Implementing a Comprehensive Managed Fall Protection Program

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Introduction

During his 39-year railroad career the author worked with employees, front line supervisors, managers, executives, regulatory authorities and suppliers to establish processes and practices that were designed to help the organization achieve safety performance, production and cost-control goals. Organizations can achieve their performance goals when leaders, managers and employees have committed to establishing processes that are clearly defined and where roles and expectations of team members are clearly understood. It is equally important that organizations have established methods for monitoring progress toward achievable goals through a system of performance evaluation and feedback. The new ANSI/ASSE Fall Protection Code provides a model that will assist your organization in establishing an effective managed fall protection program. By providing an outline of required activities the new code will guide your organization toward an effective process for reducing or eliminating fall hazards.

The newly revised ANSI/ASSE Fall Protection Code is comprised of a set of standards that include; Definitions (Z-359.0), Safety Requirements for Subsystems and Components of Personal Fall Arrest Systems (Z-359.1), Minimum Requirements for a Comprehensive Managed Fall Protection Program (Z359.2), Positioning and Travel Restraint Systems (Z-359.3), Assisted Rescue and Self Rescue Systems (Z-359.4). The topic of this paper will be the new standard Z-359.2, which establishes the minimum guidelines for a fall protection program. Z-359.2 focuses on policies, duties and training, fall protection procedures, hazard survey, eliminating and controlling fall hazards including requirements for fall protection systems, design considerations for new buildings and facilities, rescue procedures, incident investigations and evaluation of program effectiveness.

Every employer who has workers exposed to fall hazards should be able to answer the following questions:
1. Do you have policies in place that require the use of fall protection?
2. Have all of your fall hazards been identified?
3. Have all of your employees been trained in the use of these systems?
4. Who is responsible to see that the equipment and systems are inspected and are safe?
5. Who is responsible for rescue should an employee fall?
6. Who is responsible for maintaining equipment?

7. Do you have a program administrator or assigned responsibilities for trainers and others involved in administering your fall protection program?

This paper will focus on assisting your organization in understanding the general requirements of the ANSI/ASSE Fall Protection Code and in developing a process and plan for administering a comprehensive fall protection program. The principles and processes discussed are applicable to all levels of the organization from the senior managers, program administrators, trainers and end users. This paper does not propose to describe in detail all aspects of the new standard but should be viewed as a synopsis of the ANSI/ASSE Z359 Fall Protection Code.

The Scope and Purpose of the Z-359.2-2007 Standard

The standard is entitled, "Minimum Requirements for a Comprehensive Fall Protection Program." It applies to occupational and non-occupational activities except for construction and is intended for the use of organizations where employees are exposed to fall hazards. It is not intended to apply to those involved in sporting activities. It is recognized that new developments in regulations and technology may require future changes to the standard. The standard as presented does provide minimum criteria for the development and implementation of a managed fall protection program.

The purpose of the standard is to assist organizations in the development and implementation of a comprehensive managed fall protection program. The fall protection program should provide a method to: identify, evaluate and eliminate or control fall hazards. The fall protection program should ensure: effective training of personnel exposed to fall hazards, proper installation and use of installed fall protection systems, rescue systems and rescue procedures.

NOTE: *The NFPA 1006 establishes minimum requirements for fire service and other emergency responders who perform technical rescue operations. Additionally the NFPA 1670 identifies the various functions of technical rescue operations.*

The standard provides a hierarchy or preferred order of methods that will ensure elimination or control of fall hazards, including eliminating of fall hazards, passive fall protection systems, fall restraint, fall arrest and administrative controls. Variance from the standard is permitted only when the requirements of the standard are not feasible. In such cases the employer shall implement fall protection measures that provide employees with an equivalent level of fall protection.

Interpretations of the various fall protection standards must be submitted in writing to the Secretariat of the standard. Definitions of the terms and nomenclature can be found in the ANSI/ASSE Z-359.0-2007 Standard.

Policies, Duties and Training

Section 3 of the Z359.2 code identifies the responsibility of the employer to determine the course of action, create goals and objectives, implement the action plan and to follow up with an evaluation or review of the established goals and objectives. Before this can occur the leadership team must be made aware of the need to implement a fall protection program and the actions

required to implement a fall hazard risks reduction plan. This is best accomplished by the leadership team attending a training session that answers the following three questions.

