1 Status

1.1 Update of existing policy, effective 11/18/11.

2 Purpose

2.1 To eliminate the potential for injury while erecting, inspecting or using any type of field erected work platform or scaffold.

3 Applicability

3.1 This policy applies to all subsidiary companies and departments of The Cianbro Companies.

3.2 All organizations are required to comply with the provisions of this policy and procedure. Any deviation, unless spelled out specifically in the policy, requires the permission of the Corporate Safety Officer or designee.

4 Definitions

4.1 Authorized Scaffold User: One who has been trained on the use of the particular scaffold and who understands the limitations and configuration of that scaffold. Authorized scaffold users may also be deemed competent persons if they meet the definition competent person in 4.4 below.

4.2 Bearer (putlog): A horizontal traverse scaffold member upon which the scaffold platform rests and which joins scaffold uprights, posts and similar members.

4.3 Brace: A rigid connection that holds one scaffold member in a fixed position with respect to another member or to a building or structure.

4.4 Competent Person: One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to team members and who has the authorization to take prompt corrective measures to eliminate such conditions. Competent Scaffold Persons will be deemed competent as an erector, an inspector, or a combination of the two.

4.5 Coupler: A device for locking together the tubes of a tube and coupler scaffold.

4.6 Equivalent: Alternate designs, materials or methods to protect against a hazard which the employer can demonstrate will provide an equal or greater degree of safety for team members than the methods, materials or designs specified in the standard.

4.7 Heavy Duty Scaffold: Rated for loading between 51# and 75# per square foot.

4.8 Light Duty Scaffold: Rated for loading up to 25# per square foot.

4.9 Longitudinal Bracing: Bracing parallel to the long side of the scaffold so the X runs the same direction as the long side of the scaffold.
4.10 Maximum Intended Load: The load of all persons, equipment, tools, materials, transmitted loads and other loads reasonably anticipated to be applied to a scaffold or scaffold component at any one time.

4.11 Medium Duty Scaffold: Rated for loading between 26# and 50# per square foot.

4.12 Qualified Person: One who by possession of a recognized degree, certificate, professional standing or with extensive knowledge, training and experience has successfully demonstrated his or her ability to solve problems related to the subject matter, the work or the project.

4.13 Runner (ledger or ribbon): The lengthwise horizontal spacing or bracing member which may support the bearers.

4.14 Scaffold: Any temporary elevated work platform.

4.15 Traverse Bracing (cross bracing): Bracing at right angles to the long side of the scaffold so the X is in the interior scaffold space between the parallel uprights.

5 Policy

5.1 All of our team members and subcontractors working on any scaffolding or work platform in use in our work areas shall comply with all OSHA standards and this policy.

6 Responsibilities

6.1 The top Cianbro manager of the job site is responsible for the implementation of this policy on the project.

6.2 The corporate safety department is responsible for maintaining this document.
7 Scaffold Safety is Everyone’s Responsibility

7.1 Planning The Activity

7.1.1 Prepare Job Activity Plans with input from each team member and the safety specialist. In many cases it is required that the manufacturer actually design the scaffold configuration. Identify the competent person in the activity plan. Refer to Section 7.10 “Competent Person and Training.”

7.1.2 Survey the jobsite or work area before each activity to determine ground conditions, strength of structures, and general site conditions such as weather, overhead obstructions, power lines, and other work activities.

7.1.3 Order scaffolding that best fits the job requirements.

7.1.4 Upon delivery inspect all scaffolding and check for:
   - Excessive rust and metal fatigue
   - Straightness of members and weld integrity
   - Inspect coupling pins for alignment and locking devices on frames/braces
   - Inspect center pivot on cross braces
   - Inspect caster brakes
   - All required pieces are present including manufacturers erection and user instructions

Remember: Fall Protection - Your life may depend on it!

