Brunel Energy, Inc.

Fall Protection

Contents

1. Purpose

1.1. Brunel Energy, Inc., hereinafter referred to as, "the Company," has established a program compliant with OSHA 29 CFR 1910 and 29 CFR 1926. The purpose of this program is set the minimum requirements for the protection of personnel from injury as a result of falls, and to provide fall protection procedures to prevent injury to employees while performing work at levels that exceed heights over 6 feet in Construction Work Codes or 4 feet in General Industry work codes.

2. Applicability

2.1. This policy applies to employees, subcontractors and/or visitor(s) of the Company. For the purposes of this policy, an employee shall be considered on the job whenever he/she is:

2.1.1. On or in, any Company or client property, including parking areas; or

2.1.2. On Company time even if off Company premises (including paid lunch, rest periods and periods of being on call).

2.2. As a condition of employment, Company employees are required to abide by additional governmental or customer policies and requirements that may be imposed at a worksite in addition to the requirements of these policies and procedures. Nothing set forth in this policy constitutes, construes, or interprets in any way as a contract of employment.

2.3. This policy applies to all company employees who have work assignments at work levels that exceed 6 feet in height where guardrails or nets are not utilized. This includes work near and around excavations. Guardrails, safety nets, or personal fall arrest systems shall be used where feasible.

2.4. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers company employees and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

3. Definitions

3.1. ***Fall arrest*** is a system used to arrest an employee in a fall from a working level. It consists of an anchor point, connectors, a body belt, or full body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these. The entire system must be capable of withstanding the impact forces involved in stopping or arresting the fall. The forces increase with the fall distance due to acceleration (a person without protection will free fall 4 feet (1.2 meters) in ½ a second and 16 feet (4.8 meters) in 1 second).

3.2. ***Fall Restraint*** system consists of the equipment used to keep an employee from reaching a fall point, such as the edge of a deck, floor, or the edge of an elevated working surface. The most utilized fall restraint system is a standard guardrail. Other types of fall restraint systems are listed below:

3.2.1. A tie off system that "restrains" the employee from falling off an elevated working surface.

3.2.2. Guardrail System means a barrier erected to prevent employees from falling to lower levels.

3.3. A ***lanyard*** is flexible line of rope, wire rope, or strap which generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline, or anchorage.

3.4. ***Lower levels*** are those areas or surfaces to which an employee can fall. Such areas or surfaces include, but are not limited to, ground levels, floors, platforms, ramps, runways, excavations, pits, tanks, material, water, equipment, structures, or portions thereof.

3.5. ***Personal Fall Arrest System (PFAS)*** is a system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body belt, or body harness and may include a lanyard, deceleration device, lifeline, or suitable combination of these.

3.6. ***Self-retracting lifeline/lanyard*** is a deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under slight tension during normal employee movement, and which, after onset of fall, automatically locks the drum and arrests the fall.

3.7. ***Walking/working surface*** is any surface, whether horizontal or vertical on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, runways, formwork, and concrete reinforcing steel but not including ladders, vehicles, or trailers, on which employees must be located in order to perform their job duties.

3.8. ***Work area*** is the portion of a walking/working surface where job duties are being performed.

4. Responsibilities

4.1. Manager(s):

4.1.1. Shall be responsible for implementing, supporting, and enforcing the requirements of this policy for their locations.

4.2. HSE Supervisor(s):

4.2.1. Shall assist management with implementing and maintaining the procedures and steps set forth in this policy.

4.2.2. A site-specific fall protection plan will be developed by a qualified person at each job site.

4.2.3. A competent person will be assigned to monitor, recognize fall hazards, warn employee if they are unaware of fall hazard or are acting in an unsafe manner, be on same working surface and in visual sight and stay close enough for verbal communication.

The monitor shall not have other assignments that would take monitors attention from monitoring function.

4.2.4. It is the responsibility of the manager, supervisor/qualified person to investigate all accidents, serious incidents and near misses and implement changes to the fall protection program, as necessary.

4.3. Employee(s):

4.3.1. It is mandatory for employees to make use of fall protection equipment, assess their own safety situation and inspect the equipment prior to use. If equipment is in doubt or not in good condition, they must report it to their supervisor to rule out the possibility of work at height being executed in an unsafe manner.