1. What are the regulatory requirements for our industry?
2. Do we have employees exposed to fall hazards?
3. How do we reduce the fall hazard risk levels for employees and the organization?

The training session may require someone outside of the organization who has expertise in the subject of fall protection. Once the organizations leaders have recognized the need for action they must commit the necessary resources to provide a process that will eliminate or reduce fall hazards in the work place. The leadership team should assign responsibilities and select someone to manage the program. It shall be the responsibility of the program manager or program administrator to provide periodic feedback to Sr. Management with regards to meeting the programs goals and objectives.

The development of a policy statement that supports the existence of a fall protection program is essential. Additional policies must be developed that provide general goals and guidance for the program these statements should emphasize managements commitment to providing a work place that reduces the risks for employees exposed to fall hazards. Many of the general policies may be found in safety rule books, notices or other company communications and directives.

A sample policy statement:
"The XYZ Company will take every reasonable precaution to protect employees from fall hazards. The XYZ safety policy requires that employees shall use fall protection systems when performing tasks that expose them to fall hazards."

An example of a general safety rule:
"When employees are involved in tasks that require them to be exposed to falls of greater than four feet, the employee will be required to have some form of fall protection, such as; a railing, net, restraining system or a personal fall arresting system".

Employers must provide the resources to support the managed fall protection program. This will include a program administrator to manage the fall protection program. The program administrator must possess the knowledge, experience and authority to manage and evaluate all aspects of the program. Additional responsibilities of the employer shall include the following:

1. Maintain written procedures for fall protection and rescue for all locations where fall hazards exists.
2. Inform authorized persons of fall hazards before the person is exposed to the hazard.

NOTE: *An authorized person is an employee who has been assigned by the employer to perform duties in a location where fall hazard exists. It is expected that the authorized person be trained and periodically demonstrate their ability to use fall protection equipment safely.*

3. Provide continuous fall protection for all authorized employees at all locations operated by the employer. For employees off property employer must verify employees are protected if exposed to fall hazards.

4. Employers shall provide authorized employees with the knowledge and training to operate the fall protection systems safely.
5. Employers shall provide competent persons to supervise authorized persons who are exposed to fall hazards.

NOTE: *A competent person is an employee who has been assigned by the employer to supervise employees, implement and monitor the fall protection program. It is expected that the competent person has the knowledge and training to identify, evaluate, and address both existing and potential fall hazards. The competent person has authority to take prompt corrective actions. Competent persons may include immediate supervisors, lead men/women, foreman or others with authority over authorized persons. They must have more knowledge and experience than the authorized person.*

The program administrator is responsible for the development, implementation, monitoring and evaluation of the employer's fall protection program. The designation of program administrator need not be exclusive and this person may function as an authorized person, competent person or a qualified person.

NOTE: *the definition of a qualified person is one who has a recognized degree or professional certificate and possesses extensive knowledge and experience in the field. It is not implied by the standard that a qualified person must design and evaluate fall protect systems but should have based on his or her duties a knowledge of the standard.*

The duties and responsibilities of the program administrator shall include the following:

1. Have knowledge of current fall protection standards and regulations**.**
2. Be capable of advising employees, managers and other departments within the organization on matters pertaining to fall protection.
3. Assign duties to other individuals as needed to assist in managing the program.
4. Establish procedures and policies for implementing the fall protection program by developing processes to identify, eliminate and control both existing and future fall hazards. Additionally the administrator shall ensure that all requirements for the rescue of employees who have fallen are managed appropriately. Local emergency services may be utilized for the purpose of rescue as long as these services meet the requirements of the standard.
5. Manage training programs, investigate incidents, measure and evaluate the program's effectiveness.

The program administrator may initiate surveys or audits to evaluate existing fall hazards in the work place or the administrator may choose to select an outside concern to conduct assessments and surveys. In such cases, the expectation is that the contracted party meets all the requirements of the standard.

Training for fall protection and rescue must meet the requirements of the ANSI/ASSE Z490.1 *Criteria for Accepted Practices in Safety, Health and Environmental Training.* Trainers shall develop a training guide that is specific to identified fall hazards, which includes:

1. A training outline and timeline.

2. Learning objectives.
3. Pre-requisites.
4. Training aids (manuals, audio/visuals and equipment).
5. Appropriate student to trainer ratio.
6. Evaluation methods.
7. Minimum performance requirements.

