

Fall Hazard Management	S.O.P. 30		Page 1 of 16
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STANDARD OPERATING PROCEDURE		Approved by:	

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I. SCOPE AND PURPOSE

- a. To provide a pro-active standard operating procedure for the recognition of fall hazards and their associated preventative measures.
- b. This procedure applies to all Company personnel in the workplace.

II. RELATED PROCEDURES AND RESOURCES

- a. S.O.P. 2C, Project Hazard Control
- b. S.O.P. 3G, Personal Protective Equipment
- c. S.O.P. 4A, Aerial Work Platforms
- d. S.O.P. 6A, Scaffold Erection, Use, Modification & Dismantling
- e. Appendix Form 3O.1a, Personal Fall Protection Equipment Inspection
- f. Fall Protection Field Training Module

- g. 29 CFR 1926, Subpart M – Fall Protection

III. DEFINITIONS

- a. **Anchorage:** a secure point of attachment for lifelines, lanyards or deceleration devices.
- b. **Body Harness:** straps which may be secured about the employee in a manner that will 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 fall arrest system.
- c. **Buckle:** any device for holding the body harness closed around the employee's body.
- d. **Connector:** a device which is used to couple parts of the personal fall arrest system and positioning device systems together. It may be an independent component of the system, such as a carabineer, or it may be an integral component of part of the system (such as a buckle or de-ring sewn into a body harness, or a snap-hook spliced or sewn to a lanyard).
- e. **Continuous Fall Protection:** System where personnel are continuously protected from experiencing free-fall of greater than six feet. When planning fall protection systems Primary Systems will have precedence over Secondary Fall Protection Systems.
- f. **Controlled Access Zone (CAZ):** an area in which certain work may take place without the use of guardrail systems, personal fall arrest systems, or safety net systems and access to this zone is controlled.
- g. **Deceleration Device:** any mechanism, such as a rope grab, ripstitch lanyard, specially-woven lanyard, tearing or deforming lanyards, automatic self-retracting lifelines, lanyards, etc., which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on an employee during fall arrest.
- h. **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 harness attachment point at the moment of activation of the deceleration device during a fall, and the location of that attachment point after the employee comes to a full stop.
- i. **Failure:** load refusal, breakage, or separation of component parts. Load refusal is the point where the ultimate strength is exceeded.
- j. **Floor Opening/Hole Covers:** are used to close openings and holes in floors, platforms and walkways. These covers must be capable of supporting the maximum potential load. The cover must completely cover opening/hole and be secured against accidental displacement.
- k. **Free fall:** the act of falling before a personal arrest system begins to apply force to arrest the fall.
- l. **Guardrail System:** a barrier erected to prevent employees from falling to lower levels.
- m. **Hole:** a gap or void 2 inches or more in its least dimension in a floor, roof or other walking/working surface.

