

Scaffolding Safety

DGS Accident and Illness Prevention Program (AIPP)

Protocol P-29

Table of Contents

- A.** Policy Statement
- B.** Application, Scope, and Purpose
- C.** Definitions
- D.** General Requirements
- E.** Additional Requirements Applicable to Specific
Types of Scaffolds
- F.** Communication of Hazards
- G.** Training
- H.** Recordkeeping

Appendix A: Training Sign-In Sheet

Appendix B: Scaffolding Safety Checklist

References

- DGS Secretary Topper’s “Safety Program Policy Statement”
- PA Management Directive 530.31 Amended
- PA Code Title 34 Chapter 129
- Element C of the DGS Accident & Illness Prevention Program (AIPP)
- CFR 29 1910 and CFR 29 1926

Notes:

1. DGS employees use only crawling-board, fabricated frame, horse, and mobile types of supported scaffolding. Most references to other types have therefore been omitted. Modifications to this protocol will be necessary if any other type of scaffolding is to be used, such as: pole, tube & coupler, plasterers’, decorators’, large-area, bricklayers’ square, bracket, needle-beam, stilt, form, carpenters’, roof bracket, pump-jack, ladder-jack, window-jack, step, platform, catenary, system, or any type of suspension scaffold.
2. Scaffolding is used in many forms and in many different situations. If any questions or difficulties arise in complying with this or any other applicable portion of the DGS AIPP, the Fire, Safety, & Environmental Division shall be consulted for assistance.

A. Policy Statement

The following protocol pertaining to scaffolding is official policy for the PA Department of General Services (DGS) and all of its employees. Authority and responsibility for its execution are pursuant to DGS Secretary Topper’s “Safety Program Policy Statement,” PA Management Directive 530.31, PA Code Title 34 Chapter 129 and “Element C” of the DGS Accident & Illness Prevention Program (AIPP). All of these documents are available for review online.

This protocol is based on material from the Occupational Safety & Health Administration, the Chesapeake Region Safety Council, and other expert sources on scaffold safety.

Due to the inherently hazardous nature of scaffolding operations, a Preoperational Process Review (DGS AIPP Protocol #11) must be conducted and documented prior to the erection, use, movement, maintaining, or disassembly of any scaffolding.

B. Application, Scope, and Purpose

This protocol applies to all scaffolds used in workplaces by DGS employees including scissor lifts. It does not apply to other types of aerial lifts even though they meet the definition of a scaffold. The requirements for aerial lifts other than scissor lifts are set out in DGS AIPP Protocol #16, “Elevating Work Platforms.”

The purpose of this protocol is to protect DGS employees from injury while erecting, using, moving, maintaining, or disassembling scaffolding. In addition to following the guidelines included here, employees should observe the fundamentals outlined in all elements and protocols within the DGS AIPP since many operations they cover may occur while scaffolding is being used.

C. Definitions

Body belt – (safety belt) a strap with means for securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration device (They are used in a positioning system to prevent an employee reaching a point from which he or she might fall, but not for use as part of a personal fall-arrest system.)

Body harness – a design of straps which may be secured about the employee in a manner to 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 personal fall arrest system

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 – one 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

Coupler – a device for locking together the tubes of a tube and coupler scaffold

Crawling board – (chicken ladder) a supported scaffold consisting of a plank with cleats spaced and secured to provide footing, for use on sloped surfaces such as roofs

Deceleration device – any mechanism, such as a rope grab, rip-stitch lanyard, specially-woven lanyard, tearing or deforming lanyard, or automatic self-retracting lifeline lanyard, which dissipates a substantial amount of energy during a fall arrest or limits the energy imposed on an employee during fall arrest

Equivalent – alternative designs, materials, or methods to protect against a hazard which will provide an equal or greater degree of safety for employees than the methods, materials, or designs specified in the standard

