BP WIND ENERGY
POLICIES AND PROCEDURES

Scaffolds

Document Control Details

Scaffolds

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Scaffolds

1.0 Purpose/Scope

1.1 This procedure establishes the basic safety requirements and safe work practices for the erection, use, inspection, and/or dismantling of scaffolding.

1.2 This HSSE Procedure applies to all BP employees and on-site contractors performing work on BPWE sites.

2.0 Reference

2.1 OSHA 29 CFR 1926, Subpart L, Scaffolds (1926.450 - 454)

2.2 OSHA 29 CFR 1910.28, Safety Requirements for Scaffolding

2.3 OSHA 29 CFR 1910.22, General Requirements for Work Surfaces

3.0 Responsibilities

3.1 Facility/Project Managers

A. Accountable for implementation of the BPWE Scaffold procedure.

B. Ensure requirements of this procedure are being met.

3.2 Supervisors

A. Supervisors responsible for employees performing work on scaffolds must:

1. Ensure employees have received the proper scaffold user training (required by this procedure) and required regulatory and company training.
2. Confirm each job has been properly evaluated for hazards associated with scaffolding, such as design, fall protection, falling object protection, electrical protection, etc., and that these hazards have been properly eliminated or controlled.
3. Ensure that scaffolds are inspected by a scaffolding competent person prior to use, prior to each shift, and after any incident that might affect a scaffold's structural integrity.

B. Supervisors of scaffold erection crews must:

1. Have completed training and received their Employer's designation as a Competent Person for scaffolding operations.
2. Ensure all scaffold craftsmen have received the proper training on scaffold erection, alteration, movement, repair, disassembly, and inspection as required by this procedure.
3. Ensure they or another designated Competent Person performs initial inspections on completed scaffolds prior to use, prior to each shift, or after any occurrence which may affect a scaffold’s structural integrity.

C. Employees
   1. Inspect the scaffold tag and take the required precautions prior to working on a scaffold.
   2. Visually inspect each scaffold being used, and report any defects or concerns to Supervision immediately.
   3. Use any required personal fall protection according to training received.

D. Competent Person
   1. Scaffolding Competent Persons are responsible for supervising scaffold erection and performing inspections prior to initial use, before each work shift, and upon any occurrence that may affect the structural integrity of the scaffold.
   2. The employer is responsible to have on file and to provide documentation of the certificate of competent person training upon request.

E. Qualified Person
   1. Qualified Persons (normally a Registered Professional Engineer) are responsible for scaffolding design, scaffolds erected over 125 feet high, and pole scaffolds erected over 60 feet high.

4.0 Definitions

Definitions Table

Term	Definition
Boatswain's Chair	A single point adjustable suspension Scaffold consisting of a seat or sling designed to support one employee in a sitting position.
Brace	A rigid connection that holds one scaffold member in a fixed position with respect to another member or to a building or structure.
Cleat	A structural block used at the end of a platform to prevent the platform from slipping off its supports. Cleats are also used to provide footing on sloped surfaces such as crawling boards.
Competent Person	A person who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them. 29 CFR Part 1926 Subpart L (Scaffolds), §1926.450(b)
Coupler	A device for locking together the tubes of a tube and coupler scaffold.
Guardrail System	Vertical barrier, consisting of but not limited to, toprails, midrails, and posts, erected to prevent employees from falling off a Scaffold platform or walkway to a lower level.