7.1.5 The 100% tie off policy is in effect while scaffolding is being erected or dismantled. The competent person must determine proper fall protection including anchorage points. As a last resort the competent person may authorize tie off to scaffold components, however only to structural members of the scaffold. General rules and safety tips must be followed for scaffold and work platform assembly and dismantling. An authorized competent person must inspect and tag the scaffolding as safe to use, safe to use with tie off, or incomplete – do not use. Remember, the goal is to create a complete work platform where harnesses and lanyards will not be required.
7.2 Types of Scaffolding

7.2.1 Listed below are some of the common types of scaffolding that we use. For more types of scaffolds and other definitions, see section 1926.450 of the OSHA standards.

- Fabricated Frame Scaffold (tubular welded frame scaffold) – A scaffold consisting of a platform(s) supported on fabricated end frames with integral posts, horizontal bearers, and intermediate members.
- Quick Erect Scaffolds— A type of system scaffold designed to be fast, easy to erect and dismantle.
- Mobile Scaffolds— A powered or unpowered, portable, caster or wheel-mounted supported scaffold.
- Supported Scaffold— A scaffold consisting of posts with fixed connection points that accepts runners, bearers, and diagonals that can be interconnected at predetermined levels.
- System Scaffold— A scaffold consisting of posts with fixed connection points that accepts runners, bearers, and diagonals that can be interconnected at predetermined levels.
- Tube and Coupler Scaffolds— A supported or suspended scaffold consisting of a platform(s) supported by tubing, erected with coupling devices connecting uprights, braces, bearers, and runners.

7.3 General Requirements for all Scaffolds

The general requirements listed in this section III may not be all inclusive and you should refer to OSHA Standards 29 CFR 1926.450 through 454 and 1915.71 (if marine work) for additional requirements. The manufacturer’s erection and user instructions must be available on each project for each type and brand of scaffold that will be used.

7.3.1 Capacity

- Each scaffold must support own weight and 4 times the maximum intended load.
- Suspension ropes and hardware must support 6 times the maximum intended load.

A Qualified Person is one who by possession of a recognized degree, certificate, or professional standing, or with extensive knowledge, training and experience, has successfully demonstrated his or her ability to solve, or resolve problems related to the subject matter, the work, or the project.

7.3.2 Scaffold Platform Construction

- Platforms must be fully planked or decked with no more than 1 inch gaps or more than 9 1/2 inches where it is demonstrated by a competent person additional space is needed between the platform and the uprights.
- Scaffold platforms and walkways shall be at least 18 inches wide unless determined impossible by a competent person and would require standard guard rail system or PPE.
- The front edge of all platforms must be no more than 14 inches from the face of work except for plastering and lathing operations where no more than 18 inches is allowed.
- Platforms 10 feet and less in length must extend at least 6 inches but not more than 12 inches past supports unless designed and installed and/or guarded properly.
- Platforms longer than ten feet may extend up to 18 inches past support. Platform extensions over 18” require proper design, installation, and/or guarding.
- Overlap platforms must extend more than 12 inches over supports unless restrained to prevent movement.
- Each abutted end of planks shall rest on a separate support surface.
- On direction changes, any platform on a bearer at other than a right angle shall be laid first, and platforms which rest at right angles over the same bearer laid next.
- The top and bottom of wood platforms shall not be covered with opaque finishes. (Must be able to see wood grain through any finish.)
• Properly sized nails/bolts/wire will be used to secure planks, and railings. All nails will be driven to full length in a non-straight pull configuration.
• Mixing of different manufactured scaffold components must be approved by a competent person and compatibility and integrity of components must be maintained.
• All scaffolding shall have a safe means of access, using hook-on/attachable, stairway type ladders, stair towers, or the equivalent. Scaffold components may be modified provided a competent person determines structural integrity is maintained.
• Scaffold components of dissimilar metals cannot be mixed unless approved by a competent person.
• Before scaffold is used, the connections shall be inspected by a competent person.