Exposed power line – electrical power lines which are accessible to employees and which are not shielded from contact. Such lines do not include extension cords or power tool cords

Fabricated decking and planking – manufactured platforms made of wood (including laminated wood, and solid sawn wood planks), metal or other materials

Fabricated frame scaffold (tubular welded frame scaffold) – scaffold consisting of a platform(s) supported on fabricated end frames with integral posts, horizontal bearers, and intermediate members

Failure – load refusal, breakage, or separation of component parts

Guardrail system – a vertical barrier, consisting of, but not limited to, top rails, midrails, and posts, erected to prevent employees from falling off a scaffold platform or walkway to lower levels

Horse scaffold – a supported scaffold consisting of a platform supported by construction horses (saw horses) (Horse scaffolds constructed of metal are sometimes known as trestle scaffolds.)

Ladder jack scaffold – a supported scaffold consisting of a platform resting on brackets attached to ladders

Ladder stand – a mobile, fixed-size, self-supporting ladder consisting of a wide flat tread ladder in the form of stairs

Landing – a platform at the end of a flight of stairs

Lifeline – a component consisting of a flexible line that connects to an anchorage at one end to hang vertically (vertical lifeline), or that connects to anchorages at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components of a personal fall arrest system to the anchorage

Lower levels – areas below the level where the employee is located and to which an employee can fall. Such areas include, but are not limited to, ground levels, floors, roofs, ramps, runways, excavations, pits, tanks, materials, water, and equipment

Management – managers, supervisors, foremen, or other employees with supervisory authority over others

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

Mobile scaffold – a powered or unpowered, portable, caster or wheel-mounted supported scaffold

Open sides and ends – the edges of a platform that are more than 14 inches away horizontally from a sturdy, continuous, vertical surface (such as a building wall) or a sturdy, continuous horizontal surface (such as a floor), or a point of access, except that for plastering and lathing operations the horizontal threshold distance is 18 inches

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

Overhand bricklaying – the process of laying bricks and masonry units such that the surface of the wall to be jointed is on the opposite side of the wall from the mason, requiring the mason to lean over the wall to complete the work, including mason tending and electrical installation incorporated into the brick wall during the overhand bricklaying process

Personal fall arrest system – a system used to arrest an employee’s fall, consisting of an anchorage, connectors, a body belt or body harness and may include a lanyard, deceleration device, lifeline, or combinations of these

Platform – a work surface elevated above lower levels, with platforms that can be constructed using individual wood planks, fabricated planks, fabricated decks, and fabricated platforms

Power operated hoist – a hoist which is powered by other than human energy

Qualified – one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related 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

Safety zone – an area established on a case-by-case basis surrounding a work area to prevent accidental entry by persons not involved in the work

Scaffold – any temporary elevated platform (supported or suspended) and its supporting structure (including points of anchorage), used for supporting employees or materials or both

Step, platform, and trestle ladder scaffold – a platform resting directly on the rungs of step ladders or trestle ladders

Supported scaffold – one or more platforms supported by outrigger beams, brackets, poles, legs, uprights, posts, frames, or similar rigid support

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

Tubular welded frame scaffold – (See “Fabricated frame scaffold.”)

Unstable objects – items whose strength, configuration, or lack of stability may allow them to become dislocated and shift and therefore may not properly support the loads imposed on them (Unstable objects do not constitute a safe base support for scaffolds, platforms, or employees. Examples include, but are not limited to, barrels, boxes, buckets, crates, loose bricks, and concrete blocks.)

Walkway – a portion of a scaffold platform used only for access and not as a work level

D. General Requirements

1. Capacity:

- a. Except as specifically mentioned in this section, each scaffold and scaffold component shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it.
- b. The use of hoists of any kind attached to scaffolding must be approved and overseen by a competent person; and, their weight plus the weight of their loads must not cause the requirements described in D.1.a., above, to be violated.
- c. Scaffolds shall be designed by a qualified person and shall be constructed and loaded in accordance with that design.