- n. **Lanyard:** a flexible line of rope, wire rope, or strap which generally has a connector at each end for connecting the body harness to a deceleration device, lifeline, or anchorage.
- o. **Leading Edge:** the edge of a floor, roof, or framework for a floor or other walking/working surface (such as a deck) which changes location as additional floor, roof, decking, or framework sections are placed formed or constructed. A leading edge is considered to be an “unprotected side and edge.”
- p. **Lifeline:** a component consisting of a flexible line for a connection to an anchorage at one end to hang vertically, or for connection to anchorages at both ends to stretch horizontally, and which serves as a means for connecting other components of a personal arrest system to the anchorage.
- q. **Low-Slope Roof:** a roof having a slope less than or equal to 4 in 12.
- r. **Lower Levels:** those areas or surfaces to which an employee can fall.
- s. **Opening:** a gap or void 30 inches or more high and 18 inches or more wide, in a wall or partition through which employees can fall to a lower level.
- t. **Personal Fall Arrest System:** a system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body harness and may include a lanyard, deceleration device, lifeline, or suitable combination of these.
- u. **Positioning Device:** a body harness system rigged to allow an employee to be supported on an elevated vertical surface, and work with both hands free.
- v. **Primary Fall Protection Systems With Specifications:** Systems that provide walking and working surfaces in elevated areas that are free from floor openings and are equipped with standard guard rail systems on all open sides and closure apparatus for ladder openings or other points of access when required. These systems include, but are not limited to scaffolds, boards, aerial lifts (JLG, scissor lifts, etc.), and other approved personnel hoisting devices.
- w. **Rope Grab:** a deceleration device which travels on a lifeline and automatically by friction, engages the lifeline and locks so as to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking cam/level locking or both.
- x. **Safety-Monitoring System:** a safety system in which a competent person is responsible for recognizing and warning employees of fall hazards.
- y. **Self-Retracting Lifeline/Lanyard:** 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 a fall, automatically locks the drum and arrests the fall.
- z. **Standard Guardrail Systems:** consist of a top rail of 2x4-inch lumber or equivalent material approximately 42 inches above the walking/working surface, a mid rail at approximately 21 inches above the surface and a 4-inch-high toe board mounted at the walking/working surface. Entire system must be capable of supporting 200 pounds of force in any direction with minimum deflection. These systems will be used to guard open sides of floors, work platforms and walkways in elevated areas.
- aa. **Toeboard:** a low protective barrier that will prevent the fall of material and equipment to lower levels and provide protection from falls for personnel.
- bb. **Unprotected Sides and Edges:** any side or edge of a walking/working surface

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where there is no wall or guardrail system at least 39 inches high.

- cc. **Warning Line System:** a barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge, and which designates an area in which roofing work may take place without the use of guardrail, body harness, or safety net systems to protect employees in the area.

IV. RESPONSIBILITIES

- a. Company
 - i. Basic Industries of South Texas, Ltd. (BIST) shall ensure a determination of the walking and working surfaces, on which its employees are to work, have enough strength and structural integrity to support employees safely.
 - ii. BIST designates the Safety Director and/or his authorized designee to have the authority to make the above determination.
- b. Safety Director
 - i. Shall review this S.O.P. annually for its effectiveness and/or as regulatory changes occur and make the appropriate policy changes to ensure its compliance and effectiveness.
 - ii. Shall ensure all falls or activation of the lanyard deceleration device is investigated.
 - iii. Shall ensure implementation of changes to this S.O.P. as determined through the investigation.
- c. Supervisor
 - i. Shall implement and enforce this procedure.
 - ii. Fall protection systems shall be designed and authorized by the Supervisor in direct consultation with the Safety Department or its designated representative.
 - iii. Ensure proper training of employees is performed.
 - iv. Shall contact the Safety Department prior to purchasing or issuing any Fall Protection devices.
- d. Employee
 - i. Shall adhere to this procedure.
 - ii. Shall report any deviations from the procedure.
 - iii. Shall inspect daily their personal fall protection equipment.

V. GENERAL GUIDELINES

- a. An approved full body safety harness is to be used for employee fall protection where primary fall protection systems are inadequate and fall exposures exist.
- b. Personnel traveling or working in elevated areas more than 6 feet above ground level or on adjacent surface where a fall exposure exists, shall make use of secondary fall protection by securing their safety lanyard to a structure, lifeline or approved fall arresting device.
 - i. In all cases the structure, lifeline or fall arresting device shall be capable of supporting 5400 pounds at a minimum.
 - ii. When possible lanyards should be attached to an appropriate structure,