7.4 Specific Scaffold Requirements

7.4.1 Criteria for Supported (Frame) Scaffolds
• The first guys, ties, and braces shall be installed when the vertical height is four times the minimum base dimension and then every twenty feet thereafter for platforms 3’ wide or less and every 26’ thereafter for platforms more than 3’ wide. (See Appendix E and F)
• Guys, ties, and braces shall be installed at each end and horizontally not more than 30 feet apart.
• Supported scaffolds must be plumbed and adequately braced.
• Bracing must be installed as close as possible to the intersection of the bearer, and post, runner, and post.
• Transverse (cross) bracing shall be installed across the width of the scaffold every 3rd set of posts horizontally, every 4th runner vertically, and at scaffold ends.
• Longitudinal bracing shall be installed at approximately a 45 degree angle from the base of the first outer post to the extreme top of the scaffold. Longitudinal bracing must be repeated at every 5th post on continuous running scaffolds.
• Scaffold poles, legs, posts, frames and uprights must bear on base plates or other adequate firm foundations. Base plates are required at a minimum. Mudsills are also required unless on an adequate firm foundation (such as a concrete floor).
• Fabricated frame scaffolds, tube, and coupler scaffolds over 125 feet high shall be designated by a registered professional engineer.
• Building ties must be installed at bearer levels.
• Tube and coupler scaffolds must have positive locking type pins.
• Runners shall be located as close to the base as possible, interlocked to form continuous lengths, and coupled to each post.

7.4.2 Criteria for Suspension Scaffolds
• Support devices shall be capable of supporting at least four times the load imposed.
• Outrigger beams, when used, shall be structural metal or equivalent and restrained against movement.
• Inboard ends of suspension beams shall be stabilized by bolts or other direct connections to the floor or roof deck and evaluated by a competent person.
• Suspension rope on winding drum hoists shall not contain less than four wraps of rope at the lowest point of scaffold travel. Suspension ropes used with other types of hoists shall have a designed/provided means to prevent the rope end from passing through the hoist.
• The use of repaired or damaged rope is prohibited.
• Ropes shall be inspected by a competent person prior to each work shift and after any occurrence possibly affecting a rope’s integrity.
• Gasoline-powered equipment and hoists shall not be used.
• Braking devices shall be automatic when an instantaneous change in momentum, or accelerated over speed occurs.
• Manually operated hoists require positive crank force to descend.
• Two-point and multi-point scaffolds shall be tied or secured otherwise to prevent from swaying and inspected by a competent person.
• Devices whose sole function is to provide emergency escape and rescue shall not be used as working platforms.

7.4.3 Mobile Scaffolds
• Shall be braced by cross, horizontal or diagonal braces to prevent racking or collapse and to automatically square and align the vertical members.
• Shall have all brace connections secured and shall be plumb, level and square.
• Scaffold casters/wheels shall be equipped with positive locking devices to prevent movement while in use.
• Manual force used to move the scaffold shall be applied as close to the base as possible and no higher than five feet.
• Only power systems designed to move mobile scaffolds shall be used. Do not use forklifts, trucks, etc.
• Team members shall not be allowed to ride on scaffolds.
• Platforms shall not extend outward beyond the base supports unless outrigger frames or equivalent devices are used.
• Caster stems and wheel stems shall be pinned or positively secured to scaffold legs.

Note: Height to base width of the scaffold during movement is 2:1 or less unless specifically designed and constructed to exceed nationally recognized stability test requirements.

7.4.4 Requirements Related to Specific Types of Scaffolds
• Reference 1926.452 for additional requirements applicable to the specific type of scaffold you are going to use.

7.5 Scaffold Access and Ladders

7.5.1 When scaffold platforms are more than two feet above or below a point of access, portable ladders, hook-on ladders, attachable ladders, stair towers, stairway-type ladders, ramps, walkways, integral prefabricated scaffold access, or direct access from another scaffold, structure, personnel hoist, or similar surface shall be used. An opening in the railing or perimeter barrier must be provided with a swing gate if feasible at each access point. Climbing over railings shall be avoided as a means of access. The swing gate will be the access closure of choice. If a swing gate can not be used then a JHA is required to identify how to access the location safely and requires approval from the senior manager (or designee) on site. Do not use cross-braces or framed corners as means of access. Access must be provided to all working levels of a scaffold.