Documentation of both training and performance evaluation is required. This documentation may be in an electronic format and should include the following items:

1. Instructor's name.
2. Student's name.
3. Training organization's name if performed by an external organization.
4. Dates and times of training.
5. Course objectives and brief description of course content.
6. Instructor's observation of student's performance of course objectives.

Training requirements for the program administrator, authorized persons, competent persons, qualified persons and individuals performing rescue differ. The requirements for these individuals are described within section 3 of Z359.2. We will focus on the training requirements for authorized employees. Training of authorized employees is the responsibility of the employer and is to be performed by a competent or qualified person trainer before the employee is exposed to a fall hazard. When conditions related to the tasks being performed by the authorized employee change to the extent that previous training is not adequate to address the new conditions it will require additional training of the authorized person. Retraining may also be required if it is determined that the authorized person does not have the knowledge or skill or is not following recommended safe practices. The authorized person shall demonstrate during the training that they possess the knowledge to recognize fall hazards for tasks they are to perform and that they possess the skill to inspect, assemble and use fall protection equipment prior to performing the task.

The authorized person training shall include a minimum of the following:

1. Fall hazard recognition.
2. Fall hazard elimination or control methods.
3. Knowledge applicable fall protections regulations and company policies.
4. Responsibilities of recognized persons under the standard.
5. How to use written procedures for fall protection use.
6. How to inspect equipment and components before use.
7. Fall protection rescue methods.

The frequency of authorized person training shall be conducted at least every two years and should stay current with fall protection regulations and requirements. The program administrator should ensure that authorized persons are evaluated annually to determine the effectiveness of the training. Should it be determined training is ineffective then annually training should be required. The evaluation should contain a written and a skill based observation of the authorized person's ability to use the required fall protection for all types of fall protection the person is authorized to

use. These observations may be performed by a supervisor (qualified person), competent person or qualified trainers.

Effective training objectives have certain characteristics. They describe what the desired behavior should look like. They describe what tools, equipment and circumstances are part of the desired observable behavior. Finally they describe a standard of acceptable performance.

Fall Protection Program Procedures

Whenever authorized employees are exposed to fall hazards employers must have documented procedures describing the tasks, the hazard and the steps that must be taken to eliminate or control the fall hazard. These procedures shall specify the type of equipment to use and the proper way to use the equipment. Although it is recognized there may be non-routine tasks where authorized employees may be exposed on very rare occasions to fall hazards. In such cases it is not required by the standard to have a written procedure but it is advisable to prepare for such circumstances. A document such as a job safety analysis or JSA is a good tool to use to assist in the development of fall protection procedures.

Another document that will be needed to assist in the development of your organization's fall protection procedures is the fall hazard survey. This document shall be used to identify each location and work activity with fall hazards that authorized employees will be exposed to. This document will provide the program administrator and other managers with information about the type, basic configuration (may include photos and/or drawings), risks ratings (high, medium or low), hazard control solutions and rescue plan information. The hazard surveys should be developed by a competent or qualified person who is familiar with local work procedures, environment, policies and rules. Input from the work place team members will also be crucial in supplying the needed input for this report. Work locations, distances and obstructions should be identified in the report. Environmental factors such as exposure to moisture, heat, flames, sparks, chemicals, abrasive surfaces, moving equipment and sunlight are to be considered. The condition of walking surfaces and unguarded openings are to be identified. Look for objects that could be in the fall path or possible pendulum effects for employees attached to fall protection anchorages. The report shall include a fall hazard risk rating that establishes a hierarchy for ranking the various fall hazards in the workplace. The risk ratings can be high, medium or low and are based on the following:

1. How often is the authorized employee exposed to the fall hazard?
   a. frequently
   b. occasionally
   c. infrequently
2. What is the probability that a fall incident will occur?
   a. likely
   b. somewhat likely
   c. unlikely
3. What is the potential consequence should an employee fall?
   a. fatality
   b. Severe injury (life changing event)
   c. likely to produce a reportable injury

        d.   likely to produce a non-reportable injury

The fall hazard survey is a written report which shall be given to the program administrator. These reports should be re-written whenever the task, process, structure, equipment, polices or regulatory requirements change.

The fall protection system procedures that are developed shall be written by a competent or qualified person and shall provide 100% coverage for authorized employees. The procedures shall also include the training requirements for users. Additional items to be described in the fall protection procedures include:

1. Identification of acceptable anchorages.
2. Clearance requirements.
3. Setup procedure.
4. Use and egress from the system.
5. Limitations on the use of the system.
    a. maximum number of users for the system
    b. maximum free fall distance
    c. maximum arresting force
    d. permitted locations of authorized users

Written fall protection procedures are also required for work positioning and travel restraining systems. These procedures have the same requirements as listed above for the fall protection systems procedures.

