Appendix A - Fall Protection for Scaffolds and Related Equipment

Type of Scaffold or Equipment	Fall Protection Required
Aerial lift	Body belt (tethering, restraint system) See 29 CFR 1926.453(b)(2)(v). Personal fall arrest system or fall restraint system See 29 CFR 1926.954(b)(3)(iii)(A) (electric power transmission and distribution)
Boatswain's chair	Personal fall arrest system See 29 CFR 1926.451(g)(1)(i).
Catenary scaffold	Personal fall arrest system See 29 CFR 1926.451(g)(1)(i).
Crawling board (chicken ladder)	Personal fall arrest system, guardrail system (with a minimum 200 pound top rail capacity), or ¾ inch (1.9 centimeter) thick grab line or equivalent handhold securely fastened beside each crawling board See 29 CFR 1926.451(g)(1)(iii).
Float scaffold	Personal fall arrest system See 29 CFR 1926.451(g)(1)(i).
Ladder jack scaffold	Personal fall arrest system See 29 CFR 1926.451(g)(1)(i).
Needle beam scaffold	Personal fall arrest system See 29 CFR 1926.451(g)(1)(i).
Self-contained adjustable scaffold	**Both** a personal fall arrest system **and** a guardrail system with a minimum 200 pound top rail capacity (when the platform is supported by ropes); guardrail system only (when the platform is supported by the frame structure) See 29 CFR 1926.451(g)(1)(iv).
Single-point or two-point adjustable suspension scaffold	**Both** a personal fall arrest system **and** a guardrail system See 29 CFR 1926.451(g)(1)(ii).

Type of Scaffold or Equipment	Fall Protection Required
Supported scaffold for overhand bricklaying operations	Personal fall arrest system **or** guardrail system (with a minimum 200 pound top rail capacity) See 29 CFR 1926.451(g)(1)(vi).
All other scaffolds not specified in 29 CFR 1926.451(g)(1)(i) to (g)(1)(vi)	Personal fall arrest system **or** guardrail systems meeting the requirements of 29 CFR 1926.451(g)(4) See 29 CFR 1926.451(g)(1)(vii).

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Appendix B - OSHA Standards Related to Fall Protection

This appendix lists some of the OSHA standards that apply to fall protection in construction.

Construction

29 CFR 1926.104, safety belts, lifelines, and lanyards

29 CFR 1926.105, safety nets

29 CFR 1926.451, general requirements (scaffolding)

29 CFR 1926.452, additional requirements applicable to specific types of scaffolds

29 CFR 1926.453, aerial lifts

29 CFR 1926.454, training requirements (scaffolding)

29 CFR 1926.501, duty to have fall protection

29 CFR 1926.502, fall protection systems criteria and practices

29 CFR 1926.503, training requirements (fall protection)

29 CFR 1926.760, fall protection (steel erection)

29 CFR 1926.800, underground construction

29 CFR 1926.954, electric power transmission and distribution (personal protective equipment)

29 CFR 1926.1051, general requirements (stairways and ladders)

29 CFR 1926.1052, stairways

29 CFR 1926.1053, ladders

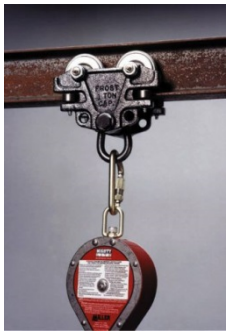
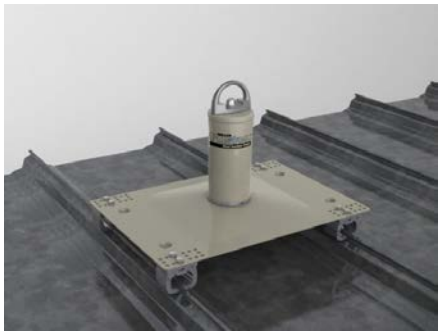
29 CFR 1926.1060, training requirements (stairways and ladders)