2. Scaffold platform construction:

- a. Each platform on all working levels of scaffolds shall be fully planked or decked between the front uprights and the guardrail supports as follows:
 - (1) Each platform unit (scaffold plank, fabricated plank, fabricated deck, or fabricated platform) shall be installed so that the space between adjacent units and the space between the platform and the uprights is no more than 1 inch wide, except where a wider space is necessary (for example, to fit around uprights when side brackets are used to extend the width of the platform).
 - (2) If more than 1 inch between the platform and the uprights is necessary, the platform shall be planked or decked as fully as possible and the remaining open space between the platform and the uprights shall not exceed 9 ½ inches.

(3) Full planking or decking does not apply to platforms used solely as walkways or solely by employees performing scaffold erection or dismantling. In these situations, only the planking that management establishes as necessary to provide safe working conditions is required.

- b. Each scaffold platform and walkway shall be at least 18 inches wide, unless scaffolds must be used in areas that are so narrow that platforms and walkways cannot be at least 18 inches wide. Such platforms and walkways shall be as wide as feasible, and employees on those platforms and walkways shall be protected from fall hazards by the use of guardrails and/or personal fall arrest systems.
- c. The front edge of all platforms shall not be more than 14 inches from the face of the work (18 inches for plastering and lathing operations), unless guardrail systems are erected along the front edge and/or personal fall arrest systems are used to protect employees from falling.
- d. Each end of a platform, unless cleated or otherwise restrained by hooks or equivalent means, shall extend over the centerline of its support at least 6 inches.
- e. Each end of a platform 10 feet or less in length shall not extend over its support more than 12 inches (18 inches for platforms over 10 feet in length) unless the platform is designed and installed so that the cantilevered portion of the platform is able to support employees and/or materials without tipping, or has guardrails which block employee access to the cantilevered end.
- f. On scaffolds where scaffold planks are abutted to create a long platform, each abutted end shall rest on a separate support surface. This provision does not preclude the use of common support members, such as “T” sections, to support abutting planks, or hook on platforms designed to rest on common supports.
- g. On scaffolds where platforms are overlapped to create a long platform, the overlap shall occur only over supports, and shall not be less than 12 inches unless the platforms are nailed together or otherwise restrained to prevent movement.
- h. At all points of a scaffold where the platform changes direction, such as turning a corner, any platform that rests on a bearer at an angle other than a right angle shall be laid first. Platforms that rest at right angles over the same bearer shall be laid second, on top of the first platform.
- i. Wood platforms shall not be covered with opaque finishes, except that platform edges may be covered or marked for identification. Platforms may be coated

periodically with wood preservatives, fire-retardant finishes, and slip-resistant finishes; however, the coating may not obscure the top or bottom wood surfaces.

j. Scaffold components manufactured by different manufacturers shall not be intermixed unless the components fit together without force and the scaffold's structural integrity is maintained by the user. Scaffold components manufactured by different manufacturers shall not be modified in order to intermix them unless a competent person determines the resulting scaffold is structurally sound.

k. Scaffold components made of dissimilar metals shall not be used together unless a competent person has determined that galvanic action will not reduce the strength of any component.

3. Criteria for supported scaffolds:

a. Supported scaffolds with a height to base width (including outrigger supports, if used) ratio of more than four to one (4:1) shall be restrained from tipping by guying, tying, bracing, or equivalent means as follows:

(1) Guys, ties, and braces shall be installed at locations where horizontal members support both inner and outer legs.

(2) 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 3 feet wide or less, and every 26 feet or less thereafter for scaffolds greater than 3 feet wide. The top guy, tie, or brace of completed scaffolds shall be placed no further than the 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 (measured from one end [not both] towards the other).