Procedures for installing and dismantling of fall protection systems shall include descriptions of components, name of manufacturers, drawings and detailed instructions. Descriptions of any limitations placed on the system shall be included in the procedures along with inspection criteria and frequency.

Eliminating and Controlling Fall Hazards

A fall protection hierarchy has been established to assist in developing a systematic approach to eliminate and control fall hazards. This hierarchy shall be used when designing fall protection solutions for both new and existing facilities. There may be situations where more than one method of fall protection is required to reduce risks associated with falls.

The methods are listed in order from the most preferred to least preferred:

1. <u>Remove the hazard by changing the work procedures.</u> This is the most effective means to reduce fall hazards. For example, if you have a process that required an authorized person to climb onto a flat bed truck to attach rigging for the purpose of lifting a component from the truck. Modify the process so that the equipment is shipped with the rigging. The next step would be to provide the authorized employee with a guide pole that is used from ground level to position the crane hook into the rigging for the lift.
2. <u>Install a passive fall protection system</u>. Passive systems unlike active fall protection systems do not require special equipment or active participation of an authorized

person. These systems may incorporate guard rails, platforms, covers and netting around a work area perimeter. The *ANSI/ASSE A1264.1, Safety Requirements for Workplace Floor and Wall Openings, Stairs Systems* and the *OSHA Standard 1910.23, Guarding Floor and Wall Openings and Holes are* good resources for information for passive measures that can eliminate or reduce the risks associated with falls.

3. <u>Fall Restraint System.</u> This method requires the attachment of an authorized employee's body harness to an anchorage by means of a short connecting lanyard that will not permit the employee's center of gravity to reach the fall hazard.

4. <u>Fall Arresting System.</u> This method utilizes a system that is designed to stop and arrest the fall of an authorized person once a fall has occurred. This system will incorporate the use of anchorages, connectors, lanyards, body harnesses, arresting devices and rescue equipment.

5. <u>Administrative Controls.</u> This process consists of written policies, instructions, training and other warning measures that alert authorized employees to avoid approaching fall hazard areas. Administrative controls may include warning signs, lights, sounds or other measures that warn authorized employees to avoid fall hazards. *ANSI Z535.2, Environmental and Facility Safety Signs* contains standards for warning signs.

The Fall Protection Code contains the General Requirements for Fall Protection Systems. These requirements address the criteria for certification of the various components that make up a fall protection or rescue system. These requirements stipulate that the design of components will be based on the results of testing or predictive calculations by a qualified person and that all such testing and design will be documented. The Code also requires that systems be installed under the direct supervision of a qualified person.

Inspection, maintenance and storage of fall protection and rescue equipment shall be at a minimum in accordance with manufacturer's instructions and under the direction of a competent person. The frequency of inspections should be based on factors that may affect the equipment's performance. Two key factors such as frequency of use and the working environment must be considered when developing a plan for the maintenance and inspection of fall protection and rescue equipment. The manufacturer's recommendations for the use, inspection, maintenance and care of equipment shall be readily available for review by authorized users. Authorized users shall inspect the fall protection equipment at the beginning of each eight hour shift to verify that the equipment is not damaged prior to its use. The annual inspection of equipment is also required unless the manufacturer requires a more frequent inspection. Annual inspections shall be documented and performed by a competent person. This two level approach to inspection is intended to verify that defective equipment is not being used. Such inspections may expose the need for additional training, maintenance and inspections. It may also assist in determining if appropriate equipment is being used in the work environment. Written or electronic records of inspections shall be kept on file for the service life of the equipment.

Inspection requirements for fall protection and rescue equipment shall include but is not limited to:

1. Absence or illegibility of markings or tags.
2. Absence of elements that affect the form and function of equipment.

3. Evidence of defects or damage to hardware including, cracks, sharp edges, deformation, corrosion, chemical attack, excessive heating, alteration or excessive wear.
4. Evidence of defects in straps, ropes including fraying, unsplicing, enlaying, kinking knotting, roping, pulled stitches, excessive elongation, chemical attack, excessive soiling, abrasion, alteration, needed or excessive lubrication, excessive aging or wear.
5. Alteration, missing parts evidence of defects or damage, improper function of mechanical devices and connectors.
6. Any other condition that calls into question suitability of the equipment to perform its intended function.