29 CFR 1926.1423, cranes and derricks in construction (fall protection)

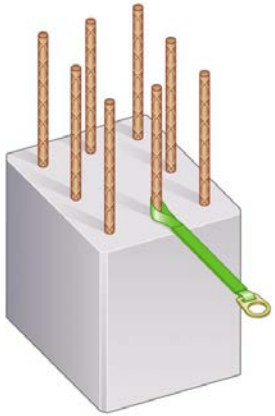
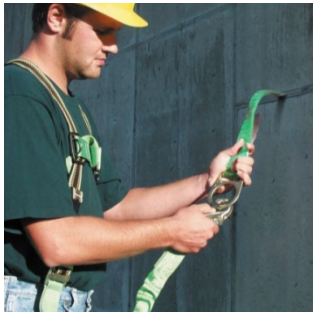
Appendix C – Examples: Fall Protection Anchors by Type

This appendix identifies various types of anchors, how they are generally used and shows an image of the anchor in use.

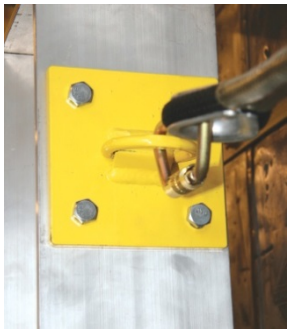
Anchor Type	Typical Use or Purpose	Illustration
Peak Anchor (One or Two D-Rings)	Typically used on a house roof after it is sheathed or fully constructed. They are typically left in place after the job is completed for future repairs.	 
Truss Anchor (including Spreaders)	Used before a structure is fully framed. A spreader is a method a qualified person may use to improve anchor point lateral stability before trusses are fully sheathed.	 
Engineered Clamp		
I-beam clamp and structural steel (vertical or horizontal beams)	The clamp adjusts to various steel beam sizes.	 

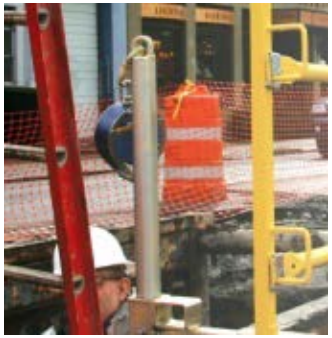
Anchor Type	Typical Use or Purpose	Illustration
Trolley beam anchor	Allows a worker to have greater access to a larger area without a longer lanyard.	
Standing seam metal roof anchor	For workers on standing seam metal roofs. This anchor clamps onto parallel seams.	
Doorway and window opening clamp	For anchoring between interior building framing or a window opening.	

Anchor Type	Typical Use or Purpose	Illustration
Top Plate Anchor	For activities near the framed wall top plate.	
Strap Anchor		
Cable anchorage sling	For use around structural steel or I-beams.	
Drop-through anchor cable	Anchor point drops through a small hole in an overhead substrate (concrete or steel).	

Anchor Type	Typical Use or Purpose	Illustration
Strap anchor (web)	For sturdy horizontal structures (e.g., beams or structural steel members). Sharp or rough edges could damage the strap.	 
Concrete Anchor		
Concrete anchor strap with D-ring	Often used by workers conducting foundation and formwork. The concrete anchor strap has a tough sleeve or wear-pad that protects it from abrasion where it contacts concrete. The strap loop slips over rebar and is left in place (with D-ring exposed) when concrete is poured. When no longer needed, the strap is cut flush with the concrete surface. Photo: a worker connects a shock-absorbing lanyard to an embedded concrete anchor strap.	 

Anchor Type	Typical Use or Purpose	Illustration
Precast hollow core concrete anchor	For workers performing activities with precast hollow concrete. Allows a single worker to tie off.	

Anchor Type	Typical Use or Purpose	Illustration
Bolt-on wall anchor	Temporary or permanent anchor point on a vertical concrete wall.	
Welded Anchor		
Welded D-ring anchor	Single D-ring temporary or permanent anchor point that is welded onto vertical structural steel.	
Weld-on anchor post	This permanent anchor point is welded onto an I-beam.	