(3) Ties, guys, braces, or outriggers shall be used to prevent the tipping of supported scaffolds in all circumstances where an eccentric load, such as a cantilevered work platform, is applied or is transmitted to the scaffold.

b. Supported scaffold poles, legs, posts, frames, and uprights shall bear on base plates and mud sills or other adequate firm foundation.

(1) Footings shall be level, sound, rigid, and capable of supporting the loaded scaffold without settling or displacement.

(2) Unstable objects shall not be used to support scaffolds or platform units.

(3) Unstable objects shall not be used as working platforms.

(4) Front-end loaders and similar pieces of equipment shall not be used to support scaffold platforms unless they have been specifically designed by the manufacturer for such use.

(5) Fork-lifts shall not be used to support scaffold platforms unless the entire platform is attached to the fork and the fork-lift is not moved horizontally while the platform is occupied.

c. Supported scaffold poles, legs, posts, frames, and uprights shall be plumb and braced to prevent swaying and displacement.

4. Access – This section applies to scaffold access for all employees. Access requirements for employees erecting or dismantling supported scaffolds are specifically addressed in paragraph i. of this Section 4.

a. When scaffold platforms are more than 2 feet above or below a point of access, portable ladders, hook-on ladders, attachable ladders, stair towers (scaffold stairways/towers), stairway-type ladders (such as ladder stands), ramps, walkways, integral prefabricated scaffold access, or direct access from another scaffold, structure, personnel hoist, or similar surface shall be used. Cross braces shall not be used as a means of access.

b. Portable, hook-on, and attachable ladders –

(1) Portable, hook-on, and attachable ladders shall be positioned so as not to tip the scaffold.

(2) Hook-on and attachable ladders shall:

(a) be positioned so that their bottom rung is not more than 24 inches above the scaffold supporting level,

(b) have rest platforms at 35-foot maximum vertical intervals,

(c) be specifically designed for use with the type of scaffold used,

(d) have a minimum rung length of 11 ½ inches, and

(e) have uniformly spaced rungs with a maximum spacing between rungs of 16 ¾ inches.

c. Stairway-type ladders shall:

- (1) be positioned such that their bottom step is not more than 24 inches above the scaffold supporting level,
- (2) be provided with rest platforms at 12-foot maximum vertical intervals,
- (3) have a minimum step width of 16 inches, except that mobile scaffold stairway-type ladders shall have a minimum step width of 11 ½ inches, and
- (4) have slip-resistant treads on all steps and landings.

d. Stairtowers (scaffold stairway/towers) – *This section will be completed if the use of stairtowers is considered in the future.*

e. Ramps and walkways –

- (1) Ramps and walkways 6 feet or more above lower levels shall have guardrail systems which comply with the fall protection section of this protocol.
- (2) No ramp or walkway shall be inclined more than a slope of one (1) vertical to three (3) horizontal (20 degrees above the horizontal).
- (3) If the slope of a ramp or a walkway is steeper than one (1) vertical in eight (8) horizontal, the ramp or walkway shall have cleats not more than fourteen (14) inches apart which are securely fastened to the planks to provide footing.

f. Integrated prefabricated scaffold access frames shall:

- (1) be specifically designed and constructed for use as ladder rungs,
- (2) have a rung length of at least 8 inches,
- (3) not be used as work platforms when rungs are less than 11½ inches in length, unless each affected employee uses fall protection, or an approved positioning device,
- (4) be uniformly spaced within each frame section,

(5) be provided with rest platforms at 35-foot maximum vertical intervals on all supported scaffolds more than 35 feet high, and

(6) have a maximum spacing between rungs of 16 $\frac{3}{4}$ inches. Non-uniform rung spacing caused by joining end frames together is allowed, provided the resulting spacing does not exceed 16 $\frac{3}{4}$ inches.

g. Steps and rungs of ladder and stairway type access shall line up vertically with each other between rest platforms.

h. Direct access to or from another surface shall be used only when the scaffold is not more than 14 inches horizontally and not more than 24 inches vertically from the other surface.

i. Access for employees erecting or dismantling supported scaffolds shall be in accordance with the following:

(1) Management shall provide safe means of access for each employee or erecting or dismantling a scaffold where the provision of safe access is feasible and does not create a greater hazard. A competent person shall determine whether it is feasible or would pose a greater hazard to provide, and have employees use a safe means of access. This determination shall be based on site conditions and the type of scaffold being erected or dismantled.

