

Seattle Public Utilities

**Fall Prevention & Protection
Program**

September 24, 1998

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Seattle Public Utilities

FALL PREVENTION & PROTECTION PROGRAM

September 24, 1998

1.0 PURPOSE & SCOPE

The purpose of this program is to help protect employees working in areas where a fall hazard potential exists and to standardize the procedures for fall prevention and protection during construction and maintenance activities. It shall be the practice of Seattle Public Utilities (SPU) to require that all SPU employees involved in construction or maintenance activities with a fall potential of 10 feet or more be protected from fall hazards and follow procedures set forth herein (see Procedures, section 3.0). These procedures may also be required for certain situations with a fall potential of less than 10 feet if the Competent Person (see Definitions, section 2.0) on site decides they are appropriate. Furthermore, Fall Restraint Systems (see Definitions, section 2.0) are required at work sites where there is a fall potential of four feet or more (see Procedures, section 3.0 for more details).

This program shall apply to all Seattle Public Utilities' (SPU) employees who are exposed to fall hazards (as described above) as a component of their work. If there is any conflict or overlap between this program with any other regulations, or City programs or policies, the provision more protective of the employee and/or public safety and health shall apply. This program is intended to supplement and help SPU implement all applicable regulations regarding fall protection and prevention, not replace the requirements of those regulations.

2.0 DEFINITIONS

Competent Person: An individual knowledgeable of fall protection equipment, including the manufacturers' recommendations and instructions for the proper use, inspection and maintenance; and who is: 1) capable of identifying existing and potential fall hazards, 2) has the authority to take prompt corrective action to eliminate those hazards and 3) is knowledgeable of the provisions of this program and the Washington Administrative Codes (WACs) relevant to fall protection requirements, and regarding the erection, use, inspection and maintenance of fall protection equipment and systems.

Construction Activity: Any activity that consists of the following: construction, alteration, demolition, related inspection and/or maintenance and repair work. Note: If requirements of the fall protection regulations for construction conflict with regulations

listed for general industry, the provisions of the Construction Safety Standards shall prevail during construction activities.

Engineering Controls: Reducing employee exposure to falls by physically modifying the work environment. Examples of engineering controls include installing guardrails or covering floor openings.

Fall Arrest System: The use of multiple, approved safety equipment components such as body harnesses, lanyards, deceleration devices, droplines, horizontal and/or vertical lifelines and anchorages, interconnected and rigged as to arrest a free fall. A body belt may not be used as part of a fall arrest system.

Fall Protection Work Plan: A written planning document in which the employer identifies all areas on the job site where a fall hazard of ten feet or more exists as well as other areas where the Competent Person decides such a plan is appropriate. The plan describes the methods of fall protection to be utilized to help protect employees, and includes the procedures governing the installation, use, inspection and removal of the fall protection method(s) which are selected by SPU (see Attachment 1 for a copy of the Work Plan form).

Fall Restraint System: An approved device and any necessary components that function together to restrain an employee in such a manner as to prevent that employee from free falling greater than two feet. An example would be the use of guardrails.

Floor Opening: An opening measuring 12 inches or more in its least dimension in any floor, roof, or platform, through which persons may fall (see Fall Restraint System Requirements Beginning At 4 ft, section 3.0).

Low-Pitch/Slope Roof: A roof having a slope less than or equal to 4 in 12 (vertical to horizontal).

Platform: A walking/working surface for persons, elevated above the surrounding floor or ground, such as a balcony or platform for the operation of machinery or equipment.

Walking/Working Surface: Any surface, whether vertical or horizontal on which an employee walks or works, to perform his/her job duties including, but not limited to, floors, roofs, ramps or bridges.

Wall Opening: An opening at least 30 inches in height and 18 inches wide, in any wall or partition, through which persons may fall, such as an opening for a window or chute.

3.0 PROCEDURES

Engineering Controls

Where feasible, fall hazards will be mitigated by eliminating the hazard by installing temporary guardrails or covering floor openings. The Competent Person will be

responsible for determining when and where temporary guardrails or covering floor openings are necessary.