4.4. Subcontractor(s):

4.4.1. It is mandatory for employees to make use of fall protection equipment, access their own safety situation and inspect the equipment prior to use. If equipment is not working or not in good condition, they must report it to their supervisor to rule out the possibility of work at height being executed in an unsafe manner.

5. Requirements

5.1. Employees who work at levels that exceed 6 feet in height where guardrails or nets or not utilized. This includes near and around excavations. Guardrails, safety nets or personal fall arrest systems shall be used where feasible. Where other methods of fall protection are not utilized those areas must be designated as controlled access zones and a safety monitoring system used.

5.2. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this policy covers company employees and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

5.3. Key Requirements of a Fall Arrest System

5.3.1. The system shall be rigged so that employees can neither free-fall more than 6 feet (1.8 meters) or contact a lower level. After the free-fall distance, the deceleration shock absorbing component of the system shall bring an employee to a complete stop within 3.5 additional feet (1.05 meter).

5.3.2. The anchorage point shall be capable of supporting at least 5,000 pounds (2,268 kilos) per employee. Most standard guardrail systems are not adequate anchorage points because they are not built to withstand the impact forces generated by a fall.

5.3.3. The system's D-ring attachment point for body harness shall be in the center of the employee's back near the shoulder level.

5.3.4. The system components shall be inspected for damage and/or deterioration prior to each use. All components subjected to the impact loading forces of a free-fall shall be immediately removed from use and appropriately inspected and/or serviced.

5.3.5. Construction of, and the standard applicable to full body harnesses and other fall arrest devices, specifies a weight limit of 310 pounds (140 kilos). This criterion assumes the device is in like-new condition. This limitation includes the weight of the user, clothing, and tools/equipment being supported with or by the user.

6. Procedure

6.1. Same Level Surfaces

6.1.1. To prevent falls on surfaces that are the same level the following shall be carried out, where applicable:

6.1.1.1. Fill/cover holes or repair structural defects before work begins.

6.1.1.2. Practice good housekeeping. Keep floors, decks, and landings free of water, grease, oil trash, debris, or other potential hazards, watch for oil and water spills or leaks, and tools left on floors. Repair the leak and clean up unsafe conditions.

6.1.1.3. Anti-slip flooring shall be used where oil or water is a constant problem.

6.1.1.4. Use footwear with slip-resistant soles and tread patterns.

6.1.1.5. Adequate lighting for interior and exterior walkways shall be provided.

6.1.1.6. Mark any significant transitions in floor height clearly.

6.1.1.7. Remove snow and ice from floor, decks, parking lots and sidewalks.

6.1.1.8. Appropriate non-slip floor surfaces, cleaners and waxes shall be used.

6.2. Ladders and Lifting Equipment

6.2.1. To prevent falls to lower levels, such as falls from a ladder or over a railing:

6.2.1.1. No makeshift platforms shall be used. Standard scaffolds or moveable platforms shall be used when a temporary platform is needed.

6.2.1.2. Ladders shall be used to reach work or storage areas.

6.2.1.3. Mechanized material handling devices to access higher levels shall be used, where available.

6.2.1.4. All ladders and lifting equipment shall be inspected regularly and perform required maintenance.

6.2.1.5. Railing protection shall be provided for areas with abrupt floor level changes (such as a loading dock).

6.2.1.6. Heavy or awkward items shall not be stored above the reach of average sized person, if possible.

6.2.1.7. Deck or floor openings shall be protected with chain/rope and caution tape. If rope is to be used, ½" (1.72 cm) shall be the minimum accepted.

6.3. Work Areas Six or More Feet Above Surrounding Surfaces

6.3.1. Fall protection is required in areas where work is to be performed from a walkway or location six or more feet above surrounding surfaces, if a standard guardrail is not provided, then a full body harness with an independent tie off and lanyard with shock absorber shall be used.

