1.0 Policy

It is the Company's policy to follow national and corporate standards and guidelines that pertain to fall protection. This policy shall apply to all site employees and contractors.

2.0 Purpose

This policy provides regulatory requirements and general guidelines that pertain to the use of guardrails, fall arrest systems, safety nets and covers. Compliance with the requirements and guidelines set forth in this policy will facilitate in minimizing the risk to employees whose jobs are associated with working on elevated surfaces greater than six feet.

3.0 Definitions

3.1 **Anchorage:** A secure point of attachment for lifelines, lanyards or deceleration devices, and which is independent of the means of supporting or suspending the employee.

3.2 **Body harness:** A design of straps secured around the employee to distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders with means for attaching it to other components of a personal fall arrest system. (**Note**: Body belts are not approved for use at the Company's site.)

3.3 **Buckle:** Any device for holding the body harness closed around the employee's body.

3.4 **Competent person:** A person who is capable of identifying hazardous or dangerous conditions in the personal fall arrest system or any component thereof, as well as their application and use with related equipment.

3.5 **Connector:** A device which is used to couple (connect) parts of the system together. It may be an independent component of the system (such as a carabiner), or an integral component of part of the system (such as a buckle or D-ring sewn into a body belt or harness, or a snap-hook spliced or sewn to a lanyard or self-retracting lanyard).

3.6 **Control:** A mechanism used to regulate or guide the operation of the equipment.

3.7 **D-ring:** A steel ring shaped like the letter "D" used for attaching various personal fall protection system equipment to the body harness. D-Rings must be capable of sustaining a minimum tensile load of 5,000 pounds. D-Rings must be 100 percent proof tested to a minimum tensile load of 3,600 pounds without cracking, breaking or taking permanent deformation.

3.8 **Deceleration device:** Any mechanism, such as a rope grab, rip stitch lanyard, specially woven lanyard, tearing or deforming lanyard, or automatic self retracting-lifeline/lanyard, which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limits the energy imposed on an employee during fall arrest.

3.9 **Deceleration distance:** The additional vertical distance a falling employee travels, excluding lifeline elongation and free-fall distance, before stopping, from the point at which the deceleration device begins to operate. It is measured as the distance between the location of an employee's body belt or body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device

during a fall, and the location of the attachment point after the employee comes to a full stop.

3.10 **Equivalent:** Alternative designs, materials or methods which the employer can demonstrate will provide an equal or greater degree of safety for employees than the methods, materials or designs specified in the standard.

3.11 **Free fall:** The act of falling before the personal fall arrest system begins to apply force to arrest the fall.

3.12 **Free-fall distance:** The vertical displacement of the fall arrest attachment point on the employee's body belt or body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance, lifeline and lanyard elongation but include any deceleration device slide distance or self-retracting lifeline/lanyard extension before they operate and fall arrest forces occur.

3.13 **Ground rigging:** A method of suspending a working platform starting from a safe surface to a point of suspension above the safe surface.

3.14 **Lanyard:** A flexible line of rope, wire rope or strap used to secure the body belt or body harness to a deceleration device, lifeline or anchorage.

3.15 **Lifeline:** A component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline). It connects other components of a personal fall arrest system to the anchorage.

3.16 **Personal fall arrest system:** A system used to arrest an employee in fall from a working level. It consists of an anchorage, connectors, a body belt or a body harness. It may include a lanyard, deceleration device, lifeline or suitable combinations of these.

3.17 **Rope grab:** A deceleration device which travels on a lifeline and automatically frictionally engages the lifeline and locks so as to arrest the fall of an employee.

3.18 **Side-rolling ladder:** A semi-fixed ladder, nonadjustable in length, supported by attachments to a guide rail. It is generally fastened to shelving, the plane of the ladder being also its plane of motion.

3.19 **Snaphook:** A connector comprised of a hook shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object.

3.20 **Tie off:** The act of an employee, when wearing personal fall protection equipment, connecting directly or indirectly to an anchorage. It also means the condition of an employee being connected to an anchorage.

3.21 **Toe board:** A 3–4" solid covering that extends vertically up along the edge of the walking/working platform. The covering acts as a warning to personnel that they are at the edge. It also keeps tools and debris from falling off the platform.