If defects or damage to equipment is found, the equipment shall be removed from service immediately. If the equipment inspection interval has been exceeded, if the system has arrested a fall, the equipment shall be removed from service until the equipment has been properly inspected by a competent person and found to meet the inspection requirements.
If the inspected equipment has been determined to be unfit for service, it shall be tagged not to be returned to service without authorization of a competent person. Equipment removed from service and not to be returned to service must be destroyed by a competent person, returned to the manufacturer or it may be used in training if kept in a controlled area to prevent its use.
Responsibility for the maintenance of fall protection and rescue equipment shall be described in the fall protection procedures.

The fall protection procedures shall include a description of proper storage of the equipment and shall be consistent with the manufacturer's guidelines and recommendations. Storage procedures will ensure that the equipment is safe from environmental conditions that could result in damage. For example equipment such as lanyards and harnesses should not be exposed to ultra violet radiation or moisture.
Access to stored fall protection and rescue equipment shall be limited to trained and authorized persons only.

Standards for rope access are also included in the Minimum Requirements for Comprehensive Managed Fall Protection Program standard and should be a part of a fall protection program. The sections 5.6.1 through 5.6.11 describe the requirements for job safety analysis, requirements for use, inspection and maintenance of these systems.

Rescue Procedures

Employers shall provide prompt rescue of authorized persons who have fallen. Written rescue procedures shall be incorporated into the fall protection program. The procedures shall be prepared and maintained by a competent person for all instances where authorized persons are working from heights that present fall hazards. Procedures should include recognition of the importance of self rescue when possible. Prompt rescue is considered to be as soon as possible after the fall has occurred with a recommended goal of 6 minutes. Authorized and competent persons should understand the possible hazards associated with suspension trauma.

If a professional rescue service is to be used, the program administrator or other competent person shall contact the rescue agency for the purpose of familiarizing them with the locations of elevated work places where fall protection systems are in use. The rescue agency shall advise the

employer in writing of their availability and capability with regard to rescue operations. Rescue services shall be advised of conditions and activities that may affect the rescue operation. The rescue service shall provide the employer's competent person or program administrator with a written plan for the rescue operation.

If outside rescue services cannot be relied upon to provide prompt rescue the program administrator shall provide a plan and training for their employees to provide rescue operations. The plan shall include a list of rescue team members, description of equipment to be used and complete instructions on equipment use and the rescue procedures. Although not mentioned in the Fall Protection Code rescue team members should recognize the physical symptoms of suspension trauma and understand methods to be used to lessen its impact on a suspended employee.

Incident Investigations

All fall related incidents, including near misses shall be reported to the program administrator and competent person. A thorough investigation of all factors associated with the fall shall promptly occur. The investigation shall evaluate all contributing factors to assist in determining causation of the incident. All policies, procedures, training and equipment involved in or related to the incident will be evaluated. Any activity affecting the equipment or site involved in the incident shall cease until the investigation of the incident is completed. A competent person shall evaluate the equipment to determine if any damage occurred to the system because of the incident and to determine if the equipment is suitable for service. If any damage is discovered, the system will be removed from service until proper repairs have been made. All records related to the fall incident investigation shall be maintained on file for at least five years.