- overhead.
- c. Personnel working from or traveling in powered work platforms or personnel lifting/hoisting devices shall also properly secure their lanyards as per Section X of this S.O.P.
 - d. Fall protection devices such as lifelines, safety harnesses/lanyards, etc. shall be inspected on a regular basis for damage and/or deterioration.
 - i. Defective equipment shall be removed from service and destroyed, or in some cases repaired by a qualified person as designated in writing by the manufacturer of the device in need of service.
 - e. Fall protection equipment, i.e., harnesses and lanyards, shall be:
 - i. Inspected monthly using Appendix Form 3O.1a, Fall Protection Equipment Inspection, and
 - ii. Shall use the appropriate color code for month, Appendix form 2C.2b, Monthly Inspections Color Code Chart, as a visual identifier.
 - iii. Color-coded tape is available from the job site supervisor/foreman or the jobsite Safety coordinator.
 - iv. Proper placement of the color-coded tape for the harness shall be the harness webbing at shoulder.
 - v. Proper placement of the color-coded tape for the lanyard shall be at the shock absorber.
 - f. Fall protection devices subjected to shock loadings imposed during fall arresting, shall be red tagged, immediately removed from service and turned into the Safety department by end of shift.
 - g. Fall protection devices and systems shall not be used for anything other than its intended purpose.

VI. FALL PROTECTION SYSTEMS

- a. **Guardrail Systems:** all guardrail systems and their use shall comply with the following provisions:
 - i. Top edge height of top rails or equivalent guardrail system members, shall be 42 inches, plus or minus 3 inches above the walking/working level (when conditions warrant, the height of the top edge may exceed 45 inches, provided the guardrail system meets all other criteria.
 - ii. Mid-rails, screens, mesh intermediate vertical members, or equivalent intermediate structural members shall be installed between the top edge of the guardrail system and the walking/working surface when there is no wall or parapet wall at 21 inches high.
 - iii. Mid-rails shall be installed at a height midway between the top edge of the guardrail and the walking/working surface.
 - iv. Screens and mesh, when used, shall extend from the top rail to the walking/working surface.
 - v. Intermediate members when used between posts shall be no more than 19 inches apart.
 - vi. Guardrail systems shall be capable of withstanding, without failure, a

force of at least 200 pounds applied within 2 inches of the top edge, in any outward or downward direction, at any point along the top edge.

- vii. When a 200 pound test load is applied in a downward direction, the top edge of the guardrail shall not deflect to a height less than 39 inches above the walking/working surface.
 - viii. Mid-rails shall be capable of withstanding without failure, a force of at least 150 pounds applied in any downward or outward direction.
 - ix. Guardrail systems shall be so surfaced as to prevent injury from punctures or lacerations.
 - x. If wire rope is used for top rails, it shall be flagged at not more than 6 feet intervals with high-visibility material. Top rails and mid-rails shall be at least 1/4 inch nominal diameter.
 - xi. When guard rail systems are used at hoisting areas, a chain, gate or removable guardrail section shall be placed across the access opening between guardrail sections when hoisting operations are not taking place.
 - xii. Manila, plastic, or synthetic rope being used for top rails or mid-rails shall be inspected as frequently as necessary to ensure that it continues to meet the strength requirements.
- b. **Safety Net Systems:**
- i. If a safety net system is required contact the Safety Department for specific requirements.
- c. **Personal Fall Arrest Systems:**
- i. Personal Fall Arrest Systems and their use shall comply with the provisions set forth below:
 1. Connectors shall be drop forged, pressed or formed steel, or made of equivalent materials.
 2. Connectors shall have a corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to interfacing parts of the system.
 3. Dee-rings and snaphooks shall have a minimum tensile strength of 5,000 pounds and proof tested to a minimum tensile load of 3,600 pounds without cracking, breaking or taking on permanent deformation.
 4. Snaphooks shall be sized to be compatible with the member to which they are connected to prevent unintentional disengagement of the snaphook keeper by the connected member, or shall be a locking type snaphook designed and used to prevent disengagement of the snaphook by the contact of the snaphook keeper by the connected member.
 5. Unless the snaphook is a locking type and designed for the following connections, snaphooks shall not be engaged:
 - a. Directly to webbing, rope, or wire rope
 - b. To each other
 - c. To a dee-ring to which another snaphook or connector is attached
 - d. To a horizontal lifeline