(2) Hook-on or attachable ladders shall be installed as soon as scaffold erection has progressed to a point that permits safe installation and use.

(3) When erecting or dismantling tubular welded frame scaffolds: end frames, with horizontal members that are parallel, level and are not more than 22 inches apart vertically may be used as climbing devices for access, provided they are erected in a manner that creates a usable ladder and provides good hand hold and foot space.

(4) Cross braces on tubular welded frame scaffolds shall not be used as a means of access or egress.

5. Use –

(a) Scaffolds and scaffold components shall not be loaded in excess of their maximum intended loads or rated capacities, whichever is less.

- (b) Shore or lean-to scaffolds shall not be used.
- (c) Scaffolds and scaffold components shall be inspected for visible defects by a competent person before each work shift, and after any occurrence which could affect a scaffold's structural integrity (see Appendix B – Scaffolding Safety Checklist).
- (d) Any part of a scaffold damaged or weakened such that its strength is less than that required by paragraph 1. of this section shall be immediately repaired or replaced, braced to meet those provisions, or removed from service until repaired.
- (e) Scaffolds shall not be moved horizontally while employees are on them unless they have been designed by a registered professional engineer specifically for such movement; or, for mobile scaffolds, where the applicable provisions of the next section (Section E) are followed.
- (f) Scaffolds shall not be erected, used, dismantled, altered, or moved such that they or any conductive material handled on them might come closer to exposed and energized power lines than as follows:

- (1) insulated lines less than 300 volts – 3 feet,
- (2) insulated lines 300 volts to 50,000 volts – 10 feet,
- (3) insulated lines more than 50,000 volts – 10 feet plus 0.4 inches for each 1,000 volts over 50,000 volts (or – 2 times the length of the line insulator but never less than 10 feet),
- (4) uninsulated lines less than 50,000 volts – 10 feet,
- (5) uninsulated lines over 50,000 volts – 10 feet plus 0.4 inches for every 1,000 volts over 50,000 volts.

Exception for de-energized lines – Scaffolds and materials may be closer to power lines than specified above where such clearance is necessary for performance of work, but only after the lines have been deenergized, relocated, or protected from accidental contact by the utility company or electrical system operator.

- (g) Scaffolds shall be erected, moved, dismantled, or altered only under the supervision and direction of a competent person qualified in scaffold erection, moving, dismantling or alteration. Such activities shall be performed only by

experienced and trained employees selected for such work by the competent person.

(h) Employees shall be prohibited from working on scaffolds covered with snow, ice, or other slippery material except as necessary for removal of such materials.

(i) 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.

(j) *to be completed for suspension ropes if used in the future*

(k) *to be completed for suspension ropes if used in the future*

(l) Work on or from scaffolds is prohibited during storms or high winds unless a competent person has determined that it is safe for employees to be on the scaffold and those employees are protected by a personal fall arrest system or wind screens. Wind screens shall not be used unless the scaffold is secured against the anticipated wind forces imposed.

(m) Debris shall not be allowed to accumulate on platforms.

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

(o) Ladders shall not be used on scaffolds to increase the working level height of employees.

(p) Platforms shall not deflect more than 1/60 of the span when loaded.

(q) *to be completed for suspended scaffolding if used in the future*

6. Fall protection –

(a) Each employee on a scaffold more than 10 feet above a lower level shall be protected from falling to that lower level. Fall protection requirements differ by type of scaffold, as specified below. The next section [6. (b)] outlines the fall protection requirements for employees erecting or dismantling scaffolds.

