



SANFORD UNDERGROUND RESEARCH FACILITY

SOUTH DAKOTA SCIENCE AND TECHNOLOGY AUTHORITY

Powered Industrial Trucks (PIT's) Standard

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Revision History

Rev	Date	Section	Paragraph	Summary of Change	Authorized by
01	6/27/2023	NA	NA	Initial Release	CCR 780
02	5/8/24	5 & 6	5.4 & 6.1	First Report form title change	CCR 947

1.0 Purpose

The purpose of this standard is to ensure that all Powered Industrial Trucks (PITs) shall be managed to protect workers against associated hazards.

South Dakota Science and Technology Authority (SDSTA) references the following to fulfill this standard:

- OSHA 1910.178, Powered Industrial Trucks
- ANSI/ITSDF B56.1-2020 Safety Standard for Low Lift and High Lift Trucks

2.0 Scope

This standard applies to all personnel that utilize PITs at Sanford Underground Research Facility (SURF).

3.0 Definitions

Attachments – A device added to the PIT, designed and built by the user, purchased from a commercial supplier, or provided by the manufacturer of the PIT, other than the conventional forks, and intended to carry the load. Examples include non-conventional forks, fork extensions, extension booms, non-conventional or special or unique load handlers, rotating devices, side shifters, load stabilizers and jib crane booms. A removable attachment is an attachment that can be mounted on the forks, or in place of the forks on the carriage, by means of such conventional fasteners as bolts, pins, etc., and does not require the disassembly of any other portion of the lifting system to install or remove.

Bulldozing – The action that results when an operator would have one pallet on the forks, then use the load to push other pallets ahead of the truck. Bulldozing may also involve having two pallets arranged vertically on the forks plus pushing up to six pallets (single or double stacked) out in front of the truck. This action is prohibited at SURF. See Section 5.4.4

Free Rigging – The direct attachment to or placement of rigging equipment (slings, shackles, rings, etc) onto the tines of a PIT for a below-the-tines lift. This type of lift does not use an approved lifting attachment. This action is prohibited at SURF.

Powered Industrial Trucks (PIT) – A mobile, power-propelled truck used to carry, push, pull, lift, stack or tier materials. This includes but is not limited to forklifts, electric pallet truck/jack, and walk-behinds with elevating mechanisms. PITs can be powered by electric motors or combustion engines.

Qualified Operator – An individual deemed competent by management after successfully completing the Training and Qualification requirements of this chapter.

Qualified Person – A person who, by possession of a recognized degree, certificate or professional standing, or who by extensive knowledge, training and experience has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work or the project.

Split-forking – The action that results when the operator moves two palletized loads by inserting one fork in each pallet. This action is prohibited at SURF.

4.0 Responsibilities

4.1. SDSTA Department Directors

- 4.1.1. Implement the requirements associated with the use of PITs.
- 4.1.2. Ensure that only properly trained and authorized operators use PITs.
- 4.1.3. Ensure that direct reports are trained to perform the assigned work.
- 4.1.4. Ensure accountability of the requirements of this document with direct reports.

4.2. Engineering Director

- 4.2.1. Arranges for the review of attachment Engineering Notes by qualified persons or committee.
- 4.2.2. Retains all Engineering Notes (if required) for attachments used in their departments.

4.3. Surface Operations and Utilities (SOU) Department

- 4.3.1. Ensures maintenance, repair, and upkeep of all powered industrial trucks.
- 4.3.2. Retains preventative maintenance records for all PITs owned and operated by SDSTA.

4.4. Environment, Safety, and Health (ESH) Department

- 4.4.1. Maintains the lesson plan and training materials for the classroom phase of the operator training.
- 4.4.2. Maintains documentation of all classroom training, on-the-job training and evaluations.
- 4.4.3. Provides technical support and assists departments in implementing an effective PIT program.
- 4.4.4. Reviews and revises the standard for compliance with applicable regulations.

4.5. Supervisors/Project Managers

- 4.5.1. Ensure operators adhere to the requirements of this standard.
- 4.5.2. Ensure that operators are competent to operate PITs safely as demonstrated by completion of training and evaluation.

4.6. Operators

- 4.6.1. Adhere to the requirements of this standard.
- 4.6.2. Obtain all required training before operating a PIT.
- 4.6.3. Conduct a pre-use inspection prior to operation.
- 4.6.4. Understand the load capacity before operating a PIT for maximum stability.
- 4.6.5. Obtain a signal person to direct if load blocks visibility of the driver.
- 4.6.6. Stop work and report any damaged PITs to your supervisor immediately and lock and tag equipment out of service.
- 4.6.7. Wear appropriate PPE while operating PITs.
- 4.6.8. Wear seat belt/restraint to protect against recognized hazards.
- 4.6.9. Practice good housekeeping of PITs.