- e. To any object which is incompatibly shaped or dimensioned in relation to the snaphook such that unintentional disengagement could occur.
 6. On suspended scaffolds or similar work platforms with horizontal lifelines which may become vertical lifelines, the devices used to connect to a horizontal lifeline shall be capable of locking in both directions on the lifeline.
 7. Personal fall arrest systems, when stopping a fall shall:
 - a. Limit maximum arresting force on a employee to 600 pounds when used with a body harness and shock absorbing type lanyard.
 - b. Be rigged such that an employee can neither free fall more than 6 feet nor contact any lower level.
 - c. Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet.
 - d. The attachment point of the body harness shall be located in the center of the wearer's back near shoulder level, or above the wearer's head.
 8. Personal fall arrest systems and components subjected to impact loading shall be immediately removed from service and shall not be used again for employee protection until inspected and determined by a competent person to be undamaged and suitable for reuse.
 9. Personal fall arrest systems shall be inspected prior to each use for wear, damage and other deterioration, and defective components shall be removed from service.
 10. Personal fall arrest systems shall not be attached to guardrail systems nor shall they be attached to hoists.
 11. When a personal fall arrest system is used at hoist areas, it shall be rigged to allow the movement of the employee only as far as the edge of the walking/working service.
- d. **Warning Line Systems:**
- i. Warning Line Systems and their use shall comply with the following provisions:
 1. The warning line shall be erected around all sides of the roof work area.
 2. When mechanical equipment is not being used, the warning line shall be erected not less than 6 feet from the roof edge.
 3. When mechanical equipment is being used, the warning line shall be erected not less than 6 feet from the roof edge which is parallel to the direction of the mechanical equipment operation, and not less than 10 feet from the roof edge which is perpendicular to the direction of the mechanical equipment operation.
 4. Points of access, materials handling areas, storage areas, and hoisting areas shall be connected to the work area by an access path formed by two warning lines.

5. When the path to a point of access is not in use, a rope, wire, chain, or other barricade shall be placed across the path.
 6. Warning lines shall consist of ropes, wires, or chains and supporting stanchions erected as follows:
 - a. The rope, wire, or chain shall be flagged at not more than 6 foot intervals with high-visibility material.
 - b. The rope, wire or chain shall be rigged and supported in such a way that its lowest point is no less than 34 inches from the walking/working surface and its highest point is no more than 39 inches from the walking/working surface.
 - c. After being erected the stanchions shall be capable of resisting a force of at least 16 pounds applied horizontally against the stanchion, 30 inches above the walking/working surface, perpendicular to the warning line and in the direction of the floor, roof, or platform edge.
 - d. The rope, wire or chain shall have a minimum tensile strength of 500 pounds.
 - e. The line shall be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over.
 7. No employee shall be allowed in the area between the roof edge and the warning line unless the employee is performing roofing work in that area.
 8. Mechanical equipment on roofs shall be used or stored only in areas where employees are protected by a warning line system, guard rail system, or personal fall arrest system.
- e. **Controlled Access Zones:**
- i. Controlled access zones and their use shall conform to the following:
 1. When used to control access to areas where leading edge and other operations are taking place the controlled access zone shall be defined by a control line or by any other means that restricts access.
 2. When control lines are used, they shall be erected not less than 6 feet nor more than 25 feet from the unprotected or leading edge.
 3. The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected leading edge.
 4. The control line shall be connected on each side to a guardrail system or wall.
 5. The control lines shall consist of ropes, wires, tapes, or equivalent materials and supporting stanchions as follows:
 - a. Each line shall be flagged at no more than 6 feet intervals with high visibility material.
 - b. Each line shall be rigged and supported in such a way that it's lowest point is not less than 39 inches from the

walking/working surface and it's highest point is not more than 45 inches from the walking/working surface.