Fall Protection Work Plan

A Fall Protection Work Plan shall be developed by the Competent Person for each construction work site or maintenance activity (see Attachment 1 for a copy of the form to be completed) which identifies every work area where a fall hazard of ten feet or more exists, as well as other areas where the Competent Person decides such a plan is appropriate. The Fall Protection Work Plan shall include the following:

- Identification of all fall hazards in the work area;
- Description of the method of fall arrest or restraint systems to be provided;
- Description of the correct procedures for the assembly, maintenance, inspection and disassembly of the fall protection system to be used;
- Description of the correct procedures for the handling, storing and securing of tools and materials;
- Description of the method of providing overhead protection for workers who may be in, or pass through, the area below the work site; and
- Description of the rescue plan for prompt, safe removal of injured workers, including, but not limited to, the following:
 - ◇ Emergency telephone numbers for medical and rescue assistance;
 - ◇ Site address and specific directions for getting to the site;
 - ◇ Location of first-aid kit;
 - ◇ Special equipment needed for rescue, such as cranes, ladders, etc.; and
 - ◇ Location and availability of personnel trained and competent in rescue procedures.
- The Competent Person on site shall sign and date the Work Plan Log to document that the Fall Protection Work Plan was completed and reviewed according to the provisions of this program.

Fall Restraint System Requirements Beginning At 4 ft.

Open-sided floors, platforms or surfaces four feet or more above an adjacent floor or ground level (except where there is an entrance to a ramp, stairway, or fixed ladder) shall be guarded by a standard guardrail consistent with WAC 296-24-75011 (see Attachment 2 for more details). Also, see WAC 296-24-75005 “Protection for Wall Openings and Holes” and WAC 296-24-75007 “Protection of Open-Sided Floors, Platforms and Runways” for other situations where fall protection is necessary if a fall potential of four feet or more exists.

Equipment

Each employee who is assigned to work in an area where there is a fall hazard of ten feet in height or more (and in locations where the Competent Person decides it is appropriate) shall be trained by a Competent Person or an SPU-approved Fall Prevention and Protection class on the specific equipment that will be used at that site as identified in the Fall Protection Work Plan.

Supervisors shall make available to employees in a specific and easily accessible location (e.g., the Supervisor’s office) the manufacturers’ written instructions on the use, inspection and maintenance of all fall protection equipment used by employees under his/her supervision. In addition, Supervisors shall inform employees of the existence and location of the instructions.

Only employees who have received the training required by the Fall Prevention and Protection Program, and who have been trained on the specific equipment, shall use any fall protection equipment. If employees are not trained in the use of fall protection equipment, they shall not work in areas in which a fall hazard of 10 feet or more exists or in other areas where the Competent Person for the site decides are inappropriate.

General Provisions

The Competent Person is responsible for making the completed Fall Protection Work Plan available on the job site for inspection by on-site workers, the Department of Labor and Industries or Safety Office representatives.

If at any time an employee has a question as to his/her safety in any fall hazard situation, the employee shall leave the hazard area and discuss the concern with his/her Supervisor or Crew Chief. If the employee feels unsafe in a situation requiring fall protection equipment, he/she should immediately discuss this concern with his/her Supervisor or Crew Chief. If these individuals cannot adequately address the concern of the employee, the Safety Office should be consulted.

4.0 RESPONSIBILITIES

Management:

Department Director, Branch Executives, Division Directors and Section Managers oversee compliance, including providing adequate funding for training and equipment needed according to this program.

Supervisors:

- Arrange for required training, including refresher training (see Training Requirements, section 5 for details), in coordination with the Training Office for employees under their supervision who may be exposed to fall hazards during construction and/or maintenance activities;
- Maintain a record of such training and send a copy to the SPU Training Office;
- Select a qualified employee to be the Competent Person for construction and maintenance projects where fall hazards exist;
- Require a Competent Person to complete a Fall Protection Work Plan for each construction or maintenance related activity where a fall potential of greater than ten feet exists, as well as for other areas where the Competent Person decides such a plan is appropriate;
- Send a copy of all new and revised Fall Protection Work Plans to the Safety Office; and
- Make readily available to employees under his/her supervision the manufacturer's written instructions on the use, inspection and maintenance of all fall protection equipment (see Procedures, section 3 for more details).

Crew Chiefs:

Note: For work groups (or work projects) where Crew Chiefs are not present, Supervisors will undertake the responsibilities listed below.