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Term	Definition
Maximum Intended Load	The total 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.
Outrigger	The structural member of a supported scaffold used to increase the base width of a scaffold in order to provide support for and increased stability of the scaffold.
Personal Fall Arrest System	An assembly of components and subsystems that comprises a system and is used to arrest a person in a free fall. This system always includes a full body harness and connecting means between the harness and an anchor or anchorage connector. Such connecting means may consist of a lanyard, energy absorber, fall arrester, lifeline, self-retracting, lanyard or suitable combinations of these means.
Qualified Person	One familiar with the construction and operation of the equipment and the hazards involved and are permitted to work on or near exposed energized parts. Additionally, it is a person who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.
Rated Load	The manufacturer's specified maximum load to be lifted by a hoist or to be applied to a Scaffold or Scaffold component.
Scaffold	Any temporary elevated platform (supported or suspended) and it's supporting structure (including points of anchorage), used for supporting employees, materials, or both.
Three Points of Contact	Term used for a method of safe ladder climbing where between a climber's two hands and two feet, at least three of them are in contact with the ladder rungs/rails at all times while ascending or descending the ladder.
Tube and Coupler Scaffold	A supported or suspended scaffold consisting of a platform(s) supported by tubing, erected with coupling devices connecting uprights, braces, bearers, and runners.

Scaffolds

5.0 Procedure

5.1 General Requirements

A. All scaffolds shall be designed by a Qualified Person or manufacturer and shall be erected, loaded, and used in accordance with that design or manufacturer's specifications.

B. Scaffolds shall be erected, altered, moved, or dismantled by trained and certified scaffold erectors (e.g. holding a current scaffold training certificate indicating satisfactory completion of a scaffold erection training course) and under the supervision of Competent Persons.

C. Employees required to perform work on scaffold platforms shall be trained in the recognition and control measures for the hazards associated with the type(s) of scaffold being used.

D. A scaffold shall be capable of supporting, without failure, its own weight and at least four times the maximum intended load.

E. All scaffold work platforms should have complete guardrails and toe boards installed unless prevented by the assembly configuration (e.g. the nature or configuration of the scaffold/work area, masonry work, piping configuration, etc.).

F. All scaffold work platforms must be completely decked between the uprights and/or guardrail supports.

G. Scaffold platforms shall be a minimum of 18 inches wide.

H. All scaffold decking shall be made of manufactured system components designed specifically for that purpose or scaffold grade lumber.

I. The footing or anchorage for all scaffolds shall be sound, rigid, and capable of supporting the loaded scaffold without settling or displacement.

1. Unstable objects such as barrels, boxes, loose bricks, or concrete blocks will not be used to support scaffolds.
2. Mud sills (12" x 12" minimum size) should be used if scaffold legs are resting on dirt, grass, or a potentially unstable surface such as gravel, sand, shell, etc.
3. Base plates are required at all times.
4. When using leveling jacks, 3/4 of its length must remain inside the scaffold leg.

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

K. Manufactured scaffold components shall not be modified. Scaffold components manufactured by different manufacturers or of dissimilar metals shall not be intermixed unless the components fit together without force, modification and the scaffolds structural integrity is maintained as determined by a Competent Person.

L. Supported scaffolds with a height-to-base width ratio of more than four-to-one shall be restrained from tipping by guying, tying, bracing, or equivalent means.

1. Guys, ties, and braces shall be installed according to the scaffold manufacturer's recommendations or at the closest horizontal member to the 4:1 height and be repeated vertically at locations of horizontal members every 20 feet or less thereafter for scaffolds three feet wide or less, and every 26 feet

or less thereafter for scaffolds greater than three feet wide.

2. The top guy, tie, or brace of completed scaffolds shall be placed no further than 4:1 height from the top. Such guys, ties, and braces shall be installed at each end of the scaffold and at horizontal intervals not to exceed 30 feet.

M. Design drawings must be made prior to erection and kept on site for any scaffold over 125' high. They must be designed by a licensed professional engineer competent in this field.

5.2 Scaffold Decking (Boards)

A. Scaffold Grade 2" x 10" or 2" x 12" board material only will be used.

B. No paint or material which would affect proper visual board inspection or work surface safety may be applied to scaffold boards. Scaffold boards may be painted 10 to 12 inches on each end to denote use for scaffold decking only.