6.3.2. Handrails shall be installed on stairs with four or more stairs.

6.3.3. Handrails shall be installed on ramps that rise four feet or more.

6.3.4. Slip-resistant treads shall be installed on stairs.

6.3.5. Stairways or walkways shall not be used for storage of any kind.

6.3.6. All stairways and ramps shall be maintained in a clean, dry condition.

6.3.7. Nets shall be installed when other types of fall protection equipment cannot be used.

6.3.8. Ladder access openings to landings such a walk around, crown deck; cranes etc. shall have safety doors that may be closed when personnel are on the deck (landing).

6.3.9. To prevent falls from fixed ladder systems, ladder cages or fall arrest systems shall be used on all fixed ladders over twenty feet (6 meters) in height. Caged ladders shall have a maximum unbroken length of 30 feet (9.15 meters).

6.3.10. Fall arrest systems shall be used in conjunction with a climb assist device. Types of fall arrest systems that can be used with fixed ladders are:

6.3.10.1. Climb Assist/Fall Arrest System with a counterweight shall be used in conjunction with a full body harness.

6.3.10.2. Fixed cable or rail attached to the ladder in conjunction with a fall arrest sleeve and full body harness.

6.3.10.3. Self-Retracting Lifeline System used in conjunction with a full body harness.

6.3.11. Ladders over 10 feet in length (3 meters) that originate from small landings that are 10 feet (3 meters) above the ground, deck or floor shall be equipped with ladder cages or fall arrest systems.

6.3.12. On narrow landings for ladders with cages, extend the outside edge of the cage to the landing guardrail.

6.3.13. Equipment and raw materials for use in fall protection systems shall meet ANSI, ASTM, or OSHA requirements.

6.3.14. The Company shall provide prompt rescue of employees in the event of a fall or shall assure that the employee is able to rescue themselves.

6.3.15. Personal fall protection shall be required when working at height greater than 6 feet (1.8 m), per industry standard/state requirement or where a fall could result in serious injury. This includes elevated platforms not guarded by handrails, working on derrick members, from ladders, scaffold, or staging.

6.3.16. Fall protection equipment including full body harnesses, lanyards, inertial reels, positioning systems and emergency escape device winches and escape devices shall meet recognized industry or regulatory standards.

6.3.17. All equipment shall be identified/numbered and inspected on a regular basis to ensure integrity.

6.3.18. A register of inspections shall be maintained at the worksite.

6.3.19. Areas beneath the work being conducted shall be barricaded to prevent personnel from entering and eliminating the risk of being struck by falling objects.

6.3.20. Tools and equipment being carried/used aloft shall be secured.

6.3.21. When working from a certified workbasket, fall protection shall be worn and tail ropes attached to the hook separate from the basket attachment. Two people shall always be in the basket, one to steady and assist.

6.3.22. Forklifts, buckets, or jibs shall NOT be used to raise personnel unless in a purpose designed and certified forklift workbasket.

6.3.23. Work platforms shall be provided to facilitate access to BOPs.

6.3.24. Inertia reels shall be suspended permanently from the substructure to facilitate fall protection while working on work platforms.

6.3.25. Inertia reels shall be mounted above the Monkey Board and Casting Stabbing Board.

6.4. Fall Restraint for Temporary Deck of Floor Openings

6.4.1. All deck (floor) openings accessible to personnel shall be covered, guarded, or made inaccessible.

6.4.2. A temporary (portable) barricade system or fall arrest system is not possible, barrier tape is not a full protection barrier.

6.4.2.1. If the use of portable barricade system or fall arrest system is not possible, safety netting shall be used. The following are guidelines to consider when barricading temporary openings:

6.4.2.2. The barricade shall be constructed such that employees cannot easily get through it.

6.4.2.3. The barricade shall have a top rail 42 inches (1.2 meters) from the deck, a mid-rail located 16 ½" (42 cm) below the top rail and an optional bottom rail located 16 ½" (42 cm) below the mid-rail.

6.4.2.4. It shall be strong enough to prevent employees from falling through it.

6.4.3. Temporary Guardrail systems shall be capable of withstanding at least 200 pounds of force applied within 2 inches of the top edge, in any direction and at any point along the edge, and without causing the top edge of the guardrail to deflect downward to a height less than 39 inches above the walking/working level.

6.4.4. Mid-rails, screens, mesh, and other intermediate members shall be cable of withstanding at least 150 pounds of force applied in any direction at any point along the mid-rail or other member.