7.5.2 Hook-on and Attachable Ladders
• Shall be positioned as not to tip scaffold.
• The ladder bottom rung shall not be more than 24 inches above the scaffold supporting level.
• Ladders extending more than 35 feet high shall have rest platforms at 35 foot maximum vertical intervals.
• Ladders shall be specifically designed for use with the type of scaffold used.
• Minimum rung length of 11 1/2 inches, uniformly spaced with a maximum spacing between rungs of 16 3/4 inches.

7.5.3 Stairway Type Ladders
• The bottom step shall not be more than 24 inches above the scaffold supporting level.
• Rest platforms shall be provided at 12 foot maximum vertical intervals.
• Minimum step width of 16 inches (mobile stairway-type ladders may have minimum step width of 11.5 inches).
• Treads and landings must to be slip resistant.

7.5.4 Stair Towers
• The bottom step shall not be more than 24 inches above scaffold supporting level.
• Handrails shall be provided at all levels with adequate hand hold for team member grasping, surface smooth (free of objects which could puncture), at least three inches from other objects, and at least 28 to 37 inches high from the surface of the tread.
• Landing platforms at least 18 inches wide by 18 inches long at each level.
• Stairway between stair rails shall be at least 18 inches wide.
• Treads and landings have slip resistant surfaces.
• Stairways shall be installed between 40 and 60 degrees from horizontal.
• Riser height and tread depth shall be uniform within 1/4 inch.
• Stair towers are preferred over ladders for access to different levels.

7.5.5 Ramps and Walkways
• 6 feet or more above lower levels shall have guardrail systems that comply with sub part “M” (Fall Protection).
• Slope of ramp or walkway shall not be inclined more than one (1) vertical to three (3) horizontal (or 20 degrees above the horizontal).
• Slopes more than 20 degrees shall have cleats not more than 14 inches apart securely fastened.

7.5.6 Prefabricated End Frame Access
• Must be specifically designed and constructed for use as ladder rungs.
• Ladder rung length must be at least 8 inches wide, maximum spacing between rungs not to exceed 16 3/4 inches and uniformly spaced.
• Ladder must be free from obstructions such as scaffold planks extending over the end of the scaffold.
• Rest platforms provided every 35 feet.

7.5.7 Access for team member erecting or dismantling supported scaffolds
• A safe means of access shall be provided for each team member erecting or dismantling a scaffold.
• Hook on attachable ladders shall be installed as soon as scaffold erection has progressed to a point that permits safe installation and use.
• Tubular welded frame scaffold and frames with horizontal members that are parallel, level and not more than 22 inches apart vertically, may be used for access.
• Cross braces on tubular welded frame scaffolds shall not be used for access.

7.6 Scaffold Use

7.6.1 Scaffolds and scaffold components shall be inspected by a competent person before each work shift and after any occurrence resulting in possible damage to the scaffold. See SD1054 for a basic inspection checklist available on Cianbro.net/Resources/Forms. A scaffold tag shall be placed at all points of access to the scaffold.

7.6.2 The use of shore or lean-to scaffolds is prohibited.

7.6.3 Never overload scaffold components beyond their rated capacity.

7.6.4 Scaffolds shall not be moved horizontally with team members on them.

7.6.5 Clearance between power lines:
A. Insulated Lines
   • <300 volts → 3 feet minimum
   • 300 volts to 50 kV → 10 feet minimum
   • >50 kV → 10 feet minimum plus 4.0 inches per 1 kV>50 kV

B. uninsulated Lines
   • <50 kV → 10 feet minimum
   • >50 kV → 10 feet minimum plus 4.0 inches per 1 kV>50 kV
NOTE: Clearance closer than the above requirements is possible if a qualified individual coordinates the accomplishment of the following:
- Lines are deenergized and grounded.
- Lines are relocated.
- Lines have installed insulated protective covers.
- Lines are of the insulated, armored, shielded cable type.