Evaluating Program Effectiveness

The fall protection program administrator shall be responsible to evaluate the effectiveness of the program. The purpose of the evaluation is to determine the strengths and weaknesses of the program and to work toward continuous improvement of the process. It must be a goal of the program administrator to determine if the program is meeting objectives and to take corrective actions if objectives are not being met. The evaluation results must be communicated to all levels of the organization both to the organization's leadership and the end users.
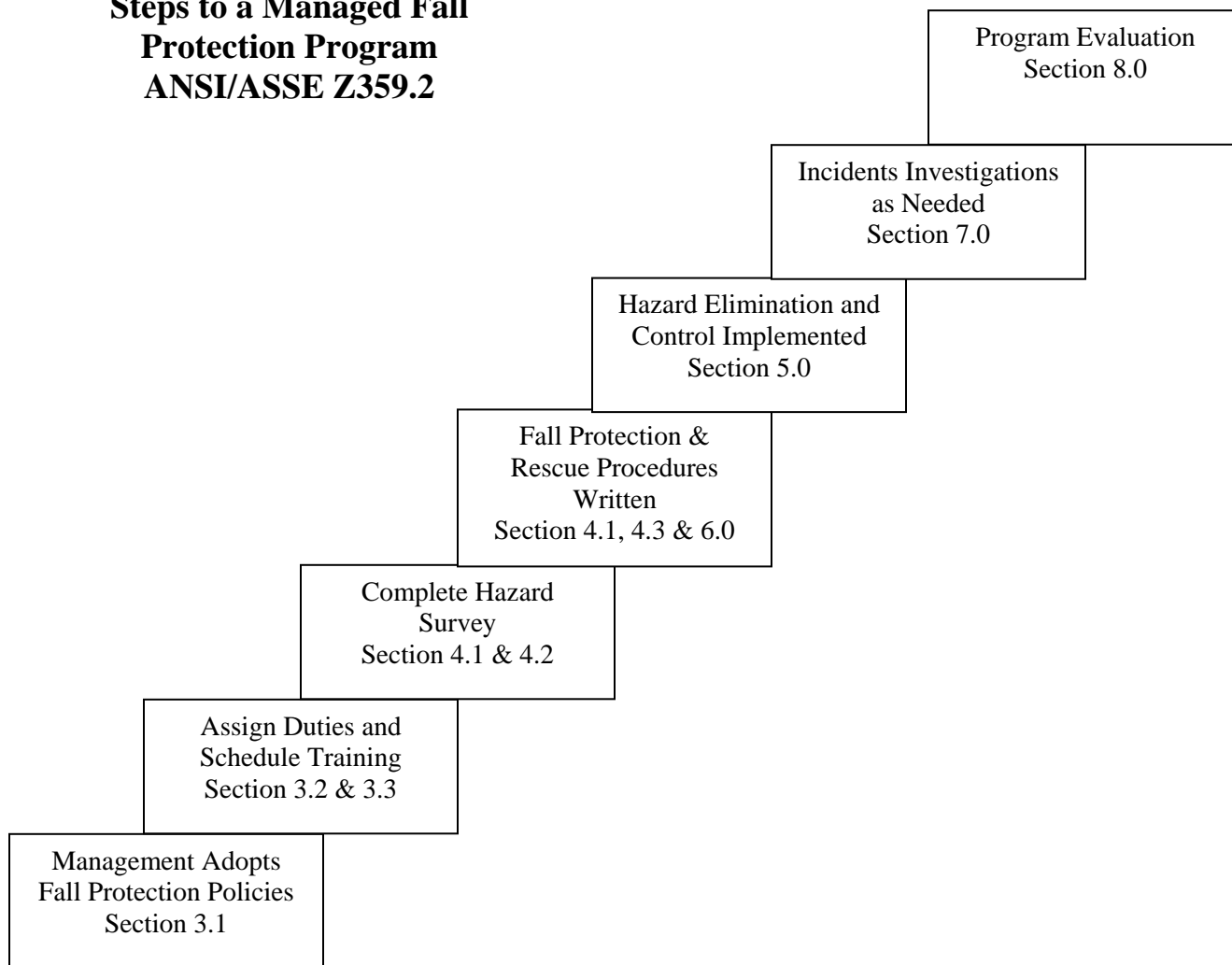
The evaluation process should include a systematic approach to grade the programs overall objectives as well as compliance with procedures and policies. The evaluation process can be performed with a periodic audit or assessment that looks at the following criteria:

1. Compliance to written policies and procedures.
2. Determining that responsibilities have been assigned.
3. Determining that assigned duties and responsibilities are properly executed.
4. Determination that all required training is taking place and is documented.
5. Determination that training is effective and that it meets the ANSI/ASSE Z490.1 Criteria for Accepted S, H & E Standards. This review includes observation of authorized users' proper use of fall protection equipment and systems.

6. A review of fall hazard survey reports to determine if all fall hazards have been identified. This evaluation should look at new and existing work activities, as well as new and old facilities.
7. A review of installed fall protection systems functionality.
8. A review of the purchasing of fall protection systems and equipment to ensure that systems and components meet the requirements of the Z359 Fall Protection Standard.
9. A review of all maintenance, inspection and storage of all fall protection systems and components.
10. Review of all fall protection and rescue procedures.
11. A review of rescue policies, procedures and rescue training exercises.
12. A review of all fall incident investigations.