(1) Each employee on a boatswains' chair, catenary scaffold, float scaffold, needle beam scaffold, or ladder jack scaffold shall be protected by a personal fall arrest system.

(2) Each employee on a single-point or two-point adjustable suspension scaffold shall be protected by both a personal fall arrest system and guardrail system.

(3) Each employee on a crawling board (chicken ladder) shall be protected by a personal fall arrest system, a guardrail system (with minimum 200 pound toprail capacity), or by a three-fourth inch diameter grabline or equivalent handhold securely fastened beside each crawling board.

(4) Each employee on a self-contained adjustable scaffold shall be protected by a guardrail system (with minimum 200 pound toprail capacity) when the platform is supported by the frame structure, and by both a personal fall arrest system and a guardrail system (with minimum 200 pound toprail capacity) when the platform is supported by ropes.

(5) Each employee on a walkway located within a scaffold shall be protected by a guardrail system (with minimum 200 pound toprail capacity) installed within 9 ½ inches of and along at least one side of the walkway.

(6) Each employee performing overhand bricklaying operations from a supported scaffold shall be protected from falling from all open sides and ends of the scaffold (except at the side next to the wall being laid) by using a personal fall arrest system or guardrail system (with minimum 200 pound toprail capacity).

(7) For all scaffolds not otherwise specified in paragraphs (1) through (6) above, each employee shall be protected by using personal fall arrest systems or guardrail systems meeting the requirements specified in Protocol #19 of the DGS AIPP (Fall Hazard Prevention & Control).

(b) Management shall provide fall protection for employees erecting or dismantling supported scaffolds where the installation and use of such protection is feasible and does not create a greater hazard.

(c) Protocol #19 of the DGS AIPP (Fall Hazard Prevention & Control) shall be reviewed as part of the pre-operational process planning for all operations involving the use of scaffolding, and all of its requirements shall be met.

7. Falling object protection –

(a) In addition to wearing hardhats each employee on a scaffold shall be provided with additional protection from falling hand tools, debris, and other small objects through the installation of toeboards, screens, or guardrail systems, or through the erection of debris nets, catch platforms, or canopy structures that contain or deflect the falling objects. When the falling objects are too large, heavy, or massive to be contained or deflected by any of the above-listed measures, management shall direct that such potential falling objects are kept away from the edge of the surface from which they could fall and are secured as necessary to prevent their falling.

(b) Where there is a danger of tools, materials, or equipment falling from a scaffold and striking employees below, the following provisions apply:

(1) 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, a toeboard shall be erected along the edge of platforms more than 10 feet above lower levels for a distance sufficient to protect employees below.

(2) Where tools, materials, or equipment are piled to a height higher than the top edge of the toeboard, paneling or screening extending from the toeboard or platform to the top of the guardrail shall be erected for a distance sufficient to protect employees below; or, a guardrail system shall be installed with openings small enough to prevent passage of potential falling objects; or, a canopy structure, debris net, or catch platform strong enough to withstand the impact forces of the potential falling objects shall be erected over the employees below.

(c) Canopies, when used for falling object protection, shall be installed between the falling object hazard and the employees.

(d) Toeboards where used shall be:

(1) capable of withstanding, without failure a force of at least 50 pounds applied in any downward or horizontal direction at any point along the toeboard; and,

(2) at least three and one-half inches high from the top edge of the toeboard to the level of the walking-working surface; and,

(3) securely fastened in place at the outermost edge of the platform; and,

- (4) installed in such a way as to have not more than ¼ inch clearance above the walking-working surface; and,
- (4) solid or with openings not over one inch in the greatest dimension.

E. Additional Requirements Applicable to Specific Types of Scaffolds

In addition to the preceding requirements, the following requirements apply to the specific types of scaffolds indicated. Scaffolds not specifically addressed here, such as but not limited to systems scaffolds, must meet the previously listed General Requirements (Section D).