- c. Each line shall have a minimum breaking strength of 200 pounds.

f. Safety Monitoring System:

- i. Safety monitoring systems and their use shall comply with the following provisions:

1. Basic Industries of South Texas will designate a competent person to monitor the safety of other employees and shall ensure that the Safety Monitor complies with the following:

- a. The Safety Monitor shall be competent to recognize fall hazards.
- b. The Safety Monitor shall warn an employee when it appears that the employee is unaware of a fall hazard or is acting in an unsafe manner.
- c. The Safety Monitor shall be on the same walking/working surface and within clear visual sighting distance of the employee or employees being monitored.
- d. The Safety Monitor shall be close enough to communicate orally with the employees. The Safety Monitor shall not have other responsibilities which could take their attention from the monitoring function.
- e. No employee, other than an employee engaged in roofing work (on low-slope roofs) or an employee covered by a fall protection plan, shall be allowed in an area where an employee is being protected by a safety monitor.
- f. Each employee working in a Controlled Access Zone shall be directed to comply promptly with fall hazard warnings from Safety Monitors.

VII. LIFELINE PLACEMENTS/INSTALLATION

- a. Horizontal Lifelines:

- i. All horizontal lifelines placed in skeletal steel structures (e.g., pipe racks) shall be of ½ inch cable as a minimum and shall be secured on each end by at least three cable clamps.
- ii. Softeners shall be placed where lifelines contact sharp edges of beams to prevent damage to lifeline.
- iii. Intermediate supports shall be adequate to minimize sag and vertical deflection under loading.
- iv. Horizontal lifelines shall be installed and maintained by competent persons who are knowledgeable in the rigging practices necessary to safety install and maintain the system.
- v. Priority shall be given to lifeline placement as structures are erected.
- vi. Lifelines shall be arranged to provide adequate mobility in all areas of the structure while maintaining continuous fall protection for personnel.

- vii. Lifelines should be arranged to provide tie-off points at least shoulder high for personnel using them.
- viii. Lifelines shall not be used for any purpose other than fall protection.
- ix. Personnel installing lifelines shall be protected from a fall at all times by use of retractable lanyards or tie-off to structural steel, etc.
- x. While in service lifelines shall be inspected weekly by a competent person.
- xi. Horizontal lifelines shall anchor only one lanyard between attachment points unless specifically designed for that purpose by the competent person.

VIII. VERTICAL LIFELINES/RETRACTABLE LIFELINES

- a. Static Rope
 - i. Static rope lifelines shall be of synthetic fiber rope that meets requirements.
 - ii. Static rope, lifelines must be used with approved rope grabs for lanyard attachment.
 - iii. Static rope lifelines must be anchored at the top by means capable of supporting 5400 pounds.
 - iv. Softeners shall be used where lifelines contact sharp edges such as beam flanges.
 - v. Static rope lifeline/rope grabs shall be placed for each person working from or riding in spiders/sky-climbers or two point suspension scaffolds. Each person must have an individual lifeline.
- b. Retractable Reel Lifelines
 - i. Retractable lifeline devices shall be attached to supports capable of withstanding 5400 pounds of impact loading.
 - ii. Retractable lifeline devices shall be secured by means of shackles, carabineers and wire rope chokers or synthetic slings. Rope (synthetic or natural fiber) shall not be used to secure these devices. These attachment methods must be capable of supporting 5400 pounds of impact loading.
 - iii. Each retractable lifeline device shall be equipped with a rope tag line for extending the device to elevations below the point of attachment.

IX. LADDERS

- a. Personnel climbing or working from ladders shall wear an approved safety harness/lanyard system for secondary fall protection and tie-off as per Section (V)(B) of this S.O.P.
- b. Permanent caged structural ladders may be ascended or descended without additional fall protection.
- c. Temporary construction ladders shall extend at least 36 inches above their uppermost landing and shall be secured against displacement.
- d. When ascending or descending ladders, personnel shall follow the three point rule, where both hands and at least one foot are in contact with the ladder at all

times.

- i. Materials or tools shall not be carried in hands while using ladders.
 - ii. Refer to S.O.P. 3M, Manual Material Handling for the proper procedures.
- e. Do not climb higher than the third rung from the top on a single or extension ladder or the second step from the top on a stepladder. The top rung of the ladder should never be below your waist.
- f. Personnel climbing ladders that are not secured at the top must have another person hold the ladder at the bottom until the ladder can be secured. This includes the last trip down after untying the ladder at the top.