7.6.6 Scaffolds shall be erected, moved, dismantled or altered only under the supervision and direction of a competent person and these activities shall be performed only by experienced and trained team members selected for such work by the competent person.

7.6.7 Team members are prohibited from working on scaffolds covered with slippery materials like ice, snow, oils, except as necessary for removal of such materials.

7.6.8 Suspension ropes shall be protected from heat sources or corrosive substances.

7.6.9 It will be the determination of the competent person or designer whether scaffold components can be altered.

7.6.10 Scaffold work is prohibited during storms or high winds unless a competent person determines it is safe. The practice of covering scaffolds with plastic, etc. increases the wind load on a scaffold dramatically and must be evaluated by a competent person.

7.6.11 Debris cannot accumulate on platform. Regular housekeeping/clean up is required.

7.6.12 Makeshift devices shall not be used on top of scaffold platform to increase height for team members.

7.7 Fall Protection

7.7.1 Each team member on a scaffold more than six (6) feet above a lower level shall be protected from falling to that lower level.
- Each team member on a boatswain’s chair, catenary, needle beam, or ladder jack scaffold shall be protected with a fall arrest system.
- Each team member on a single-point or two-point adjustable suspension scaffold shall be protected by both personal fall arrest and a guardrail system.
- A competent person shall determine the fall protection/prevention requirements needed for erecting or dismantling scaffolding >6 feet. As a last resort the competent person may authorize tie off to structural members of the scaffolding. A fall arrest system shall be used unless a complete fall prevention system is in place.

As a last resort the competent person may authorize tie off to structural members of the scaffolding. Fall arrest system shall be used unless a complete fall prevention system is in place.

- Vertical lifelines used for fall protection shall be anchored to a fixed point independent of the suspended scaffold anchor point. Safe anchorage points include structural members of a building and not stand pipes, vents, piping systems, electrical conduit, outrigger beams, or counter weights.
- Scaffolding top rails manufactured after January 1, 2000 must be 38 inches to 45 inches high (42 to 45 inches for marine work).
- It is unacceptable to use cross bracing in lieu of top or mid rails on scaffolding.
- A competent person must determine adequate tie off points while erecting, dismantling, or using a scaffold. Tying off to the scaffold is the last resort. The scaffold must be secured from tipping by guying, bracing etc., before using it as an anchorage point.

7.8 Falling Objects Protection

7.8.1 Protection from falling objects shall be provided by the use of toe boards, screens, guardrail system, debris nets, catch platforms, canopy structures, or deflecting devices.

7.8.2 Areas below scaffold where objects could fall shall be barricaded off unless scaffold edges/sides can be adequately protected with toe boards and/or paneling/screening provided along scaffolding sides.
7.8.3 Canopies, debris nets, or catch platforms with sufficient strength to withstand impact forces expected can be used over team members working below for protection.

7.9 Scaffold Tagging
(See Appendix G)

7.9.1 A competent person is required to monitor and be responsible for all scaffolding use activities. The competent person shall be responsible for affixing a tag to each scaffold that identifies the status of use.

- **Red** Tag indicates that the “Scaffold is incomplete or uninspected: DO NOT USE!”
- **Yellow** Tag indicates that the “Scaffold has been inspected and is safe to use, but requires 100% tie-off!”
- **Green** Tag indicates that the “Scaffold has been inspected and is safe to use, without 100% tie-off!”

7.9.2 Each tag will reflect the competent person’s name and date when tag was fixed. Each day the scaffold is to be used, the competent person must inspect the scaffold and initial and date the tag.

7.9.3 Do not use any scaffold that has not been tagged to reflect use instructions or has not been inspected by a competent person for the day you plan to use it.

7.10 Competent Person and Training

7.10.1 A competent person is one who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to team members, and who has authorization to take prompt corrective measures to eliminate such conditions.