1. “Fabricated frame scaffolds” (tubular welded frame scaffolds) –

- (a) When moving platforms to the next level, the existing platform shall be left undisturbed until the new end frames have been set in place and braced prior to receiving the new platforms.
- (b) Frames and panels shall be braced by cross, horizontal, or diagonal braces, or combination thereof, which secure vertical members together laterally. The cross braces shall be of such length as will automatically square and align vertical members so that the erected scaffold is always plumb, level, and square. All brace connections shall be secured.
- (c) Frames and panels shall be joined together vertically by coupling or stacking pins or equivalent means.
- (d) Where uplift can occur which would displace scaffold end frames or panels, the frames or panels shall be locked together vertically by pins or equivalent means.
- (e) Brackets used to secure cantilevered loads shall:
 - (1) be seated with side-brackets parallel to the frames and end-brackets at 90 degrees to the frames;
 - (2) not be bent or twisted from these positions; and,
 - (3) be used only to support personnel, unless the scaffold has been designed for other loads by a qualified engineer and built to withstand the

tipping forces caused by those other loads being placed on the bracket-supported section of the scaffold.

(f) Scaffolds over 125 feet in height above their base plates shall be designed by a registered professional engineer, and shall be constructed and loaded in accordance with such design.

2. “Horse scaffolds” –

(a) Horse scaffolds shall not be constructed or arranged more than two tiers or 10 feet in height, whichever is less.

(b) When horses are arranged in tiers, each horse shall be placed directly over the horse in the tier below.

(c) When horses are arranged in tiers, the legs of each horse shall be nailed down or otherwise secured to prevent displacement.

(d) When horses are arranged in tiers, each tier shall be crossbraced.

3. “Crawling boards” (chicken ladders) –

(a) Crawling boards shall extend from the roof peak to the eaves when used in connection with roof construction, repair, or maintenance.

(b) Crawling boards shall be secured to the roof by ridge hooks or by means that meet equivalent criteria (e.g., strength and durability).

4. “Mobile scaffolds” –

(a) Mobile scaffolds shall be braced by cross, horizontal, or diagonal braces, or combination thereof, to prevent racking or collapse of the scaffold and to secure vertical members together laterally so as to automatically square and align the vertical members.

(b) Mobile scaffolds shall be plumb, level, and square and have all brace connections secured.

(c) Mobile scaffolds shall be of the “fabricated frame” type only and shall also comply with the requirements of section E.1. of this protocol.

- (e) Mobile scaffold casters and wheels shall be locked with positive wheel and/or wheel and swivel locks, or equivalent means, to prevent movement of the scaffold while the scaffold is used in a stationary manner.
- (f) Manual force used to move the mobile scaffold shall be applied as close to the base as practicable, but not more than 5 feet above the supporting surface.
- (g) Power systems used to propel mobile scaffolds shall be designed for such use. Forklifts, trucks, similar motor vehicles or add-on motors shall not be used to propel scaffolds unless the scaffold is designed for such propulsion systems.
- (h) Scaffolds shall be stabilized to prevent dipping during movement.
- (i) Employees shall not be allowed to ride on mobile scaffolds unless the following conditions exist:
 - (1) The surface on which the scaffold is being moved is within 3 degrees of level, and free of pits, holes, and obstructions.
 - (2) The height to base width ratio of the scaffold during movement is two to one or less.
 - (3) Outrigger frames, when used, are installed on both sides of the scaffold.
 - (4) When power systems are used, the propelling force is applied directly to the wheels, and does not produce a speed in excess of 1 foot per second.
 - (5) No employee is on any part of the scaffold which extends outward beyond the wheels, casters, or other supports.
- (j) Platforms shall not extend outward beyond the base supports of the scaffold unless outrigger frames or equivalent devices are used to ensure stability.
- (k) Where leveling of the scaffold is necessary, screw jacks or equivalent means shall be used.
- (l) Caster stems and wheel stems shall be pinned or otherwise secured in scaffold legs or adjustment screws.
- (m) Before a scaffold is moved, each employee on the scaffold shall be made aware of the move.