C. Scaffold boards are not to extend over their end supports more than 12" or less than 6".

D. All decking on platforms shall be overlapped (minimum 12") or secured from movement.

E. Do not use cleated boards with cleats turned up.

5.3 Scaffold Tags

A. The most effective means of communication between the scaffold builder and the scaffold user is a scaffold tag. All scaffolds built for use on BPWE sites must be tagged and must meet the following requirements:

1. The crew that erects the scaffold will complete and attach the appropriate tag.
2. The tag should be placed at eye level on or near each access ladder or stairway so it is easy to locate and plainly visible.
3. A competent person shall ensure that the scaffold is erected properly and the tag attached is proper and completely filled out.

B. If the scaffold needs to be altered in any way, the person who signed the tag must be contacted to authorize the change and re-tag in necessary.

C. An untagged scaffold must not be used.

D. If a scaffold is to be used for an extended period of time it should be inspected before each work shift by a competent person.

5.4 Tagging System

A. Color coded tags assist in easy identification of a scaffold tag from a distance. The following system shall be used. A scaffold that is not tagged shall not be used to conduct work.

B. A three (3) tag system is used to identify complete and incomplete scaffolds.

1. A green tag is completed and attached by the erecting crew to scaffolds that have complete handrails, midrails, toeboards, and decking.

2. A yellow tag is completed and attached to scaffolds that cannot be erected with all components complete or to identify a hazard associated with using the scaffold. The yellow tag allows the erecting crew to note what portion of the scaffold is incomplete and also cautions the user as to what to look for. A yellow tag also informs the user that a fall protection device is required while on a scaffold with incomplete guardrails or platforms (e.g. mason's scaffold used in bricklaying).
3. A red or "Danger" tag in conjunction with the yellow and green tags. A red tag means the scaffold is being dismantled, not yet completely erected, or for some reason not safe and shall not be used.

5.5 Access to Scaffold Platforms

A. When scaffold platforms are more than two feet above or below a point of access, an attached ladder or other approved ladder/stair system must be used by scaffold users to reach the platform. Stairs should be used unless there is a spacing constraint.

B. Hook-on and attachable ladders shall be positioned so that their bottom rung is not more than 24 inches above the scaffold supporting level.

C. Access ladders must extend 36" above the platform being accessed, or equivalent safe access shall be provided.

D. Scaffold bracing shall not be used for access or climbing. Integral prefabricated scaffold access frames must be specifically designed and constructed for use as ladder rungs may be used for access to platforms.

E. Hook-on and attachable ladders shall be broken with rest platforms at 20-foot maximum vertical intervals. All hook-on and attachable ladders over 10 feet in height must be caged.

F. Hook-on and attachable ladders shall be specifically designed for use with the type of scaffold being used.

G. Rungs must be uniformly sized and spaced with a maximum interval between rungs of 16 ¾ inches.

H. Rungs must be at least 11 ½ inches long (left to right).

5.6 Scaffold Use

A. Scaffolds shall not be loaded in excess of their maximum intended loads or rated capacities.

B. Debris shall not be allowed to accumulate on platforms.

C. Do not stack brick, tile, block, or similar material higher than 24" on the scaffold deck.

D. Makeshift devices, such as boxes and barrels shall not be used on top of scaffold platforms to increase the working level height of employees.

E. Where swinging loads are being hoisted onto or near scaffolds such that the loads might contact the scaffold, tag lines or equivalent measures to control the loads shall be used.

F. Scaffolds shall never be altered or moved while they are in use or occupied.

G. Scaffolds shall not be moved or dismantled without first removing all loose tools, materials, and equipment resting on the scaffold deck.

H. Employee shall not work on scaffolds during storms or high winds.

I. Employee shall not work on scaffolds that are covered with ice, snow or mud, unless all ice, snow and/or mud is removed and planking sanded to prevent slipping.