- Assist employees under their supervision in becoming familiar with and in adhering to all provisions of this program and any relevant regulations; and
- Regularly inspect fall protection equipment used by employees under their supervision.

Employees:

- Be familiar with and adhere to all provisions of this program and all Fall Protection Work Plans for projects in which they are involved;
- Inspect their assigned equipment prior to use at each job site, each day;
- Read and be familiar with manufacturers' operating manuals for all fall protection equipment they use; and
- Report immediately to their Supervisor or Crew Chief any fall protection equipment, facility, structure or work practice which poses a fall hazard to themselves or other employees.

5.0 TRAINING REQUIREMENTS

Supervisors will arrange for training required by this program, prior to employee exposure, in coordination with the SPU Training Office for employees under their supervision who may be exposed to fall hazards during construction or maintenance activities, as defined in this program. Supervisors shall maintain records of training and forward copies to the SPU Training Office for inclusion into the training database.

Fall prevention and protection training shall include instructions on the following topics:

- Types of fall hazards that may be encountered in the course of various field activities;
- Components of this Fall Prevention and Protection Program;
- Components of the Fall Protection Work Plan form and instructions on how to complete the form;
- Fall arrest and fall restraint equipment required, including its use, handling, storage, maintenance and inspection; and
- Procedures employees must follow in the event of a fall-related accident.

Refresher training must be provided to affected employees when: 1) there is a change in the regulations affecting fall protection, 2) before new fall protection equipment is used by an employee, 3) when any deficiencies are noted in the fall protection procedures followed by an employee and 4) two years has passed since a given employee has received Fall Prevention and Protection training.

6.0 RECORD KEEPING

Copies of all Fall Protection Work Plans and revisions to existing plans shall be sent to the Safety Office. Supervisors shall maintain copies of Fall Protection training records

(including refresher training) for employees under their supervision. The SPU Training Office shall also maintain employee training records (in the training database).

7.0 PROGRAM REVIEW

Review of this program and associated procedures shall be performed by the SPU Safety Office, Safety and Environmental Compliance Lateral Team, and/or Director's Office of Strategic Policy as regulations change or conditions warrant.

8.0 PHASE-IN PERIOD OF THIS PROGRAM

All efforts shall be made by SPU employees to meet the requirements of this program as soon as possible. However, since many individuals will need to attend training, and facilities modified in order to meet all the requirements of this program, full compliance with this program will occur no later than March 31, 1999.

9.0 SELECTED REFERENCES

- WAC 296-155 Part C-1 "Fall Restraint and Fall Arrest"
- WAC 296-155 Part K "Floor Openings, Wall Openings and Stairways"
- WAC 296-24-750 "Guarding Floor and Wall Openings and Holes"

ATTACHMENT 1

SEATTLE PUBLIC UTILITIES

FALL PROTECTION WORK PLAN

INSTRUCTIONS: This form is to be completed for each work site where employees are assigned and a fall hazard(s) of 10 feet or more exists, as well as for other areas where the Competent Person for the site decides it is appropriate. This document must be completed by a Competent Person who has an understanding of WISHA fall protection requirements, and the Seattle Public Utilities' Fall Prevention and Protection Program, and who has authority to take corrective action to help protect employees from exposure to fall hazards. A copy of this plan must be available on the work site for the duration of any SPU employee's involvement at that site and a copy sent to the SPU Safety Office.

A. Work Site Address: _____

B. Competent Person Completing this Work Plan: _____

C. Work Plan Posted (location): _____

D. Date Plan Completed: _____

E. Fall Hazards Identified in Work Area (check only those that apply):

☐	Hazard Type	Fall Protection Method (circle those to be used)* *Refer to the manufacturer's instructions for procedures on use & care of equipment, see Competent Person on site.	Overhead Protection (if needed indicate number from key below)
	Roof > 4/12 Pitch	Fall Arrest, Fall Restraint	
	Roof < 4/12 Pitch	Fall Arrest, Fall Restraint, Guardrails, Warning Line, Monitor	
	Skylight Openings	Guardrails, Cover, Hatch	
	Roof Openings	Cover, Hatch, Guardrails	
	Floor Openings	Cover, Hatch, Guardrails	
	Window Openings	Guardrails	
	Open-Sided Floors	Fall Restraint, Warning Line System, Guardrails	
	Decks	Guardrails	
	Balconies	Guardrails	
	Leading Edge Work	Warning Line System	
	Scaffold Work	Fall Arrest, Guardrails	
	Mobile Lift Work	Fall Arrest	
	Ladder Work	Positioning Belt	
	Excavation Edges	Guardrails, Warning Line System	
	Grade Drop-Offs	Guardrails	
	Chambers/Vaults		
	Other (indicate):		