6.4.5. Guardrail systems shall not have rough or jagged surfaces that would cause punctures, lacerations, or snagged clothing.

6.4.6. The barricade shall take up as little workspace as possible around the floor opening.

6.4.7. A barricade or hole covering shall be placed in/over or around the floor opening whenever the rotary table or master bushings are removed.

6.4.8. When used with rigid supports, rope, chain of sufficient strength shall be used provided it has enough supported (uprights) and adequate tightness to prevent deflection below 39 inches.

6.4.9. When used with rigid supports, rope, chain, or cable of sufficient strength shall be used provided it has enough support (uprights) and adequate tightness to prevent deflection below 39 inches.

6.5. Deck/Landing Guardrails

6.5.1. Guardrails shall be installed on platforms, floors, mud pits, cranes, doghouse roof, etc. And on all open sides and ends of such platforms which are more than 6 feet (1.8 meters) above surrounding working surfaces, where personnel are routinely required to work.

6.5.2. Guardrail – The Standard Guardrail consists of a Top Rail, Intermediate Rail, and optional Bottom Rail, Toe Board, and Posts.

6.5.3. Top rail – Smooth throughout the entire length of the railing with a vertical height of 42 inches (107.25 cm) from the upper surface of the top rail to the floor of the platform, runway, or ramp.

6.5.4. Intermediate (Mid) Rail – 6 ½ inch (42 cm) below the top rail.

6.5.5. Optional Bottom Rail – 6 ½ inch (42 cm) below the intermediate rail.

6.5.6. Toe Board – 5 inches (12.7 cm) (minimum) of vertical height from its top edge to its bottom edge securely fastened in place and has no more than ¼ inch 64 mm) clearance above floor level.

6.5.7. Posts – Shall be at least 1-1/2 inches (3.84 cm) in diameter and spaced not more than 5 feet (153 cm) on centers.

6.6. Working on Ladders

6.6.1. All ladders shall be Industrial Grade, Type 1A and Heavy Duty Rated. Other criteria to be used shall depend on the type of ladder and the area where the task is to be performed.

6.7. Step Ladders

6.7.1. Shall be of non-conductive fiberglass construction complete with rubber footings and a warning sign regarding use of the two top steps.

6.7.2. Personnel shall not stand on either of the upper two steps.

6.7.3. Ladder runners and steps shall be inspected prior to use. All rungs shall be in good condition and straight. All braces for step ladders shall be in good condition. All ladder feet shall be equipped with non-skid material.

6.7.4. Fall protection shall be used if work is off the ladder at heights above the 6 ft (1.8 m) limit (locally manufactured ladders are prohibited).

6.8. Extension Ladders

6.8.1. Shall be of non-conductive fiberglass construction complete with rubber footings and warning sign regarding use of two top steps.

6.8.2. Personnel shall not stand on either of the upper two steps.

6.8.3. Ladder runners and steps shall be inspected prior to use. All rungs shall be in good condition and straight. All braces for step ladders shall be in good condition. All ladder feet shall be equipped with non-skid material.

6.8.4. Fall protection shall be used if work is off the ladder at heights above the 6 ft (1.8 m) limit (locally manufactured ladders are prohibited).

6.9. Fixed Ladders

6.9.1. All fixed ladders shall be kept free of obstructions throughout the entire length and width.

6.9.2. All rungs of fixed ladders shall be kept tight and level and be properly secured to the structure.

6.9.3. Where possible, climber safety devices such as counterbalances or constant descent devices shall be fitted to all fixed ladders.

6.9.4. Where possible derrick ladders shall be equipped with two-climb assist devices or fall protection devices.

6.9.5. Fixed ladders shall have a width of at least 16 in (41cm), distance between the rungs shall be 12 in (30 cm) or less, clearance between the ladder and the structure shall be 7 in (18 cm) or more.

6.9.6. All fixed ladders over 19 ft. (6 m) in height from which personnel could fall to a lower level shall be fitted with a secure safety cage from a height of 7ft (2.0 m) from deck access or other fall protection devices. Additional protection shall be provided, if required, where a fall at or near the bottom of a ladder could result in further fall over handrail/landing to a lower level.

