

Fall Protection Rescue

Planning, Equipment and Training for Post-Fall Rescue and Retrieval

I. INTRODUCTION

This paper provides an overview of the present state-of-the art in fall protection rescue. Decades of experience in protecting workers exposed to fall hazards has resulted in new codes of practice which include important provisions for retrieving workers after their fall has been arrested. A new national consensus standard, ANSI Z359.2 (proposed), "Requirements for a Managed Fall Protection Program," addresses the need for prompt rescue after a fall. A companion standard, ANSI Z359.4 (proposed), "Safety Requirements for Assisted-Rescue and Self-Rescue Systems, Subsystems and Components," will provide guidance on the design of rescue equipment for general industry.



We will examine the requirements of these proposed new standards as they pertain to rescue planning, equipment and training.

II. RESCUE PLANNING

Rescue after a fall must be a pre-planned event. Current best-practices call for a thoughtful approach to retrieving a fallen worker as soon as possible without endangering the lives of those who must conduct the rescue operation.

Planning for Rescue is Part of the Total Fall Protection Program

Planning for rescue takes place in the context of a managed fall protection program. In such a program, as envisioned in the ANSI Z359.2 standard, rescue is the final piece in a systematic approach to worker protection.

The Rescue Plan and Rescue Procedures

The rescue plan is the overall approach to post-fall rescue and retrieval. The rescue plan is a strategy which establishes:

- the duties and responsibilities of the rescue team,
- principles of safe practice,
- general guidelines on the means and methods to be employed in rescue operations, and
- training guidelines and measures of competency for rescue personnel

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The rescue plan is supplemented by detailed rescue procedures which provide step-by-step processes that describe the specific manner in which rescue is to be accomplished.

Rescue Procedures are Linked to Fall Protection Procedures

Let's begin at the beginning, with the fall hazard survey, which identifies the potential fall hazards at a given location and job activity. In the managed approach to fall protection, each fall hazard is addressed by abatement procedures, which follow the hierarchy of controls. If the fall hazard cannot be eliminated or prevented by other means, then personal protective equipment (PPE) may be required. The use of fall protection PPE necessarily includes provisions for prompt rescue of the worker after a fall, as mandated in OSHA regulations.

So we see that rescue procedures are tied directly to the fall hazard abatement plan. For each fall hazard which is controlled by the use of PPE, we will have a specific location in mind. We will have identified a point for anchoring the fall protection system and taken into consideration the fall clearances required to stop the fall. We will also have knowledge of the worksite geometry and other potential hazards, such as obstructions in the path of a fall, energized electrical sources, hazardous chemicals, moving machinery, bad air (in confined spaces) and flammable vapors, etc.

Rescue procedures build on the knowledge developed in the fall protection procedures for each hazardous location. Rescue procedures then take the next step, to determine how best to retrieve an incapacitated worker after fall protection PPE has arrested their fall. Additional considerations that are part of a rescue procedure include:

- Location and strength of a rescue anchor
- Identification of the nearest safe working level
- Equipment required to transport the fallen worker to a safe working level
- Personnel needed to operate the rescue equipment
- Means to protect rescue personnel during rescue operations

The Role of Emergency Services

Reliance on professional emergency fire and rescue services is frequently cited by employers as the mainstay of their rescue plans. In some urban locations, local emergency services are available. To take advantage of these rescue professionals, however, also entails a degree of planning and coordination on the part of employers. If your facility or job-site is served by public emergency responders, you must consult them in advance and seek their input on the feasibility of using their rescue capabilities.

Questions to be considered before relying on professional emergency services include:

- Are emergency responders on duty throughout the time when they may be needed?
- Can they reach the location of a fallen worker in a timely manner?
- Do they have the equipment and training necessary to reach the elevation involved and access a fallen worker?
- Are provisions for multiple-worker or multiple-location falls within their capabilities?
- Does the emergency service have sufficient back-up capacity to respond to your needs in the event that the responders are occupied with another emergency when you call them?