The program administrator shall perform the program evaluation no less than every two years or the program administrator shall order a program evaluation whenever any deficiencies are reported by an authorized or competent person. It is recommended that a team approach be utilized for program evaluation. Involvement of employees and managers is essential to the success of the Managed Fall Protection Program. The program evaluation process shall be documented and must identify deficiencies and corrective actions when applicable. All identified corrective actions must be accompanied by an action plan. The action plan shall identify a clear description of the problem, the corrective action, the person who is responsible for correcting the problem and a time line for resolution. Program evaluations shall be kept on file for at least five years.

**Steps to a Managed Fall
Protection Program
ANSI/ASSE Z359.2**

Program Evaluation
Section 8.0

Incidents Investigations
as Needed
Section 7.0

Hazard Elimination and
Control Implemented
Section 5.0

Fall Protection &
Rescue Procedures
Written
Section 4.1, 4.3 & 6.0

Complete Hazard
Survey
Section 4.1 & 4.2

Assign Duties and
Schedule Training
Section 3.2 & 3.3

Management Adopts
Fall Protection Policies
Section 3.1

Summary

The new ANSI/ASSE Z359.2-2007 Standard is a systematic approach that will guide a
company's leaders and employees through the successful implementation of a Managed Fall
Protection Program. The new standard will assist in establishing the needed components that are
required for a quality process to manage the program. As with any controlled process, the
standard clearly defines the needed inputs for achieving the desired output - a workplace that is
safer and more productive.
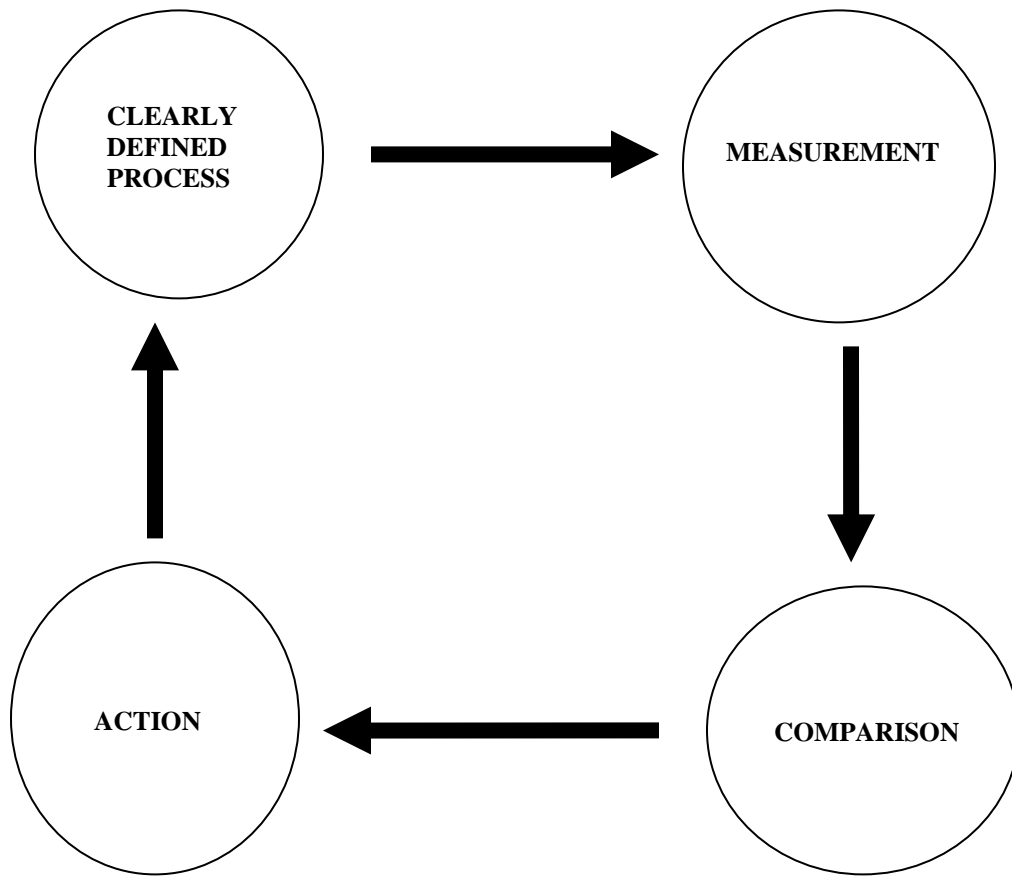
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