4.0 Responsibilities

4.1 Senior Manager

The Company's senior manager is responsible for implementing and complying with this policy. Responsibilities include:

4.1.1 Ensure personnel working on elevated surfaces are briefed on the provisions of this policy.

4.1.2 Ensure employees are trained in accordance with section 5.8.

4.1.3 Provide regulatory interpretation and implementation criteria for elevated work practices performed on site.

4.1.4 Ensure this policy is reviewed and updated as necessary.

4.2 Employees

4.2.1 Follow the guidelines and requirements in this policy.

4.2.2 Evaluate each job task for the need of fall protection equipment before beginning work.

4.2.3 Inspect personal fall protection equipment before each use, per the inspection guidelines of Attachment A.

4.2.4 Remove defective equipment from service and attach a "Do Not Use" tag.

4.2.5 Properly store personal fall protection equipment as designated in section 5.6.

4.2.6 Be responsible for following the requirements of this policy.

4.3 Foreman

4.3.1 Be the competent person as defined in section 3.4.

4.3.2 Ensure that site employees and contractors are knowledgeable of the applicable procedures and regulations.

4.3.3 Ensure training, training material and documentation are complete for employees whose job functions may expose them to a fall exposure greater than six feet.

4.3.4 Select and provide appropriate equipment in good working condition for work practices where a recognized fall exposure exists.

4.4 Safety Coordinator (or his or her) designee

4.4.1 Maintain training records for employees.

4.4.2 Procure proper fall protection equipment.

4.4.3 Provide guidance and requirements for fall protection.

5.0 Requirements

5.1 General Requirements and Design Considerations

5.1.1 The Company requires 100 percent tie-off when working or moving at elevated heights greater than six feet above a lower level or ground, when other types of fall protection equipment such as a standard guardrail are not available.

5.1.2 All elevated walking and working surfaces shall be free of obstructions, be free of any tripping or slipping hazards, have approved guardrails, and have toe/kick boards. This also includes any mobile lift platforms.

5.1.3 A personal fall arrest system is required when any person is performing any work six feet or more above any lower level. When known hazards exist (such as working over machinery, moving equipment or sharp objects) fall protection must be employed regardless of the height at which the work will be performed. This six-foot measurement is calculated from the feet or the lowest point of the body.

5.1.4 Stairs are the preferred method of providing access from one working level to another. When it is impractical to install stairs, fixed ladders should be installed in accordance with reference 5.4.

5.1.5 All fixed ladders that open to a platform, or access way, shall be equipped with a self-closing guardrail gate that only opens toward the area to which access is provided.

5.1.6 Guardrails should be installed at the edges of elevated surfaces that serve as walking or working areas (consult the References section for specifications).

5.1.7 Where personal fall protection must be used on a regular basis, anchor points should be permanently installed.

5.2 Equipment Specifications

5.2.1 To ensure compatibility, all integrated components of a fall arrest system shall be supplied or approved by the manufacturer.

5.2.2 Lanyards used as a personal fall arrest system shall be equipped with a deceleration device.

5.2.3 Only full body harnesses with a D-ring at the center of back and/or chest shall be used.

5.2.4 Snaphooks used as a part of personal fall arrest systems shall be of the locking type with a self-closing, self-locking keeper.

5.2.5 D-rings and snaphooks shall have a minimum tensile strength of 5,000 pounds. They shall be proof-tested to a minimum tensile load of 3,600 pounds without cracking, breaking or taking permanent deformation.

5.2.6 Locking-type snaphooks shall be in use at all times. A lanyard may be wrapped around a supporting structure and then hooked onto itself forming a choker, only if the manufacturer states in its literature that the device is designed for such use. If a choker type use of a lanyard is used, documentation to ensure manufacturer acceptance of this practice should be available.

5.2.7 Lanyards and vertical lifelines shall have a minimum breaking strength of 5,000 pounds. Self-retracting lifelines and lanyards which automatically limit free-fall distance to two feet or less shall be capable of sustaining a minimum tensile load of 3,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.

5.2.8 Self-retracting lifelines and lanyards which do limit free-fall distances to two feet or less, rip stitch lanyards, and tearing and deforming lanyards shall be capable of sustaining a minimum tensile load of 5,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.