J. The clearance between scaffolds and power lines shall be as follows: Scaffolds shall not be erected, used, dismantled, altered, or moved such that they or any conductive material handled on them might get closer to exposed and energized lines than as follows:

Table 5.6

Insulated Lines (Voltage)	**Minimum Distance**
Less than 300 volts	3 Feet
300 volts to 50 KV	10 Feet
More than 50 KV	10 Feet PLUS 4 inches for each 1 KV or 50 KV, or 2 times the length of the line insulator but never less than 10 Feet
Uninsulated Lines (Voltage)	**Minimum Distance**
Less than 50 KV	10 Feet
More than 50 KV	10 Feet PLUS 4 inches for each 1 KV or 50 KV, or 2 times the length of the line insulator but never less than 10 Feet

5.7 Fall Prevention and Fall Protection

A. Each employee on a scaffold more than 6 feet above the ground shall be protected from falling by means of a complete guardrail system (*fall prevention)* or approved personal *fall protection*. This requirement applies to both scaffold users and scaffold erectors/dismantles. See also HSSE Procedure, Working at Heights.

B. All scaffold work platforms should have complete guardrails and toe boards installed; however, if the guardrail is incomplete or missing, personal fall protection is required.

C. Fall Prevention

1. All scaffold guardrail systems must meet the design/performance requirements set forth in this section and by local regulatory agency standards.
2. Guardrail systems shall be installed along all open sides and ends of platforms.
3. Guardrail systems shall be completely installed before the scaffold is released for use by employees other than erection and dismantling crews.
   - Guardrail systems shall be surfaced to prevent injury to employees such as punctures or lacerations.
   - Top edge height of toprails or equivalent member shall be installed

between 38 and 45 inches.

- Each toprail or equivalent member shall be capable of withstanding, without failure, a force applied in any downward or outward direction of at least 200 pounds.
- Rope, No. 9 wire, banding material, or similar material, shall not be used as a toprail or midrail.
- Midrails shall be installed at a height approximately midway between the top edge of the guardrail system and the platform surface. When intermediate members are used as a midrail, they shall not be more than 19 inches apart.
- Each midrail or equivalent member shall be capable of withstanding, without failure, a force applied in any downward or outward direction of at least 150 pounds.

4. Where guardrail systems are incomplete, missing, or moved to allow access for work, personal fall protection shall be used on the affected platform(s).
5. In some cases a building, structure, equipment, or piping may prevent the proper installation of a complete scaffold guardrail, a Competent Person can determine whether these obstructions meet or exceed the applicable guardrail requirements; to be used instead of the scaffold guardrail system. The Competent Person should use the Scaffold Tag to indicate when these conditions are acceptable.

D. Personal Fall Protection

1. Approved personal fall protection is required any time employees work on, or erect a scaffold which is not protected by a complete deck and guardrails, and 6 feet or more above the ground. Working as stated above means while traveling, stationary, or at anytime exposed to a fall hazard.
2. Personal fall protection used on scaffolds shall be attached by a lanyard to a vertical lifeline, horizontal lifeline or approved scaffold structural member.
3. Personal fall protection is not required while using a designed ladder or access system, provided “three points of contact” are maintained when ascending or descending a scaffold ladder (access-way), and the requirements of this procedure and applicable regulatory agency standards for ladders and stairways are met.
4. Employees may not climb any ladder with anything in their hands. Tools and materials may be hoisted up or down by rope or other devices.

E. Falling Object Protection

1. All persons working on, or in the vicinity of scaffolds shall wear an approved hard hat. See also HSSE Procedure - Personal Protective Equipment Selection and Use for hard hats.
2. In addition to wearing hard hats, employees shall be provided with additional protection from falling hand tools, materials, debris and other small objects through the installation of toeboards, barricades, mesh/screens, debris nets, or

catch platforms/canopies.

3. Toeboards shall be part of the basic requirements for scaffolds. Where there is a hazard of tools, materials, or small objects falling from the surface of scaffold platforms and striking employees below, the area below the scaffold to which objects can fall shall:
   - Be barricaded and employees shall not be permitted to enter the hazard area, or
   - Have a secured 2" x 4" (nominal) toeboard that shall be erected along all edges of scaffold platforms more than 10 feet above lower levels.