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Experience has shown that many emergency responders are not trained or equipped to deal effectively with post-fall rescue situations. A properly developed rescue plan will not assume that public emergency services are automatically the solution for any and all post-fall rescue events. Employers are advised that it is ultimately their responsibility to provide for the rescue of their workers.

One important role for emergency services is in rendering prompt emergency medical treatment to a fallen worker once that person has been evacuated to a safe working level. Rescue planning must include timely notification and arrival of medical assistance to the accident scene, since many accidental falls are precipitated by trauma, such as electrocution, blunt force injury, cardiac arrest, etc.

Medical Considerations in Post-Fall Rescue

At the recent International Technical Rescue Symposium, there was considerable discussion of how much and what kind of first aid should be rendered by rescue personnel during the rescue mission. The consensus of rescue professionals was that the first priority in rescue is to bring the incapacitated person promptly to a safe level. At that point, emergency first aid can be administered by trained emergency medical technicians.

Some training in first aid for members of the rescue team is generally recommended. Training includes such topics as maintaining an airway, recognizing of the signs of orthostatic intolerance and shock, the use of a back-board for immobilizing the neck and spine, and CPR. However, the primary goal of rescue after a fall is quick, safe transportation to ground level.

While performing the rescue, and after arriving at a safe working level, rescuers are cautioned to keep the fallen person in an upright or seated posture to reduce sudden back-flow of de-oxygenated blood into the heart. Any worker who has been suspended in a harness following a fall, even for relatively short periods, is advised to seek medical attention for possible delayed onset of suspension trauma.



III. RESCUE EQUIPMENT

Historically, equipment used in industrial rescue work has been drawn from mountaineering and alpine rescue fields. This equipment emphasizes rope techniques and combinations of components rigged together for each rescue application. While the equipment is very light and versatile in the hands of professional rescue technicians, it requires considerable skill and experience to be used safely.

The current trend is toward equipment designed especially for the needs of industrial rescue teams. This equipment tends to have more redundant safety features and is often pre-rigged by the manufacturer to reduce the possibility of misuse during an emergency. New national standards are being developed to establish requirements for industrial

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rescue equipment. These new standards will simplify the task of selecting and using rescue equipment for industrial users.

Selecting the Right Equipment for the Job

A wide range of safety equipment is available for post-fall rescue. The type of equipment you select will depend on the circumstances of your pre-planned rescue response. Here again, we rely on the evaluation and planning performed by a competent person as part of the rescue plan to guide us in the selection of equipment suitable for specific applications.

There is no one-size-fits-all solution in rescue equipment. The equipment must be matched to the rescue plan and will vary to such a degree that equipment solutions for one rescue scenario could be completely inappropriate for another application. For recommendations on equipment designed for your rescue needs, contact your rescue equipment manufacturer.

Rescue Equipment Standards

The National Fire Protection Association, NFPA 1983 (2006 edition), provides guidelines to manufacturers of fiber ropes, harnesses and accessory equipment. This standard applies primarily to the professional fire services, but is also applicable to the needs of industrial rescue personnel. Equipment certified to NFPA 1983 (2006 edition) meets a very stringent set of strength and performance requirements suitable for the demands of emergency rescue.

The American National Standards Institute, ANSI Z359 Accredited Standards Committee for Fall Protection, has been working on a new standard for rescue equipment, ANSI Z359.4 (proposed). This new standard sets criteria for product design and testing. The ANSI Z359.4 standard will address requirements for the following types of equipment:

- Rescue Harnesses,
- Rescue Lanyards,
- Anchorage Connectors,
- Rope-and-Tackle Systems,
- Descender Devices,
- Three-Way Rescuers (self-retracting lanyards with emergency rescue capability), and
- Rescue Hoists

When it is published sometime early next year, look for rescue equipment marked as certified to the ANSI Z359.4 standard. This is your assurance of the highest level of product performance in components for the industrial rescue market.

IV. RESCUE TRAINING

Training and Competency

We often hear that training is fundamental to the successful implementation of any fall protection and rescue plan. But training, narrowly defined as education or instruction, is not sufficient to ensure a positive outcome in an emergency. Rescue personnel must be trained, and they must

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also demonstrate their working knowledge through a practical, hands-on demonstration of skill. Training plus assessment equals competency. And competency in an emergency is the ultimate measure of a successful rescue training program.