5.2.9 Defective fall protection equipment shall be immediately taken out of service, tagged “Do Not Use,” and turned into the tool room for the manufacturer to repair or replace. Equipment that is beyond repair shall be destroyed so that it cannot be used.

5.2.10 Any fall protection equipment that receives an impact load shall be immediately removed from service, tagged “Do Not Use,” and returned to the vendor for inspection and testing. Only upon vendor approval can the equipment be used.

5.3 Guardrail Systems and Toeboards

Requirements for scaffold fall protection systems are in the References section. All other guardrail systems and their components shall meet these criteria:

5.3.1 Guardrail systems shall be capable of withstanding, without failure, a force of at least 200 pounds, applied within two inches of the edge in any outward or downward direction, at any point along the top edge.

5.3.2 When guardrail systems are used at hoisting areas, a gate or removable guardrail section shall be placed across the access opening between guardrail sections when hoisting operations are not taking place.

5.3.3 Each employee in a hoist area shall be protected from a fall of six feet or more to lower levels by guardrail system or personal fall arrest systems. If the guard system, swing gate, guardrail or portions are removed to facilitate the hoisting operation during landing of materials, an employee must lean through the access opening or out over the edge of the access opening (to receive or guide equipment and material for example), so that employee shall be protected from fall hazards by a personal fall arrest system.

5.3.4 Each employee on walking/working surfaces shall be protected from falling through holes (including skylights) more than six feet above lower levels by personal fall arrest systems, covers or guardrail systems erected around such holes.

5.3.5 When guardrail systems are used around holes that are used as points of access (such as ladder-ways), they shall be provided with a gate or be so offset that a person cannot walk directly into the hole.

5.3.6 Guardrail systems and their use shall comply with these provisions: The top edge height of the top rails, or equivalent guardrail system members, shall be 42 inches plus or minus three inches above the walking/working level.

5.3.7 Toeboards, when used as falling object protection, shall be erected along the edge of the overhead walking/working surface for a distance sufficient to protect employees below.

5.3.8 Toeboards shall be capable of withstanding, without failure, a force of at least 50 pounds applied in any downward or outward direction at any point along the toeboard.

5.3.9 Toeboards shall be a minimum of 3½ inches in vertical height from their top edge to the level of the walking/working surface. They shall be solid or have an opening not more than 1 inch.

5.4 Ladders

Requirements for ladders are in the References section. In addition, these guidelines should be adhered to:

5.4.1 Personal fall protection is not required when climbing up or down portable ladders to gain access to the point of work. Fall protection, where practical, shall be used when performing work from a ladder at heights greater than six feet, no exception for railcars and tank trucks.

5.4.2 Always select the correct ladder for the work being performed. Be sure the ladder is an approved ladder and has a current (valid) inspection. Freestanding ladders do not have to be secured before work. Non-freestanding (non-self-supporting) ladders must be secured to prevent shifting, sliding or falling before working from the ladder.

5.5 Portable Platforms

5.5.1 When working from a portable platform you shall tie off on the inside of the platform (e.g., cherry picker, JLG lifts, upright lift, lull). Do not tie off to any anchor point outside the portable platform.

5.5.2 Maintain adequate aisles (at least three feet wide) for unobstructed movement of personnel and so that fire protection equipment can be brought to any area of the process.

5.6 Inspection and Equipment Storage

5.6.1 Fall protection/arrest equipment shall be properly inspected by the user before use for mildew, wear, damages, deterioration or defective components.

5.6.2 New fall protection equipment shall be dated as to when it was placed in service.

5.6.3 Defective equipment shall be removed from service at once and tagged “Do Not Use” until repaired and tested.

5.6.4 If equipment is beyond repair, it shall be destroyed.

5.7 Emergencies and Rescues

The manager is required to provide for prompt rescue of employees in the event of a fall or shall assure the employees are able to rescue themselves. In the event of an actual elevated work practice emergency, use current site emergency procedures.

5.8 Training

5.8.1 All employees and contractors whose job functions have the potential to expose them to a fall exposure greater than six feet shall be trained on fall protection equipment and the hazards.

5.8.2 The training program shall enable each employee to recognize the hazards of falling and shall train each employee in the procedures to be followed to minimize the hazards.