X. TEMPORARY WORK PLATFORMS/WALKWAYS

- a. Every effort shall be made to ensure all temporary platforms/walkways, scaffolds, etc. are equipped with solid decks, free of openings and standard guard rail systems, regardless of height.
- b. Personnel working from or traveling on temporary work platforms or catwalks must wear an approved safety harness and lanyard at all times.
- c. Personnel are required to achieve 100 percent fall protection at all times.

XI. PERSONNEL LIFT/HOISTING DEVICES

- a. Aerial Lifts (Jig, Scissor, Snorkel, etc.)
 - i. Personnel riding in or working from aerial lifts must wear an approved safety harness/lanyard system and secure their safety lanyard to the lift basket anchorage point at all times.
 - ii. Lifts shall be placed on solid level surfaces to eliminate the possibility of overturning.
- b. Spiders and Ski-Climbers
 - i. Personnel riding in or working from hoisting devices shall wear an approved safety harness/lanyard system and shall be provided with an independent lifeline and rope grab to which their lanyard shall be secured at all times when aloft.
- c. Crane Hoisted Personnel Baskets
 - i. Personnel riding in or working from personnel baskets must wear an approved safety harness/lanyard system and have the lanyard secured to the basket at all times when aloft.

XII. ELEVATORS

- a. Personnel riding inside enclosed elevator cars are not required to secure their safety lanyard.

XIII. SKELETAL STEEL/OPEN STRUCTURES

- a. This section deals with fall protection when personnel are required to gain access to, travel and work in skeletal steel/open structures such as pipe racks. This

- b. includes traveling on or working on any elevated surface that is not designed as a personnel work surface or walkway, e.g., pipe.
- c. Personnel working or traveling in elevated skeletal steel/open structures more than 6 feet above ground level or adjacent completed surface shall wear an approved safety harness and secure their lanyards to a lifeline or a structure capable of supporting 5400 pounds, at all times.
- d. Personnel working or traveling in skeletal steel/open structures shall have two safety lanyards at all times in order to achieve 100 percent fall protection. One of the lanyards must be secured at all times when personnel are more than 6 feet above ground or adjacent complete surface.
- e. An adequate lifeline system shall be provided in skeletal steel/open structures to allow continuous fall protection for personnel working or traveling in these structures. Personnel competent in the necessary rigging practices shall be responsible for installation and maintenance of these lifelines.
- f. Vertical travel in these structures shall consist of properly placed and secured access ladders. Ladder shall be used and secured as per Section IX of this S.O.P.
- g. In lieu of lifelines, personnel may secure safety lanyards to substantial structural steel members, pipe and pipe supports. Personnel shall avoid securing lanyards to cable trays, conduit and small-bore pipe.

XIV. PERMANENT STRUCTURES/STAIRS/CAGED LADDERS

- a. Personnel working or traveling on permanent decks, floors and walkways that are free of fall exposures are not required to wear safety harnesses and lanyards, provided they can access the elevations by completed permanent stairs or fully enclosed personnel hoists (elevators).
- b. Personnel working or traveling in incomplete permanent structures where fall exposures exist, such as floor openings and open sided floors must wear an approved safety harness/lanyard system and be properly tied off when within 6 feet of any fall exposure.
- c. Priority shall be given to installing and securing permanent floors and walking surfaces and all guardrails and other permanent fall protection devices.
- d. When required, temporary guardrails and floor covers shall be installed to eliminate fall exposures.
- e. Only authorized personnel involved in work activities associated with the fall exposure and who are provided with secondary fall protection systems may work on floors or walkways, which are incomplete.
- f. Permanent stairs, when completed, shall be used to access or egress elevated work areas.
- g. Safety lanyards or other fall protection devices are not required on stairs as the handrails are to be used for this purpose. Personnel climbing or descending stairs shall always have at least one hand on the handrail.
- h. Caged ladders do not require secondary fall protection i.e., retractable lanyard. Personnel climbing ladders must keep both hands free for climbing at all times.