Anchor Type	Typical Use or Purpose	Illustration
Trench Box Guardrail Anchor	For performing deep excavation. The trench box guardrail is designed with an anchor point on a post near the guardrail.	 

Anchor Type	Typical Use or Purpose	Illustration
Anchor Not Bolted or Clamped in Place		
Mobile fall protection system	Intended for a single worker using a fall arrest system. It allows quick mobility from place to place on a job site. Larger versions allow multiple workers to anchor.	
Rotating retractable anchor mast	For use on sloped residential roofs. Allows the worker greater range of motion (up to 360 degrees for some models) and helps elevate the anchor point above the worker.	
Dead weight anchor	For use on roofs where penetrating the surface is not an option. Anchorage is provided by the weight of heavy materials (e.g., concrete, steel, water bladder).	 

Anchor Type	Typical Use or Purpose	Illustration
Bolt hole anchor	For use in horizontal steel bolt holes.	
Vertical Lifeline		
Rope grab (with vertical lifeline)	Rope lifeline attaches to an anchorage at the top and hangs vertically down through the work area. Movable rope grab attaches to the rope. Lanyard connects the rope grab to workers' harness. To move up and down the work area, the worker can slide the rope grab up and down the lifeline, then relock it in place. If the worker falls, the rope grab locks onto the rope to break the fall. This system's effectiveness depends on how well the worker is trained to reposition the rope grab while moving about. The grab can slide off the end of the rope if the rope is too short, if a knot is not tied near the end of the rope, or if the grab	 

Anchor Type	Typical Use or Purpose	Illustration
	is not installed properly.	
Horizontal Lifeline	This hybrid system uses one line (firmly anchored at both ends) as the anchorage for another. This allows the worker greater lateral movement than a fixed anchor point. The components are the same as other personal fall protection systems. A deceleration device or rip-stitch lanyard can be included. In some cases, more than one worker will connect to the horizontal lifeline if approved by the manufacturer and a qualified person.	 
Photos used with permission of the equipment manufacturers.		

Appendix D – Examples: Lanyards, Deceleration Devices, Harnesses, and Body Belts

Device Type		Typical Use or Purpose	Illustration
Lanyard	Lanyard (typical 2-foot and 6-foot lengths)	Lanyards are available in a variety of lengths.	
	Y-lanyard (or twin-leg lanyard)	Typically used during work on cranes, rebar and steel structures, and poles. By attaching and reattaching the legs in different positions, the worker can move across the work face, remaining connected by at least one leg of the lanyard at all times.	

	Device Type	Typical Use or Purpose	Illustration
Deceleration Device	Rip-stitch-style Shock Absorbing Lanyard	These typically expand by approximately 3.5 feet during deceleration, which reduces the force on the worker.	
	Stretch-type Shock-Absorbing Lanyard	These absorb force in a fall by stretching (or by a similar mechanism) on impact to provide a controlled deceleration.	
	Self-retracting lifeline (line wound on a reel in a reel-housing)	The lifeline is wound on a reel and automatically extends or retracts to take up slack in the line as the worker moves about. A sudden extension in the line activates a locking mechanism that typically includes a deceleration device. Some self-retracting lanyards can be set to restrict the distance traveled and so can also function as part of a properly designed fall	

Device Type	Typical Use or Purpose	Illustration
	restraint system.	
Body Harness	Used in personal fall protection systems. Has a D-ring on the back between the shoulders when used for fall arrest and fall restraint systems. Workers need to be fitted with the correct harness size. Available with special features such as an integrated high-visibility vest, extra D-rings (for use with positioning devices), life vest (for over-water work), or various buckle and closure styles.	  
Body Belt	In general, harnesses are preferable to body belts. Body belts may be used in limited instances (e.g., as part of a positioning device system).	 
Thimble	Thimbles provide a protective interface between the eye of a rope loop and a connector. They are used to prevent pinching or abrasion of the rope. The thimble needs to be firmly seated in the eye of the rope loop.	

Appendix E - References and Resources

29 CFR 1926 Subpart M (.500, .501, .502, and appendices)

29 CFR 1926 Subpart R and appendices

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