6.10. Steps and Stairways

6.10.1. Every flight of stairs or steps having four or more risers shall be fitted with at least one handrail and where possible, one on each side.

6.10.2. All handrails, stairs and steps shall be properly secured to the structure and be level in serviceable condition.

6.10.3. All handrails shall consist of a top rail and mid rail and have a vertical height of 42 in. (1.06 m) and be capable of withstanding 200 lbs. (91 kg) of weight at any point.

6.10.4. Wherever possible, stairs shall be installed at angles to the horizontal of between 30o and 50o.

6.10.5. Personnel shall not climb over handrails to access other work areas.

6.10.6. All handrails shall be fitted with toe boards at the bottom of all rails as per country specific standards.

6.10.7. Note: Aluminum ladders are NOT acceptable for working on electrical equipment.

6.11. Scaffolding and Work Platforms

6.11.1. Scaffolds shall be furnished and erected in accordance with this standard for people engaged in work that cannot be done safely from the ground or from solid construction.

6.11.2. The footing or anchorage for scaffolds shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement.

Note: Unstable objects such as barrels, boxes, loose brick, or concrete blocks shall not be used to support scaffolds or planks.

6.11.3. Scaffolds and their components shall be capable of supporting without failure at least four times the maximum intended load.

6.11.4. All load-carrying timber members of scaffold framing shall be a minimum of 1,500 f. (Stress Grade) construction grade lumber. All dimensions are nominal sizes as provided in the American Lumber Standards, except that where rough sizes are noted, only rough and undressed lumber of the size specified will satisfy minimum requirements.

6.11.5. All planking or platforms shall be overlapped (minimum 12 inches) or secured from movement.

6.11.6. An Access ladder or equivalent safe access shall be provided.

6.11.7. Scaffold planks shall extend over their end supports not less than 6 inches or more than 18 inches.

6.11.8. The poles, legs, or uprights or scaffolds shall be plumb, and securely and rigidly braced to prevent swaying and displacement.

6.11.9. Materials being hoisted onto a scaffold shall have a tag line. Overhead protection shall be provided for men on a scaffold exposed to overhead hazard.

6.11.10. Note: Where certification is required to install and inspect scaffolding training shall be provided to personnel.

6.12. Safety Monitoring

6.12.1. In reference to controlled access zones, a competent person who is competent to recognize fall hazards; will serve as a safety monitor to warn the employee when it appears that the employee is unaware of a fall hazard or is acting in a unsafe manner; and shall be on the same walking/working surface and within visual sight in distance of the employee being monitored; the safety monitor shall be close enough to communicate orally with the employee and the safety monitor shall not have other

responsibilities that could take the monitor's attention from the monitoring function. Mechanical equipment must not be used or stored in areas where safety monitoring systems are being used to monitor employees in roofing operations on low-slop roofs. No Employee other than employee engaged in roofing work or an employee covered by a fall protection plan shall be allowed in area where an employee is being protected by a safety monitoring system. Each employee working in a controlled access zone shall be direct to comply with fall hazard warnings from safety monitors.

6.13. Leading Edge Work

6.13.1. A fall protection plan specific to leading edge work, precast concrete work, or residential construction shall be prepared by a Manager or Supervisor who is qualified person by possession of recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience has successfully demonstrated ability to solve or resolve problems in the subject matter.

7. Training

7.1. All relevant employees shall be required to complete Fall Prevention and Protection training.

7.2. Employees shall receive training upon initial hire and refresher training annually thereafter regarding the procedures and expectations for working at heights and from ladders.

7.3. Training shall enable employees to recognize the hazards of falling and shall train each employee in the procedures to follow to minimize and or eliminate these hazards.

7.4. Re-training shall be provided when inadequacies in an affected employee's knowledge or use in fall protection occur, deficiencies in training, workplace changes or fall protection systems or equipment changes that render previous training obsolete occur.

7.5. Training shall be documented and identify who was trained, when, dates of training, signature of person providing training and date the Company determined training was deemed adequate.

8. Recordkeeping

8.1. Training records shall be maintained in the corporate office.

9. Reference

9.1. OSHA 1926 and 1920.