XV. STRUCTURAL STEEL ERECTION

- a. Personnel erecting structural steel shall achieve continuous fall protection through use of safety harness/lanyards, retractable lifelines, connectors toggles and/or aerial lifts, i.e., JLG, Snorkel, etc.
- b. The use of ladders and personnel hoists/lifts shall be use as much as possible as the safe method of vertical travel in structural steel elevations.
- c. Climbing of column and diagonal structural steel members is strictly prohibited.
- d. Prior to and during horizontal lifeline placement, personnel shall crawl (coon) steel members with lanyards secured around the structural steel members. Retractable lifelines secured at elevations above the point of operation may be used on the some applications to provide fall protection prior to availability of horizontal lifelines.
- e. When lanyard lengths that are longer than standard are required due to large steel members, the Project Manager and the Safety Director shall be contacted to approve methods for obtaining the additional length.

XVI. REINFORCEMENT STEEL/CONCRETE FROM WORK

- a. Continuous fall protection is required for personnel working more than 6 feet above ground level on rebar walls, formed concrete walls and piers.
- b. Fall protection can be achieved through the use of retractable lifelines, static lifeline and rope grabs, or double lanyards.
- c. Personnel working on rebar or formed walls and elevated piers generally require a work positioning lanyard (cannot be used for fall protection) and a fall protection lanyard.
- d. On vertical rebar walls, the safety lanyard shall be secured either to a lifeline or a horizontal section of rebar at a point above the worker's head.
- e. On form walls, personnel shall use patented construction from tie-off attachments or lifelines to secure their safety lanyards.

XVII. RIGGING/CRANE ASSEMBLE/DISMANTLING

- a. Crane assembly/dismantling operations pose a challenge to a continuous fall protection program. However, through thought and planning, maximum protection can be achieved.
- b. Fall protection shall be provided during these operations though the use of retractable lifelines, safety harnesses/lanyards, and by minimizing movement in elevated areas by using ladders and, in some cases, personnel lifts.
- c. Walking of chords and lacing of crane booms without continuous fall protection such as horizontal lifelines is strictly prohibited.
- d. When working on crane cabs/superstructure retracting, lifelines shall be attached by the first person up and shall be used by all persons working on the elevation.
- e. Other means of fall protection can be used as long as they provide mobility and continuous safety.

XVIII. RIGGING/MATERIAL HANDLING

- a. Off-Loading Float Trailers
- b. Off-loading float trailer operations do not lend themselves to use of either primary or secondary fall protection measures.
- c. Make sure the load is stable, where it will not shift during handling and cause a fall.
- d. Always be aware of trailer deck edges and watch where you step. Inspect trailer floors for the following:
 - i. Holes
 - ii. Rotten or weak decking
- e. Do not stand between any hoisted load and the hoisting device.
- f. Use tag lines to control loads while standing clear of them.
- g. Use ladders to access and egress float trailers.

XIX. RIGGING UP LARGE LOADS

- a. At times riggers, and possibly other support crafts, must rig up to and handle loads that are very large and require work at elevations (e.g., rigging up and lifting tanks, vessels, bins, silos, etc.) Fall protection during these operations should be provided as follows:
 - i. Ladders shall be used for access and egress to the elevation.
 - ii. Continuous fall protection shall be obtained by use of retractable lifelines, which can be suspended from spreader bars, alternate crane hooks, etc. This does not exclude other fall protection methods as long as they are continuous and meet OSHA requirements.
 - iii. Use of aerial lifts (JLG, snorkel, etc.) can reduce fall exposures during these operations.