5. Aerial lifts – Any device that lifts workers to a higher level is a type of scaffold, but is also an “Elevating Work Platform” (or “aerial lift”). The use of all such devices are governed not only under this protocol, but also under Protocol #16 of the DGS AIPP (Elevating Work Platforms).

F. Communication of Hazards

1. Physical warning barriers, such as portable posts or saw horses with ropes, shall be set up around the safety zone of any scaffold erection or disassembly operations to prevent employees and passersby from accidentally entering.
2. Warning signs that managers or supervisors in charge of scaffold use deem appropriate shall be posted in and around scaffold work areas. As each situation warrants in the opinion of the managers or supervisors in charge, warnings about hazards such as tripping, moving machinery, falling objects, or others should be considered.

G. Training

1. Advance training sufficient to allow for the safe performance of scaffold erection, use, maintenance, moving, and disassembly operations shall be arranged for all workers by management.
2. Training needs should be determined by management during pre-operational planning and delivered prior to the job’s commencement.
3. Training for all employees working with, on, or around scaffolding shall at a minimum include the following areas:
 - (a) the nature of any electrical hazards, fall hazards, and falling object hazards in the work area;
 - (b) correct procedures for dealing with electrical hazards and for erecting, maintaining, and disassembling the fall protection systems and falling object protection systems being used;
 - (c) proper use of the scaffold, and the proper handling of materials on the scaffold;

(d) maximum intended load and the load-carrying capacities of the scaffolds used; and,

(e) any other subjects that management deems applicable based on the characteristics of the individual job.

4. Training for employees who are expected to erect, disassemble, repair, inspect, or move scaffolding shall be trained by a competent person in the correct procedures for those functions, along with any unusual hazards expected.

5. Training shall also include reviewing this protocol with each participating employee.

H. Recordkeeping

1. Manufacturers' product manuals, instruction manuals, record of purchase date, training records, and other pertinent materials that are available shall be kept on file by the managers, supervisors and foremen responsible for scaffold use operations.

2. Scaffold safety training records shall be kept on file by the managers or supervisors in charge of scaffolding operations when new training or re-training is required, and a copy of the sign-in sheet shall be provided to the DGS Safety Coordinator. Completion of the attached form (Appendix A) along with a brief summary of the job in question shall constitute an acceptable training record.

Appendix B – Scaffolding Safety Checklist

1. ___ The Scaffolding protocol was reviewed during pre-job planning.
2. ___ All components of the scaffolding were inspected prior to erection.
3. ___ Base plates are firmly attached to mudsills and on a solid, level surface.
4. ___ Scaffold is plum, level, and square.
5. ___ All joints & connections are tight.
6. ___ Each work deck is fully planked in accordance with this protocol.
7. ___ Work surfaces are free of ice, snow, debris, or other trip / fall hazards.
8. ___ All guardrails are in place, or workers are using fall arrest equipment if > 10 feet high.
9. ___ Supplies, equipment, and other necessary items are neatly and safely stored.
10. ___ Toeboards or lower level barricades are installed to protect from falling objects.
11. ___ Everyone working on the scaffold has been trained to do so safely.
12. ___ If the height to width ratio exceeds 4:1, the scaffolding has been secured as required.
13. ___ The scaffold is capable of supporting at least 4 times the maximum intended load.
14. ___ Electrical hazards, including power lines, are isolated or de-energized.
15. ___ All workers on and around the scaffold wear hardhats.
16. ___ Workers erecting, altering, or disassembling scaffolding are trained to do so.

Date _____ Inspected by _____ Location _____

NOTE: This checklist covers only some of the basic scaffold issues. Review the protocol for all requirements.