

# Protocol #13

## Rigging

# DGS Accident and Illness Prevention Program (AIPP)

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### **Appendix A:** P-13 Training Sign-In Sheet

#### **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 1926

## **A. Policy Statement**

The following protocol for rigging 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 policy includes material that applies directly to DGS operations. It is based on material from the Occupational Safety & Health Administration, the National Safety Council and other credible resources in the area of rigging safety.

This policy must be considered together with DGS Protocol P-11 – Preoperational Process Review since most instances of rigging involve new or altered processes. In instances where there is no record of a preoperational process review having been conducted pertaining to a particular rigging job, a preoperational process review must be conducted and documented.

## **B. Application, Purpose and Scope**

This protocol applies to situations where rope, chain, wire-rope and/or fabric-straps are used to lift, lower, move or suspend an object.

The purpose of this protocol is to protect DGS employees from injury during rigging operations. In addition to following the guidelines included here, employees should observe the fundamentals outlined in all of the elements and protocols within the DGS AIPP since many operations they cover may occur during rigging operations.

This protocol does not apply to the proper use of forklifts and pallet-jacks when they are used to lift loads that are properly stacked on pallets which is covered under DGS AIPP protocols P-26 (Powered Industrial Trucks) and P-25 (Materials Handling & Storage).

This protocol does not apply to the proper use of rescue hoists and other equipment related to confined space entry, which is governed by DGS AIPP Protocol P-07.

## **C. Definitions**

**Breaking strength** – the load-weight at which a specific material or object will destabilize, deform or break

**Competent person** – someone designated by management as 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, including stopping work until corrective measures are completed

**Mousing** – lashing between the neck and the tip of a hook to prevent the load from coming off

**Personal protective equipment (PPE)** – specialized clothing or equipment worn by an employee for protection against a hazard

**Rigging** - lifting, lowering, moving or suspending objects with rope, chain, wire rope, fabric straps, etc.

**Rigging accessories** – any devices used to connect a load to rigging equipment that are not part of the load such as wire rope, chain, rope, synthetic fiber slings, hooks, fittings, swivels, shackles, eye bolts, pad eyes, rigging screws, wedge sockets, plate clamps, spreader bars, lifting beams, etc.

**Rigging equipment** – any tool or piece of equipment, motorized or manual, that is used to lift, move or suspend another object

**Safe working load** – the maximum allowable working load established by the manufacturer of any piece of equipment or accessory used in rigging operations

**Safety factor** – the ratio of breaking strength to the force to be applied to the rigging equipment

**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.

**Shock loading** – the rapid application of force causing rigging equipment and accessories to bear much more than just the weight of the load

**Static loading** – the slow, even and gradual application of force so that little more than the weight of the load is ever borne by the rigging equipment and accessories

**Suitable equipment** – rigging equipment or accessories that have passed pre-job inspection, are within any applicable expiration date and are rated in writing by their manufacturer or an engineer for the functions they will be used to perform

**Work area** – an area encompassing the current position of a load, the load’s final position, the path between those two positions, and the areas where employees will need to maneuver to complete the work

## **D. Requirements**

1. Pre-operational planning according to DGS AIPP protocol P-11 shall be conducted before any new or altered rigging operations begin. The competent person who will be present during the rigging operations shall participate in the pre-operational planning.
2. All rigging equipment and/or accessories will be operated within their specific safe working load limitations or breaking strength. In order to prevent the failure of rigging equipment or accessories, a safety factor of two to one shall be maintained as a minimum. For example if an item’s breaking strength is 1,000 lbs., then that item cannot be loaded with any more than 500 lbs. The safety factor allows a margin for failure prevention in the event of accidental shock loading, unsuitable equipment being undetected during pre-job inspections, or other accidental errors.
3. Static loading shall be performed in all instances. Shock loading is a common cause of catastrophic rigging failures and must be avoided.
4. Managers in charge of rigging operations shall make sure that the following information is available during pre-operational planning and rigging operations for each piece of equipment to be used:
  - a. manufacturer’s product manual or other similar documents if they exist, instruction manual if one exists, and record of purchase date and/or other documents needed to allow for safe and proper operation
  - b. load-bearing capacity rating of all equipment and rigging accessories

- c. inspection requirements and records
  - d. up-to-date certificates for any equipment requiring them
5. If the approved plan is not working as expected, the competent person must stop the work and a new plan of action must be developed. Management will consult with the Fire, Safety & Environmental Division if they need help devising a safe plan.
  6. Under no circumstances may a person be underneath a load, on a load, or within the descent path of an object being lowered.
  7. Only employees trained and necessary to a rigging operation may be present within the safety zone surrounding a load's position, movement path or expected position and any such presence must be carefully controlled by the competent person in-charge. The competent person in-charge shall direct employees to leave the safety zone as soon as their presence is no longer necessary or if risk levels rise to an unacceptable level. The safety zone's dimensions are to be established on a case-by-case basis by the competent person in-charge based upon the characteristics of the job.
  8. All employees involved in rigging operations will wear DGS-provided PPE including hardhats, gloves and safety glasses while working or being in the vicinity prior to the job's conclusion.
  9. All rigging equipment and/or accessories shall be inspected prior to each use. Equipment or accessories that are not suitable for use (not rated or recommended for the loads or techniques anticipated) shall be taken out of service immediately and replaced with suitable equipment. Managers in charge of rigging operations shall ensure that information from manufacturers or other authoritative sources on the safety and suitability standards for each piece of equipment is available for reference.
  10. All equipment shall be used in accordance with manufacturers' instructions or best-practices guidelines.

## **E. Communication of Hazards**

1. Physical barriers, such as portable saw horses with ropes, shall be set up around the safety zone of any rigging operations so that neither employees nor passersby will accidentally enter the safety zone.

2. Signs warning of hazards such as moving machinery, falling objects, etc. shall be posted along with the physical barriers cordoning off the safety zone.

## **F. Training**

1. Training sufficient to allow for the safe performance of rigging operations shall be arranged by the managers in charge. If a planned rigging operation is unique, training needs should be determined by the manager in charge during pre-operational planning and delivered prior to the job's commencement.
2. The purposes of pre-job training are to make employees aware of their role(s) in the process and to familiarize them with the proper use and limitations of the rigging equipment, rigging accessories and tools they will use.
3. Training should also include the review of this protocol with each participating employee.

## **G. Recordkeeping**

1. Manufacturer's product manuals, instruction manuals, record of purchase date, and other materials required by this protocol and training materials shall be kept on file by the managers, supervisors, and foremen responsible for rigging operations.
2. Training records shall be kept on file by managers in charge of rigging 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.