XX. EXCAVATIONS

- a. Whenever feasible, banks or excavations 4 feet or deeper shall be sloped or stepped back to eliminate vertical banks and vertical falls to elevations below ground level.
- b. All excavations, regardless of depth, will be provided with some type of fall protection.
- c. On vertical banked excavations less than 4 feet deep or on sloped or stepped excavations 4 feet deep or deeper, wooden horse type barricades are acceptable fall protection.
- d. On excavations with vertical banks and depths in excess of 4 feet, rigid standard guard rail systems with top and mid rails capable of supporting 200 pounds of force in any direction with a minimum of deflection shall be installed as the excavation is opened.
- e. Whenever possible, properly sloped stairs with handrails shall be used to provide access/egress to excavations.

XXI. FLAT ROOF FALL HAZARD

- a. In the event a continuous fall protection system cannot be implemented on a flat roof, a safety monitor system shall be implemented as follows.
- b. Written approval by the Safety Director and cosigned by the Project Manager.
- c. Training will be provided to all employees by a designated Safety Representative competent in the subject.
- d. Training will include the nature of the fall hazard, communication to prevent exposure to the hazard, along with any other requirements of 29 CFR 1926.502(h)(1-4).
- e. All applicable provisions of 29 CFR 1926.502(h)(1-4) and this procedure shall be complied with prior to and during operations.
- f. A “Closing Meeting” will be held at the end of each implementation of the monitoring procedure to assess the effectiveness of the program.

XXII. FALL PROTECTION PLAN

- a. This option is available ONLY to employees engaged in leading edge work and who can demonstrate that it is infeasible or creates a greater hazard to use conventional fall protection equipment. The fall protection plan **MUST** conform to the following provisions:
 - i. The fall protection plan shall be prepared by a qualified person and it must be site specific. This plan must be maintained up-to-date to reflect changing site conditions.
 - ii. All changes in the program must be approved by the qualified person.
 - iii. A copy of the plan shall be maintained at the job site.
 - iv. The implementation of the plan shall be under the supervision of a competent person.
 - v. The plan shall document the reasons why the uses of conventional fall protection systems, fall arrest systems, or safety net systems are infeasible or why their use would create a greater hazard.
 - vi. The plan must explain the other measures that will be taken to reduce or eliminate the fall hazard for the workers who cannot be provided with protection from the conventional fall protection systems.
 - vii. The plan shall identify each location where conventional fall protection methods cannot be used. These locations shall then be classified as controlled access zones.
 - viii. The plan shall include the name of each employee who is designated to work in controlled access zones.
 - ix. In the event an employee falls, Basic Industries of South Texas shall investigate the circumstances to determine if the fall protection plan needs to be changed.

XXIII. TRAINING REQUIREMENTS

- a. Basic Industries of South Texas shall provide a training program for each

- b. employee who might be exposed to fall hazards. The program shall enable each employee to recognize the hazards of falling and shall train each employee in the procedures to be followed to minimize these hazards.
- c. The company shall assure that each employee has been trained by a competent person qualified in the following areas:
 - i. The nature of fall hazards in the work area.
 - ii. The correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection system.
 - iii. The use and operation of guardrail systems, personal fall arrest systems, safety net systems, warning line systems, safety monitoring systems, controlled access zones and any other protection systems that might be used.
 - iv. The role of each employee involved in a safety monitoring system.
 - v. The correct procedures for the handling and storage of equipment and materials, and the erection of overhead protection.
 - vi. The contents of this program.
- d. Certification of Training
 - i. This training shall be certified by using the Tool Box Safety Meeting Report Form and an employee exam for documented evidence.
- e. Retraining
 - i. When any member of the management staff of Basic Industries of South Texas has reason to believe that any affected employee who has already been trained does not have the understanding and skill required, Basic shall retrain such employee. Otherwise, employees will be trained on a yearly basis through the **Field Employee Training Program**.
Circumstances where retraining is required include, but are not limited to:
 - 1. Changes in the workplace render previous training obsolete.
 - 2. Changes in types of fall protection systems or equipment to be used render previous training obsolete.
 - 3. Inadequacies in an affected employee's knowledge or use of fall protection systems or equipment indicate that the employee has not retained the requisite skill or understanding.