5.8.3 The training program shall include, but is not limited to:

- The nature of fall hazards in the work area.
- Correct procedures for erecting, maintaining, disassembling and inspecting the fall protection systems.
- Use and operation of guardrail systems, personal fall arrest systems, controlled access zones, site management systems, safety net systems, warning line systems, safety monitoring systems or other applicable protection to be used.
- Role of each employee as a safety monitor in a “buddy system.”
- Handling rescue and site emergency numbers and procedures.
- Load limits, proper anchoring and tie-off techniques, and storage of fall arrest systems.
- Calculating the total free-fall distance and ways to minimize this distance.
- The standards in Subpart M, General Industry, Roof Access Procedure.

5.8.4 Employees shall be retrained:

- When the employer has reason to believe that any affected employee (who has already been trained) does not have the understanding of, nor ability to, demonstrate the skill required by section 5.8.3.
- When regulatory changes occur.
- When changes in the workplace render previous training obsolete.
- When changes in the types of fall protection systems or equipment to be used render previous training obsolete.
- At least every two years.

5.8.5 Training documentation should include:

- Verification of compliance with section 5.8.2 above.
- Name or other identification of the employee trained, date of the training, and signature of the person who conducted the training or the signature of the employer.
- The latest record of training.

6.0 References

6.1 29 CFR 1926 Subpart M – Fall Protection

7.0 Attachments

Attachment A: Fall Protection Equipment Inspection Guidelines

Attachment B: Fall Protection Do's and Don't's

Attachment C: Calculating Free-Fall Distances

8.0 Signatures

Attachment A
Personal Fall Protection Equipment Inspection Guidelines

Personal fall protection/arrest equipment shall be properly inspected before use. Equipment shall be repaired or replaced if there are any signs of:

		(Yes)	(No)
1.	Mildew, rot or other deterioration.	( )	( )
2.	Exposure to agents that can cause deterioration (i.e., solvents and other petro-chemical products).	( )	( )
3.	Excessive wear or abrasion.	( )	( )
4.	Buckles that do not work properly.	( )	( )
5.	Snaps or hooks that have improperly operating safety latches.	( )	( )
6.	D-rings that are damaged or worn.	( )	( )
7.	Ropes that are cut, broken, worn, knotted, or otherwise damaged, deteriorated or weakened.	( )	( )
8.	A sustained impact under load conditions, even if there is no apparent damage.	( )	( )
9.	Alteration or customizing.	( )	( )

If the answer is “Yes” to any items above, remove the defective equipment from service, attach a “Do Not Use” tag and notify the safety coordinator.

Attachment B
FALL PROTECTION DO'S AND DON'T'S

- Always read instructions and warnings on fall protection equipment.
- Visually inspect fall protection equipment carefully before use.
- Be trained on the basics of fall protection and proper use of the equipment.
- Develop a rescue plan establishing what to do if a fall occurs.
- Use full body harnesses and shock absorbers whenever possible.
- Select anchorage points that will support 5,000 pounds per attached worker.
- Observe proper tie-off procedures.
- Attach fall-arrest connecting devices to the back of D-rings only.
- Make sure all equipment is compatible. Do not mix and match equipment from different manufacturers.

Attachment C

CALCULATING TOTAL FREE-FALL DISTANCES

Calculating Total Fall Clearance

OSHA limits total free fall distance to a maximum of 6 feet as referenced by 1926.501 (b), and less in cases when working over dangerous equipment 1926.501 (b) (8). But limiting these falls to 6 feet is not as simple as purchasing 6-foot lanyards. Please refer to the following example (see diagram 1).

An employee is wearing a full body harness with the D-ring 5 feet off the floor, attached is a 6-foot shock-absorbing lanyard. If the employee attaches the lanyard to an anchor point at ground level, and falls over the open sided floor, he will be exposed to a free fall of approximately 11 feet (D-ring height of 5 feet + lanyard length of 6 feet). In addition, the shock-absorbing lanyard may lengthen up to 3.5 feet thus exposing the employee to a total fall of 14.5 feet. Considering that the D-ring is 5 feet from the employees feet (when wearing the harness) you will need an additional 5 feet of clearance to ensure the employee doesn't hit anything below in the event of a fall. Adding all of this together we have a minimum total fall distance in this situation of 19.5 feet.