4. Where tools and materials are stacked above the height of the toeboard, two additional protective measures should be considered:
   - Higher toeboards, or
   - Mesh/screen put up against the guardrail with openings small enough to contain materials on the platform.

5. In some cases, due to the nature or configuration of the scaffold/work area, debris nets, catch platforms or canopy structures may be erected to protect employees from falling objects, rather than the protective mechanisms listed above.
6. If used these structures must be strong enough to withstand the impact forces of the potential falling objects, and shall be erected over the employees below.
7. When potential falling objects are too large, heavy or massive to be contained by any of the above listed measures, those materials shall be placed away form edges and further secured from falling.

F. Mobile (Rolling) Scaffolds

1. Mobile scaffolds shall be used only on level, smooth surfaces free of major defects, or the wheels must be contained in wood or channel iron runners.
2. Mobile scaffolds shall be braced by cross, horizontal, or diagonal braces, or a combination thereof, to prevent racking or collapse of the scaffold and to ensure scaffolds remain plumb, level and squared at all times. All brace connections shall be secured.
3. Scaffold height during movement shall not exceed two times the minimum base.
4. Out-rigger frames, when used, are installed on both sides of the scaffold, and would be included in the base/height limit calculations.
5. No one is to ride on any part of a scaffold that is being moved.
6. All casters used with mobile scaffolding shall be provided with a positive locking device to hold the scaffold in position when the scaffold is stationary or while employees are on the scaffold.
7. Caster stems and wheel stems shall be pinned or otherwise secured in scaffold legs or adjustment screws.
8. Manual force used to propel the scaffold shall be applied as close to the base

as possible, and never more than five feet above the supporting surface.

9. Power systems used to propel mobile scaffolds shall be designed for such use. Forklifts, trucks or other similar motorized vehicles shall not be used to move scaffolds.

G. Suspended Scaffolds

1. Wire or fiber rope used for scaffold suspension, including connecting hardware, shall be capable of supporting at least 6 times the maximum intended load. All other components of suspended scaffolds, including support devices must be capable of supporting at least four times rated load capacity of the scaffold system.
2. The suspended scaffold, suspension ropes, connecting hardware, and the support devices must be inspected by a Competent Person before each use.
3. Approved personal fall protection is required for all occupants of a suspended scaffold, and shall be anchored to a fixed safe point of anchorage, which shall be independent of the scaffold, and shall be protected against sharp edges and abrasion.
   - Each individual will have a separate life line and fall arresting device.
   - Anchorages shall be capable of supporting 5,000 pounds per person attached.
4. Only those items specifically designed as counterweights shall be used as per the manufacturer's specifications on counterweight scaffold systems.
5. Outrigger beams which are not stabilized by bolts or other direct connections to the floor or roof deck shall be secured by tiebacks. Tiebacks shall be equivalent in strength to the suspension ropes and secured to a structurally sound anchorage on the building or structure.
6. Lifelines shall be secured to the ground at all times as to prevent excessive slack in the line.
7. The suspended scaffold shall be securely anchored to the ground when not in use as to prevent displacement from high winds.
8. When welding or cutting is performed from a suspended platform, precautions must be taken to cover/insulate any wire rope and attachment points exposed to potential heat or slag hazards.
9. When electric welding is performed from a suspended platform, the following precautions shall be taken:
   - An insulated thimble shall be used to connect the wire rope to its hanging support.
   - The suspension wire rope shall be covered with insulating material extending at least four feet above the hoist
   - Non-active lines; independent lines, excess suspension wire rope, tail lines... shall be covered/insulated for protection near the point of welding operations, and to prevent possible grounding contact with the platform, as well as secured so as not to provide a potential ground to the building/structure or the ground.

