP for Rope Access or Rope Access Technician/Authorized Technician) at any time.

b. Rope Access Equipment. Equipment and components selected to be use as part of a rope access system must be compatible, be used according to the equipment manufacturer's instructions, and meet equipment requirements contained in current applicable nationally recognized standards (for example, ANSI Z459.1, ASTM E2505, ISO 22846-2, ANSI Z359). (23-8.b)

(1) Anchorages. A Rope Access Supervisor/QP for Rope Access or Rope Access Lead Technician/CP for Rope Access must identify independent anchorage systems for main and backup systems. Anchorage systems must have a minimum strength of 5,000 pounds (22.3 kN) or two times the maximum arrest force per system attached.

(2) Ropes. Ropes used as working line or safety line must be tested according to CI 1800/1801 and be made of synthetic fiber with a nominal breaking strength of at least 5,000 pounds (22.3 kN) when new. The working lines and safety lines must be specifically designed and intended for life safety use. Additionally, elasticity (elongation) of lines may not be greater than 10% with a load of 1,800 pounds (8kN) applied.

(a) To aid in drying when stored, coil and pile ropes or suspend them so that air can circulate through the coils.

(b) Do not use wet ropes for electrical work.

(c) Do not splice climbing ropes to effect repair.

(3) Carabiners and Snaphooks. When used for climbing (life support), carabiners and snaphooks must require at least two consecutive and deliberate actions to open the gate. They must also be rated at 5,000 pounds (22.3 kN) and meet the ANSI Z359 requirements. Gates must be rated at 3,600 pounds (16 kN). Carabiners and snaphooks must be self-closing and self-locking. To prevent rope fraying, the use of rope thimbles is recommended when attaching rope snaps.

(4) Pulleys/Rope Sleeves. Anti-friction devices (for example, pulleys, rope sleeves) are recommended to prevent rope damage.

(5) Climbers PPE. Utilize appropriate footwear, long pants, work shirt with a minimum 4 inches (10.2 cm) sleeve length, eye protection, ANSI Z89.1 approved vented or non-vented climbers' helmet with at least a 3-point retention system, and gloves. When the air temperature exceeds 85°F (29°C), climbers should carry a water

supply with them. Other PPE (for example, hearing protection, face shields, dust masks, respirators) may be required depending on specific hazards or environmental conditions. (See chapter 5)

(6) Fall Protection. Harnesses and other personal fall protection equipment used in rope access must meet the ANSI Z359 requirements (see chapter 21).

(7) Work Seats. Whenever there is a need for personnel to remain suspended in one place for an extended period of time, a work seat may be used to provide additional support to that provided by the harness. The work seat must be fitted to the harness according to the manufacturer's instructions, and the climber's harness must remain the primary attachment point to the working line.

(8) Descender Devices. If descender devices are used, they must allow a controlled descent taking into consideration the weight of the worker, the length of the descent, considerations for safety, and the need for stopping along the working line for the purpose of hands-free work.

c. Safety, Secondary, Belay, or Back-up Line(s). Use safety, secondary, belay, back-up line(s), or other appropriate fall arrest devices in addition to the main line (working line) unless the employer can demonstrate that the second line or other fall arrest devices would create a greater hazard or otherwise would not be feasible. (23-8.c)

(1) Where a safety line is used in conjunction with the working line, each line must have its own separate anchor and must be separately fixed to the worker's harness. This does not preclude both lines being attached to a single harness attachment point.

(2) Connect the safety line of rope access systems to the sternal D-ring of the full body harness.

(3) When using a safety line, the maximum free-fall distance must not exceed six feet or the maximum distance specified by the manufacturer, whichever is less, and the maximum arrest force must not exceed 1,800 pounds (8 kN).

d. Rescue. The Rope Access Supervisor/QP for Rope Access must make provision for prompt rescue or self-rescue and arrange for emergency services. These provisions must be included in the Rope Access Plan according to paragraph 23-7. (23-8.d)

e. Tools Used During Rope Access. (23-8.e)

(1) Tools used by rope access workers must be compatible with the rope access system.