D-ring height	5 feet
Shock absorbing lanyard	6 feet
Shock absorber stretch	3.5 feet
Post fall clearance in harness	+ 5 feet
Minimum clearance required	**19.5 feet** (refer to diagram 1)

Position of D-Ring when wearing a full body harness for personal fall arrest is in the middle of the back between the shoulder blades.

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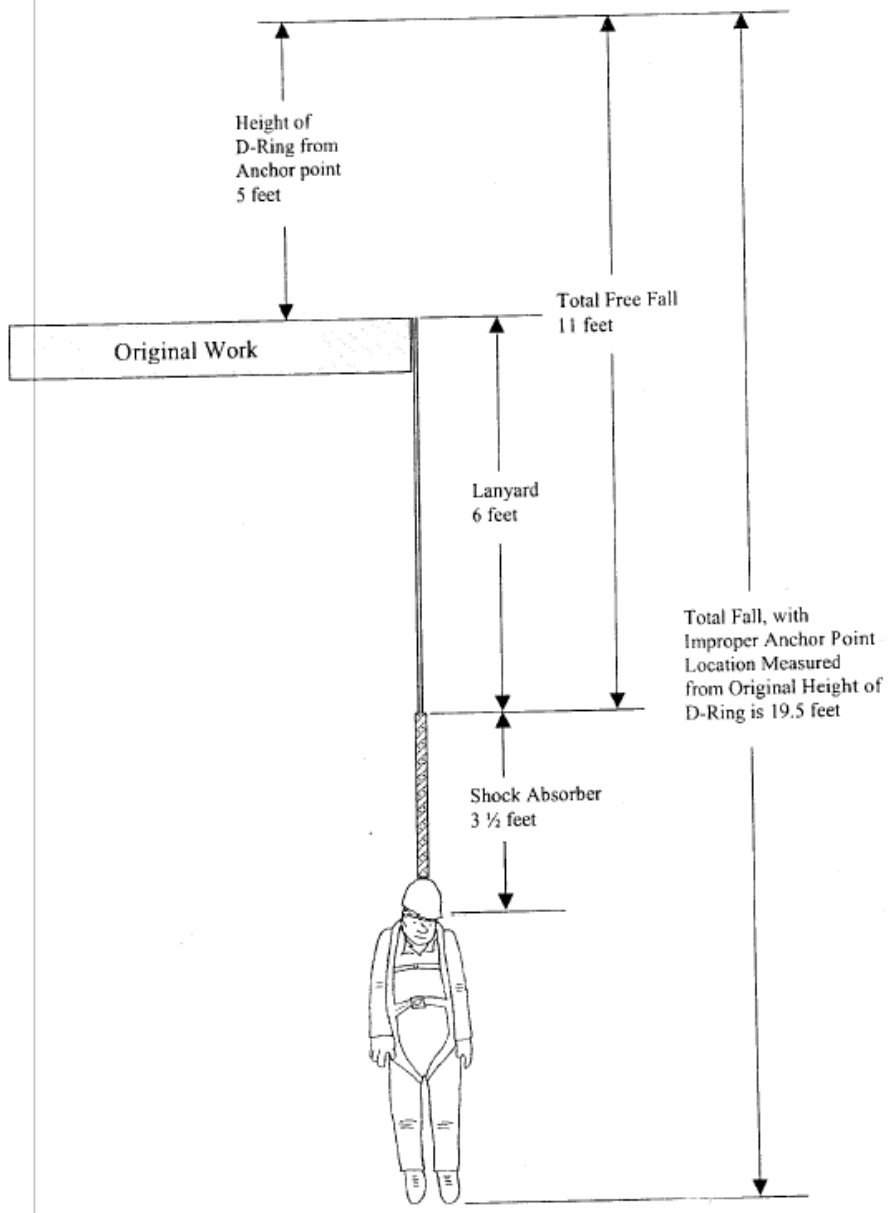
Diagram 1


Height of
D-Ring from
Anchor point
5 feet
Original Work
Total Free Fall
11 feet
Lanyard
6 feet
Total Fall, with
Improper Anchor Point
Location Measured
from Original Height of
D-Ring is 19.5 feet
Shock Absorber
3 ½ feet

To minimize the clearances required follow these general guidelines:

1. When ever possible, secure the lanyard to an anchor point at or above the height of the D-ring.
2. When this is not possible, use a shorter lanyard or retractable lanyard but never allow for a free fall of more than 6 feet.
3. Remember to calculate the shock absorbers stretch into the total to determine clearance required.
4. Remember to add the height from the employee's feet to the D-ring as well.