- Each hoist shall be covered with protective covers
- In addition to the work lead attachment required by the welding process, a grounding conductor shall be connected from the scaffold to the structure. The size of this conductor shall be at least the size of the welding process work lead, and this conductor shall not be in series with the welding process or the work piece.
- If the scaffold grounding lead is disconnected at any time, the welding machine shall be shut off
- The active welding rod or uninsulated welding lead shall not be allowed to contact the scaffold or its suspension system.

5.8 Inspection and Storage

A. Scaffold users shall read scaffold tags prior to using any scaffold. The instructions or warnings outlined on the tag must be followed. Users shall inspect the scaffold prior to, and during use; and report any defects or concerns to their Supervisor immediately.

B. Scaffolds and scaffold components shall be inspected for visible defects (e.g. Scaffold Inspection Checklist) by a Competent Person prior to initial use, before each work shift, and after any occurrence, which could affect a scaffold's structural integrity. The scaffold tag card shall be dated and initialed daily by the Competent Person upon completion of inspection.

C. Before erecting and during dismantling, trained scaffold craftsmen shall inspect all scaffold components. Those found with defects must be repaired or replaced immediately.

1. Handrails, midrails, cross bracing, and steel tubing shall be inspected for nicks, especially near center span, and indications where a welding arc has struck.
2. Scaffold components shall be straight and free from bends, kinks dents, and severe rusting.
3. Scaffold frame weld zones shall be inspected for cracks and ends of tubing for splitting or cracking.
4. Manufactured decking shall be inspected for loose bolt or rivet connections and bent, kinked, or dented frames. Plywood surfaces should be checked for softening due to rot or wear, and peeling or de-laminated layers at the edges. Scaffold boards should be inspected for rot, cracks, notches, and other damage. Also, inspect cleats if used.
5. Each quick-connecting device, whether spring, threaded connection, or toggle pin arrangement, should be inspected to see that it operates properly.
6. Casters, if used, should be inspected for smooth rolling surfaces, free turning, free acting swivel, and to be sure that the locking mechanism is in good working order

6.0 Training

6.1 Scaffold Erectors

A. These requirements are applicable to each employee who is involved in erecting, altering, disassembling, moving, repairing or inspecting a scaffold.

B. Training to recognize any hazards associated with scaffold erection shall be performed by a Competent Person. The Project Manager shall designate or assure that a Competent Person is designated for scaffold erection, dismantling and use.

C. The training shall include the following topics as applicable:

1. The nature of scaffold hazards
2. The correct procedures for erecting altering, disassembling, moving, repairing, and inspecting, the type(s) of scaffold intended to be utilized.
3. The design requirements, as well as the maximum intended load-carrying capacity and intended use of the scaffold.
4. The requirements of this procedure.

6.2 Scaffold Users

A. These requirements are applicable to each employee who performs work while on a scaffold.

B. Scaffold User training shall be performed by a person designated by the Site Manager. The training shall include the following topics as applicable:

1. The proper use of the scaffold, and the proper handling of materials on the scaffold.
2. The maximum intended load and load carrying capacities of the scaffolds used.
3. The nature of any overhead work/falling objects, personal fall, and electrical hazards in the work area, and;
   - The correct procedures for dealing with electrical hazards.
   - The proper use of personal fall protection equipment, and fall protection systems.
   - The overhead work/falling object protection systems being used.
4. The requirements of this procedure applicable to scaffold users.

6.3 Retraining

A. Retraining for both Scaffold Erectors and Scaffold Users is required when:

1. There are changes in the types of scaffolds, fall protection, falling object protection or other equipment or procedures related to the hazards associated with site scaffolding.
2. Changes in the worksite present new hazards to which the employee has not been previously trained.
3. An employee demonstrates a lack of skill or understanding or when an inadequacy in an affected employees work involving scaffolds indicates that the employee has not retained proficiency.

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Scaffolds

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