

ANSI Z359.2 Fall Hazard Survey Report and Rescue Plan

**Patrick Furr
Chief Instructor/Technical Consultant
Roco Rescue, Inc.
Baton Rouge, LA**

Introduction

This presentation is intended to outline the use of ANSI Z359.2 as a guide in preparing a Fall Hazard Survey Report and, if appropriate, written Rescue Procedures. As part of a comprehensively managed fall protection program, one of the most important tasks that an employer should complete is the Fall Hazard Survey Report. This is typically performed by an employer's designated competent person, but can also be performed by the employer's designated qualified person.

Fall Hazard Survey Report

As a component of a comprehensive fall protection plan, the Fall Hazard Survey Report provides a nuts-and-bolts understanding of the types of fall hazards present in the workplace. This can be looked at as a competent/qualified person fall hazard "walk-about." This walk-about will consider all fall hazards that authorized persons may be exposed to at the point of work, and any fall hazards along the route of access to the point of work. The Fall Hazard Survey Report should list the types of fall hazards identified, and prioritize them considering various factors.

Types of fall hazards can encompass anything, from floor holes and openings, leading edges of roofs or other work platforms, vertical work surfaces, and a multitude of other conditions. The severity of the hazard in term of exposure (high, medium, or low), the height of the potential fall, and the need and complexity of rescue should all be assessed in order to complete a prioritized list of hazards.

The Fall Hazard Survey Report will identify ways to eliminate or control the fall hazards. As the fall hazards are identified, the competent person or qualified person must determine the best solution to provide protection to the authorized persons and/or any other employees that may be exposed to the fall hazard. With the hierarchy of fall protection always in mind, the solutions that are considered should always attempt to eliminate the fall hazard by bringing the work to the ground. This may be as involved as significant design and engineering changes to retro-fit existing facilities or equipment, but preferably this will be done during the initial design of future facilities and equipment. These solutions may be as simple as employing very rudimentary and, most times, inexpensive items, such as extendible nonconductive poles, which allow the employee to replace light bulbs from ground level in otherwise out-of-reach lamps.

If it is infeasible to eliminate the fall hazard, the next attempt to mitigate the hazard should be to prevent the workers from falling. Fall prevention can be broken down into two sub-categories within the hierarchy of fall protection:

1. *Passive* fall prevention solutions should be considered before active fall prevention solutions. Examples of passive fall prevention solutions are guardrails and parapets. These are passive in that the employee does not need to don any additional fall protection equipment, such as harnesses and lanyards, nor do they need to identify and employ anchors. As long as the employees receive sufficient training to understand that passive fall protection systems must not be defeated by climbing up onto or over the systems without the use of a suitable active fall arrest solution, they are an especially cost-effective means to protect a large number of employees from that particular fall hazard.
2. The second fall prevention solution that should be considered is some type of *active* fall prevention system. This typically includes the need to equip and train the authorized person in the use of a system that employs body support (body belts or full body harnesses), connectors, and either certified or improvised anchors that meet the requirements of the fall restraint system.

If the person conducting the Fall Hazard Survey Report determines it is infeasible to provide a solution at the lower levels of the hierarchy of fall protection, it may become necessary to employ a *fall arrest system*. The fall arrest systems can be either an area system, such as a netting system that will catch a fallen worker, or a *personal fall arrest system* (PFAS), which includes a full body harness, connectors, and a suitable anchor.

Understanding and identifying solutions for unique physical characteristics along the path of the potential fall such as swing fall, obstructions, dangerous equipment, or impaling objects must be included by the competent or qualified person preparing the report. This information is critical in determining the severity of the fall and how these characteristics may compound the difficulty of performing rescue of a worker who has fallen and may be exposed to these types of hazards.

Any environmental factors that may affect the function of the fall protection systems should be identified and either resolved, or may require that the fall protection system be modified or replaced with a solution that is not affected by the identified additional factors.

Environmental factors may include:

- Hot objects, sparks, or flame
- Abrasive surfaces
- Chemicals that may degrade or damage the fall protection equipment
- UV radiation
- Energized electrical equipment
- Moving equipment, or unguarded gears and drive shafts
- Unstable or uneven work surfaces
- Materials or conditions that may adversely affect the performance of the fall protection system (for example: the use of a self-retracting lifeline while working on loose grain or other similar substances)

In order to assign priority to the identified fall hazards, the preparer of the report will establish a variety of risk factors associated with each fall hazard. Examples of risk factors may include:

- Severity of the fall (severe injury or death)
- Reason for the exposure
- Frequency of exposure to the fall hazard
- Occurrence of the exposure (what shift and day may affect the availability of rescue assets)
- Duration of the exposure
- Difficulty of access to the task or additional fall hazards along the access path
- History of previous accidents at the same or similar location

As the fall hazards and the severity of their particular risks are identified, and the level within the hierarchy of fall protection and any factor that would complicate rescue are determined, a comprehensive list should be developed to prioritize the hazards from highest to lowest risk. This will help the employer utilize its resources in the most effective manner.

Upon completion of the Fall Hazard Survey Report, the preparer should deliver the report to the fall protection program administrator so it can be included in the comprehensive fall protection program. The program administrator and the preparer of the Fall Hazard Survey Report should determine the frequency of reviews and include any other triggers for review or revision, based on changes to the work process, equipment, evolving fall protection technologies, and any changes to applicable legislation.