OVERHEAD PROTECTION METHOD KEY			
Number	Overhead Protection Method	Number	Overhead Protection Method
1	Hard Hats	5	Screens on Guardrails
2	Overhead Hazard Signs	6	Barricades to Control Access
3	Debris Nets	7	Other (indicate):
4	Toe Boards on Guardrails	8	Other (indicate):

F. Emergency Information

1. First-Aid Kit Location(s): _____
2. Nearest Emergency Medical Facility: _____
3. Emergency Services Phone Numbers:
 Medical: _____ Fire: _____ Police: _____
4. Location of Nearest Telephone: _____
5. Injuries at elevation: If a crew member is injured at elevation, the Supervisor will evaluate the employee's condition and administer first aid, if needed. Emergency services will be called as needed. If an injured employee cannot return to ground level by normal means, the employee will be brought down to a lower level by emergency services. The following equipment is available on site to facilitate lowering the injured worker, if needed:

6. Rescue Plan and On-Site Emergency Equipment/Personnel (other than those noted above):

G. Employee Training

All employees working on this site must be instructed on the provisions of this plan and have been trained in the proper use of the fall protection equipment involved. By signing this document, the employees acknowledge that they understand the plan and have been trained in the use of the equipment. They also acknowledge that they have received first-aid training.

Name	Signature	Date

H. Competent Person's Signature

The Competent Person's signature verifies that the hazard analysis has been performed and that the appropriate employees have been informed of the hazards and the fall protection systems to be used.

Name	Signature	Date

ATTACHMENT 2

WAC 296-24-75011, RAILING, TOEBOARDS, AND COVER SPECIFICATIONS

- (1) A standard railing shall consist of top rail, intermediate rail, and posts, and shall have a vertical height of from thirty-six to forty-two inches nominal from upper surface of top rail to floor, platform, runway or ramp level and:
 - (a) The top rail shall be smooth-surfaced throughout the length of the railing.
 - (b) The intermediate rail shall be approximately halfway between the top rail and the floor, platform, runway, or ramp.
 - (c) The ends of the rails shall not overhang the terminal posts except where such overhang does not constitute a projection hazard.
 - (d) Guardrails with heights greater than 42 inches are permissible provided the extra height does not create a dangerous situation for employees and that additional mid-rails were installed so that openings beneath the top rail would not permit the passage of a 19-inch or larger spherical object.
- (2) A stair railing shall be of construction similar to a standard railing but the vertical height shall be not more than thirty-four inches nor less than thirty inches from upper surface of top rail to surface of tread in line with face of riser at forward edge of tread.
- (3) Minimum requirements for standard railings under various types of construction are specified in this subsection. Dimensions specified are based on the U.S. Department of Agriculture Wood Handbook, No. 72, 1955 (No. I (S4S) Southern Yellow Pine (Modulus of Rupture 7,400 p.s.i.)) for wood; ANSI G 41.5-1970, American National Standard Specifications for Structural Steel, for structural steel; and ANSI B 125.1-1970, American National Standard Specifications for Welded and Steamless Steel Pipe, for pipe.
 - (a) For wood railings, the posts shall be of at least two-inch by four-inch nominal stock spaced not to exceed six feet; the top and intermediate rails shall be of at least two-inch by four-inch nominal stock. If top rail is made of two right-angle pieces of one-inch by four-inch stock, posts may be spaced on eight-foot centers, with two-inch by four-inch intermediate rail.
 - (b) For pipe railings, posts and top and intermediate railings shall be at least one and one-half inches nominal diameter (outside diameter) with posts spaced not more than eight feet on centers.
 - (c) For structural steel railings, posts and top and intermediate rails shall be of two-inch by two-inch by three-eighths-inch angles or other metal shapes of equivalent bending strength with posts spaced not more than eight feet on centers.
 - (d) The anchoring of posts and framing of members for railings of all types shall be of such construction that the completed structure shall be capable of withstanding a load of at least two hundred pounds applied in any direction at any point on the to rail.
 - (e) Other types, sizes, and arrangements of railing construction are acceptable provided they meet the following conditions:
 - (i) A smooth-surfaced top rail at a height above floor, platform, runway, or ramp level of from thirty-six to forty-two inches nominal;