Training Requirements for Rescue

Proposed ANSI Z359.2 offers detailed guidance in the requirements for training personnel for post-fall rescue. The standard begins by establishing the requirements for the rescue trainer. The rescue trainer must have:

- Documented experience, knowledge, expert training and education equal to or greater than any category of person that they are training,
- Documented experience, knowledge and skills in adult education methods, and
- An ongoing education in fall protection and rescue.

Training for rescue personnel under the proposed standard includes requirements for different levels of responsibility. There are two levels of rescue personnel defined in the standard, the Competent Rescuer and the Authorized Rescuer:



- Competent Rescuer - An individual designated by the employer who, by training, knowledge and experience is capable of the implementation, supervision and monitoring of the employer's fall protection rescue program.
- Authorized Rescuer - A person assigned by the employer to perform fall protection rescue.

Training for these two levels stresses the knowledge basis and skill sets of these two functions. For the Competent Rescuer, training must include all the training received by the Authorized Rescuer, plus:

- Training by a competent rescue trainer
- Physical demonstrations by trainees on how to properly select, inspect, anchor, assemble and use the fall protection and rescue equipment used in locations where they work
- Use of all types of equipment used in locations where rescues may be required, including inspecting systems prior to use, installation,

component compatibility, descent control, secondary systems, packaging methods, dismantling, storage and the common hazards associated with each system and component.

- Detailed inspection and recording of rescue equipment components and systems
- Rescue system evaluation and how to determine when a system is unsafe
- Development of written fall protection rescue procedures
- The selection and use of fall protection anchors

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Competent Rescuer training must be conducted at least every year.

Authorized Rescuer training includes:

- Training by a competent rescue trainer
- Physical demonstrations by trainees on how to inspect, anchor, assemble and use the fall protection equipment used in locations where they work
- How to recognize fall hazards
- Fall hazard elimination and control methods
- Applicable fall protection and rescue regulations
- The responsibilities of persons under the standard
- How to use written fall protection and rescue procedures
- Inspection of equipment components and systems before each use

Authorized Rescuer training must be conducted at least every two years. The Authorized Rescuer must be re-trained whenever the nature of the work, the workplace or the methods of control changes to the extent that prior training is not adequate.

Practice, Practice, Practice

The portion of the ANSI Z359.2 standard which addresses training of rescue personnel emphasizes the need for regular exercises that simulate actual rescue conditions. Training as a team is an essential part of achieving competency for the team members.

Assessment of rescue personnel is required to be performed by supervisors or independent contractors or consultants who possess at least the qualifications of a Competent Rescue Trainer. Assessment must be performed on a regular basis to ensure continued proficiency of each rescue team member.

Training Resources

Training resources are available to employers from a number of sources. Some organizations may already possess in-house rescue professionals. For those who do not, there are programs offered by state governmental organizations which employ rescue professionals certified to conduct rescue training.

Private contractors and consultants also offer complete training services. The existence of a new national consensus standard for rescue training will provide employers a benchmark to compare third-party training organizations. Verify that your training consultant has been certified to the requirements under the ANSI Z359.2 standard for rescue training. For

recommendations on qualified training organizations, contact a nationally recognized professional association, such as:



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The Society for Professional Rope Access Technicians (SPRAT), www.sprat.org

The National Association for Search and Rescue (NASAR), www.nasar.org

The National Mountain Rescue Association, www.mra.org

The National Fire Protection Association, www.nfpa.org

Or contact your fall protection and rescue equipment manufacturer.

V. CONCLUSION

While the ultimate goal of fall protection is to prevent a fall from occurring, the reality is that falls from height are a daily occurrence in the American workplace. To be prepared for the eventuality of a fall means having a fall protection program which includes provisions for prompt rescue. New guidance documents will soon be available to safety professional to aid in the proper planning and implementation of fall protection rescue, completing the task of comprehensive protection from work-related falls.

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