Written Rescue Provisions (Rescue Plan)

The second part of this paper will review the details of a written rescue procedure. If the Fall Hazard Survey Report identifies work processes or routes of travel where fall hazards cannot be eliminated, this triggers the need for written rescue procedures. OSHA and ANSI require a prompt rescue capability for authorized persons working at height. This is especially important for fall hazards that are controlled with the use of personal fall arrest systems, but it is still important to have for any fall hazards that are protected by means of passive or active fall restraint systems.

The goal is to make physical or verbal contact with the fallen worker in six minutes or less. The six-minute goal should be considered within the context of the known hazards associated with the fall. For instance, a worker at height using PFAS and working on energized electrical equipment is a prime example where the goal of six minutes to contact the victim is on the high end of the acceptable time window. It is quite likely that if the worker were electrocuted by the energized equipment, it would cause a fall and result in a suspended worker who may be in cardiac arrest. In this case, the best chance for the fallen worker to survive the fall/electrocution is to get the worker to a position where effective CPR can be initiated. This would almost certainly require that the rescue capability be immediately employable by pre-rigging the system prior to the beginning of the energized work activities.

The process of identifying the appropriate type(s) of rescue techniques and equipment should be based on the fall hazards identified in the Fall Hazard Survey Report. Additionally, the preparer of the written rescue provisions must have a thorough understanding of rescue equipment and techniques to determine whether there are any limitations to accessing the fallen worker due to equipment configurations or congestion. This is often a difficult task to accomplish

due to any existing gap between the experience and knowledge of the competent person regarding acceptable non-technical and technical rescue techniques, and the complexity of the potential rescue.

The rescue provisions may include a third-party, professional rescue agency, or the employer may choose to use an in-house rescue service comprised of its own employees. The vetting process of third-party rescuer services, be it municipal responders or private-contracted responders, should be included in the rescue provisions. The vetting process should include a thorough review of the third-party rescue service's capabilities, equipment, and willingness to respond to the employer's worksite, response times, and availability.

Notification procedures for summoning the rescue team should be included in the written rescue provisions. This should not only include emergency response notifications, but also notification of unique, high-risk, work-at-height situations, or work activities at height that include exposure to other IDLH conditions that would require an immediate response capability.

Notification procedures and agreements should include reciprocal communications that require the selected rescue service notify the employer if they are not able to respond so the employer can decide to suspend work-at-height activities if needed.

One of the best means to vet a third-party rescue asset is to invite them to the workplace to review the fall hazards, any unique circumstances that would limit their ability to provide 100% rescue capability at the site, or to identify any equipment or training shortfalls that would limit their rescue capability. Once the selected team states they have the manpower, training, and equipment required to meet any rescue requirement at the worksite, it is always good to ask them to demonstrate their capability while performing a simulated rescue from the worst-case situation that might be encountered.

An onsite visit and demonstration by the selected third-party rescue team accomplishes several objectives. In addition to identifying any shortfalls in equipment or training, the visit provides:

- The opportunity for the team to develop specific rescue pre-plans for all areas that may require rescue from height.
 - NOTE: It is very difficult to anticipate every situation and location that may require rescue from height for the purposes of planning. Therefore, it is important that the rescue team have a very high level of capabilities that will allow them to adapt to any situation that has not been specifically planned and practiced for.
- Identification of any unique personal protective equipment (PPE) requirements.
- Development of a familiarity with the "lay of the land" to more easily arrive at the proper location in the least amount of time.
- Establishment of a positive rapport with the employer, the employees, and any host emergency responders that may be able to augment the rescue team.

The requirements for in-house rescue service are very similar to those of a third-party rescue team. The same vetting process should be undertaken to determine appropriate manning, availability, equipment, and training. The only thing that may differ is the notifications agreements, but the means of notification should still be included in the written rescue provisions.

As part of the written rescue provisions, a rescue pre-plan should be developed for each unique area of worker at height, or a single rescue pre-plan may be developed for areas that are

very similar in configuration and fall protection system selection. These pre-plans should include enough detail that the equipment, techniques, anchor points, and team complement is established before the need for rescue arises.

Fall Hazard Survey Report Template

The use of a comprehensive key-word template for the completion of the Fall Hazard Survey Report helps the competent person complete an initial report at their workplace. The template should be based on ANSI Z359.2 section 4.2, and OSHA regulations specific for the work place.

Rescue Pre-Plan Template

A comprehensive rescue pre-plan template is a valuable tool that details the equipment, manpower, and rescue skills required for the areas that may require rescue from height. The recognition by OSHA that suspension trauma requires prompt rescue is the most important factor that necessitates the development of fallen worker rescue pre-plans, but any other condition that isolates a stricken worker at height should also be addressed in these pre-plans.

The pre-plans should be of sufficient detail that they enhance the probability of a successful outcome should the need for rescue occur. Information that should be included:

- Specific rescue equipment required for the rescue location
- Specific rescuer PPE
- Specific rigging requirements
- Pre-identified anchor points for rescue systems
- Diagrams of the rescue systems, including sketches
- Rescue team personnel requirements
- Routes of access and any hazards along that route

The learning outcome of this presentation is that the attendees have a thorough understanding of the use of ANSI Z359.2 as a guide in preparing the Fall Hazard Survey Report, written rescue provisions, and, if needed, a written rescue pre-plan.