- (ii) A strength to withstand at least the minimum requirement of two hundred pounds top rail pressure;
 - (iii) Protection between top rail and floor, platform, runway, ramp, or stair treads, equivalent at least to that afforded by a standard intermediate rail;
 - (iv) Elimination of overhang of rail ends unless such overhang does not constitute a hazard; such as, baluster railings, scrollwork railings, paneled railings.
- (4) A standard toeboard shall be a minimum of four inches nominal in vertical height from its top edge to the level of the floor, platform, runway, or ramp. It shall be securely fastened in place and with not more than one-quarter-inch clearance above floor level. It may be made of any substantial material either solid or with openings not over one inch in greatest dimension.

Where material is piled to such height that a standard toeboard does not provide protection, paneling from floor to intermediate rail, or to top rail shall be provided.

- (5) A handrail shall consist of a lengthwise member mounted directly on a wall or partition by means of brackets attached to the lower side of the handrail so as to offer no obstruction to a smooth surface along the top and both sides of the handrail. The handrail shall be of rounded or other section that will furnish an adequate handhold for anyone grasping it to avoid falling. The ends of the handrail should be turned in to the supporting wall or otherwise arranged so as not to constitute a projection hazard.
- (a) The height of handrails shall be not more than thirty-four inches nor less than thirty inches from upper surface of handrail to surface of tread in line with face of riser or to surface of ramp.
 - (b) The size of handrails shall be: When of hardwood, at least two inches in diameter; when of metal pipe, at least one and one-half inches in diameter. The length of brackets shall be such as will give a clearance between handrail and wall or any projection thereon of at least one and one-half inches. The spacing of brackets shall not exceed eight feet.
 - (c) The mounting of handrails shall be such that the completed structure is capable of withstanding a load of at least two hundred pounds applied in any direction at any point on the rail.
- (6) All handrails and railings shall be provided with a clearance of not less than one and one-half inches between the handrail or railing and any other object.
- (7) Floor opening covers may be of any material that meets the following strength requirements:
- (a) Trench or conduit covers and their supports, when located in plant roadways, shall be designed to carry a truck rear-axle load of at least twenty thousand pounds.
 - (b) Manhole covers and their supports, when located in plant roadways, shall comply with local standard highway requirements if any; otherwise, they shall be designed to carry a truck rear-axle of at least twenty thousand pounds.

- (c) The construction of floor opening covers may be of any material that meets the strength requirements. Covers projecting not more than one inch above the floor level may be used providing all edges are chamfered to an angle with the horizontal of not over thirty degrees. All hinges, handles, bolts, or other parts shall set flush with the floor or cover surface.
- (8) Skylight screens shall be of such construction and mounting that they are capable of withstanding a load of at least two hundred pounds applied perpendicularly at any one area on the screen. They shall also be of such construction and mounting that under ordinary loads or impacts, they will not deflect downward sufficiently to break the glass below them. The construction shall be of grillwork with openings not more than four inches long or of slatwork with openings not more than two inches wide with length unrestricted.
- (9) Wall opening barriers (rails, rollers, picket fences, and half doors) shall be of such construction and mounting that, when in place at the opening, the barrier is capable of withstanding a load of at least two hundred pounds applied in any direction (except upward) at any point on the top rail or corresponding member.
- (10) Wall opening grab handles shall be not less than twelve inches in length and shall be so mounted as to give one and one-half inches clearance from the side framing of the wall opening. The size, material, and anchoring of the grab handle shall be such that the completed structure is capable of withstanding a load of at least two hundred pounds applied in any direction at any point of the handle.
- (11) Wall opening screens shall be of such construction and mounting that they are capable of withstanding a load of at least two hundred pounds applied horizontally at any point on the near side of the screen. They may be of solid construction, of grillwork with openings not more than eight inches long, or of slatwork with openings not more than four inches wide with length unrestricted.