7.10.2 Every team member performing work on a scaffold must be trained by a competent person to recognize the hazards associated with the type of scaffold being used. This can be accomplished through the activity planning process or other formal training and shall include at a minimum the following areas:

- Electrical hazards
- Fall hazards
- Falling objects protection systems
- Erecting, maintaining, and disassembling fall protection systems
- Proper use of scaffold and material handling on scaffold
- Maximum intended load and load-carrying capacities of the scaffold being used.

7.10.3 Every team member involved in erecting, disassembling, moving, operating, repairing, or inspecting scaffolding shall be trained by a competent person to recognize any hazards associated with the work in question. This can be accomplished through the activity planning process or other formal training and shall include at a minimum the following areas:

- Correct procedures for erecting, disassembling, moving, operating, repairing, inspecting, and maintaining scaffolds.
- Design criteria, maximum intended load-carrying capacity, and intended use of scaffold.

7.10.4 Retraining should be done as necessary when changes at the worksite present a new hazard(s) and/or to restore proficiency. This can be accomplished through daily activity planning reviews with all workers involved.

7.10.5 Training guidelines can be found in Appendixes A through D to subpart L and form SD1025 available on Cianbro.net/Resources/Forms. These guidelines can be used as references for competent persons to use in conducting training.

7.11 Safety at Home

When using scaffolding or temporary work platforms at home remember to follow the same safety precautions that we use at work. Build the platforms level, plumb and strong enough for the application. Protect yourself and others from falling and from falling objects. Inspect it each day before use.
8 Budget / Approval Process

8.1 It is the responsibility of each jobsite to procure and provide all materials and PPE required and provide necessary training.

9 Related Documents

9.1 See attachments.

9.2 Documents available on Cianbro.net/Resources/Forms.

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9.3 Scaffold User Training Quiz Answers SD834 located on Cianbro.net/Resources/Safety Resources
Mobile Scaffolding

- Midrail
- Toprail
- Access gate
- Toebard
- Locking pins
- Access ladder
- Locking casters
- Caster fastening pins
- Horizontal diagonal brace
- Coupler
- Cross bracing
- End frame
- Guardrail support
- Working platform
Frame and Stair Unit

CROSS BRACE AS GUARDRAIL (NOTE 1)

GUARDRAIL SYSTEM

PLATFORM

FRAME (PANEL)

HANDRAIL SYSTEM

CROSS BRACE

STEP UNIT (NOTE 2)

SCREW JACK
Tube and Coupler Scaffold

NOTE: ALL TIES SHOULD BE LOCATED AT CLAMP LOCATIONS.
System Scaffold

Joint connections vary according to manufacturer.
Maximum Vertical Tie Spacing Narrower 3'-0 and Narrower Bases

TOP OF SCAFFOLD PLATFORM AND UPPERMOST TIE NOT TO EXCEED 4 TO 1 RATIO

20'-0" MAX. BETWEEN INTERMEDIATE TIES

4 TIMES MINIMUM BASE TIE AT CLOSEST FRAME HEADER OR BEARER

FIRST TIE CLOSEST FRAME HEADER OR BEARER ABOVE 4 TIMES THE MINIMUM BASE DIMENSION

3'-0" AND NARROWER MINIMUM BASE DIMENSION
Maximum Vertical Tie Spacing Wider Than 3'-0' Bases

- Top of scaffold platform and uppermost tie not to exceed 4 to 1 ratio
- 26'-0" max. between intermediate ties
- 4 times minimum base tie at closest frame header or bearer
- First tie closest frame header or bearer above 4 times the minimum base dimension
- Wider than 3'-0" minimum base dimension
Cianbro Scaffold Tags

Red
CIBRO
Do Not Use
SCAFFOLD INCOMPLETE OR UN-INSPECTED

Signature __________________________ Date: __________________

Green
CIBRO
O.K. TO USE
SCAFFOLD HAS BEEN INSPECTED AND IS SAFE TO USE

Signature __________________________ Date: __________________

Yellow
CIBRO
100% Tie Off Required
SCAFFOLD HAS BEEN INSPECTED AND IS SAFE TO USE, BUT REQUIRES 100% FALL PROTECTION

Signature __________________________ Date: __________________