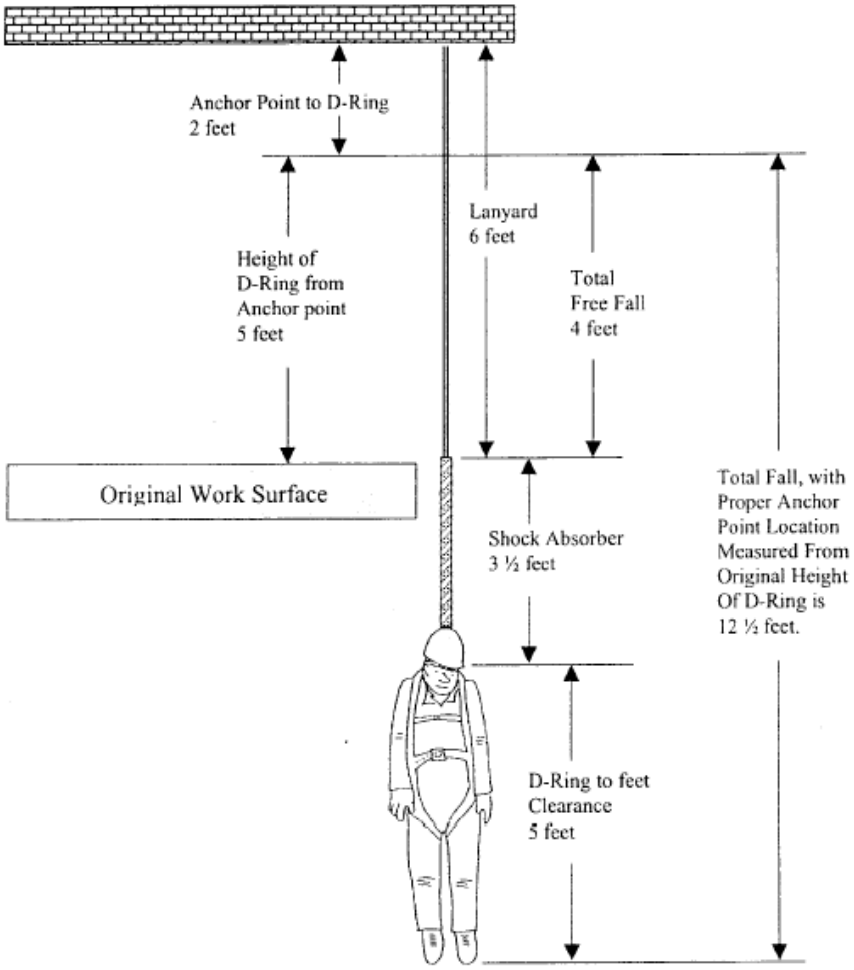
The following is another example of calculating total fall clearance required, with the same employee above with the proper anchor point. In this case, the anchor point is located 2 feet above the D-ring on the harness; notice the different results (see diagram 2).

With the lanyard tied to the anchor point 2 feet above the D-ring the free fall has been limited to 4 feet. The shock absorber maximum stretch remains 3.5 feet, and the d-ring height remains 5 feet. Thus the minimum clearance required in this case would be approximately 12.5 feet.

Free fall distance	4 feet
Shock absorber stretch	3.5 feet
D-ring height	+ 5 feet
Minimum clearance required	**12.5 feet** (refer to diagram 2)

Note: These minimum clearances are in the event of a fall, no part of the employee's body/legs hit anything below. OSHA allows for a free fall of 6 feet, but they also require if an employee falls they do not strike anything below.

Diagram 2


Anchor Point to D-Ring
2 feet
Lanyard
6 feet
Height of
D-Ring from
Anchor point
5 feet
Total
Free Fall
4 feet
Original Work Surface
Shock Absorber
3 ½ feet
Total Fall, with
Proper Anchor
Point Location
Measured From
Original Height
Of D-Ring is
12 ½ feet.
D-Ring to feet
Clearance
5 feet