5.0 Instructions

5.1. Training and Qualifications

- Operator Qualifications

- Must be current in their qualification training within this standard.
- Must hold a valid U.S. driver's license.
- Operators using previous training and experience as the basis for accepting qualifications shall be documented.
- When there are special hazards/features associated with a particular piece of equipment, e.g., unfamiliar controls or modifications to the original design, a qualified person will determine whether the operator(s) shall receive additional training and must be documented on an ESH-(12000-F)-201425 Training Certificate.
- Operator Training
 - Training shall include both classroom and On The Job (OJT). Demonstration of the operator's abilities to perform all activities expected or anticipated for the job will be part of the qualification process during OJT.
 - OJT must be conducted in the environment, or one similar, to where the PIT is to be operated.
 - A qualified person shall observe such demonstrations and document the performance results on the training certificate. A record of this training shall be maintained in the electronic database. Operator qualification is for a period of three (3) years unless withdrawn within that period by the operator's supervisor.
- Certification Records
 - Training records certifying operator qualification shall include the name of the trainee, date of training, and the signature of the trainer or evaluator. This includes contractors performing work at SURF.
- Refresher Training
 - Refresher training may be provided to operators involved in:
 - ◆ An accident.
 - ◆ A near-miss.
 - ◆ Observed operating a forklift in an unsafe manner.
 - ◇ The operator's supervisor will determine the level of training needed under these circumstances.
 - Shall be provided after 3 years since previous training.

5.2. Inspections

- Pre-use Inspections
 - Visual inspection shall be completed for each PIT and any attachment prior to the start of each shift, or prior to the first use of the day for equipment not in continuous service. A qualified operator shall conduct the inspection, and preferably one that is familiar with the specific equipment. Pre-use inspections are required to be documented. Each operator must perform their own pre-use inspection.
 - Prior to PITs being placed into service, the pre-use inspection shall be completed by a qualified operator.

- Defects on any equipment, machinery, and tools that affect safety shall be noted during the pre-use inspection and corrected in a timely manner.
 - ◆ When defects make continued operation hazardous to persons, the defective items including self-propelled mobile equipment shall be taken out of service and placed in a designated area posted for that purpose, or a tag or other effective method of marking the defective items shall be used to prohibit further use until the defects are corrected.
- Preventative Maintenance Inspection
 - Scheduled inspections shall occur and be maintained in an electronic database for PITs as part of the Preventative Maintenance and Repair program described in this Standard.
 - All attachments used in the course of operating a PIT must be inspected and used in accordance with the manufacturer's requirements and recommendations. Inspections shall be maintained in an electronic database. Minimum inspection criteria shall incorporate the items as noted in this Standard. At a minimum, each attachment will be inspected visually before each use.

5.3. Attachments

- All PIT attachments used at SURF shall meet the requirements of this Standard.
- PIT attachments provided and used by outside contractors in execution of their contract work are outside the scope of the following engineering note procedure but must adhere to the balance of this Standard.
- Engineering Notes
 - An Engineering Note shall be prepared by a qualified person for each PIT attachment used at SURF (irrespective of who owns it) unless it was purchased from a reputable manufacturer, was constructed to meet applicable codes, has not been modified in any manner, and is used in accordance with manufacturer's instructions.
 - Engineering Notes for all attachments shall include:
 - ◆ Attachment unique identifier.
 - ◆ Identification of PIT(s) or class of PIT(s) for which it is designed.
 - ◆ Allowable operating parameters: load rating, operation envelope, etc.
 - ◆ Operating instructions, if required for safe operation.
 - ◆ Inspection frequency and criteria.
 - Engineering Notes for attachments designed at SURF or other non-commercial institutions (such as Universities or other Laboratories) shall include design compliance calculations to verify that the attachment meets, as a minimum, the requirements of ASME B56.1 and 29 CFR 1910, as well as demonstrating a safety factor greater than or equal to 3 on yield strength for all load bearing components.
 - Modifications to PIT attachments (whether designed at SURF or other non-commercial institutions such as Universities, other Laboratories or purchased from a commercial source engaged in the manufacturing of lifting fixtures) shall be documented in the Engineering Notes.

- Load tests shall be documented in the Engineering Notes.
- Review of Engineering Notes
 - All PIT attachment Engineering Notes shall be reviewed by a qualified person for compliance with the requirements of this Standard.
- Amendment of Engineering Notes
 - All subsequent changes in usage that could affect the safety of personnel or the capability of performance of the attachment shall require an amendment to the original Engineering Note. This amendment shall be reviewed in the same manner as the original note.
- Similar Attachments
 - Attachments that are manufactured or fabricated to meet previously engineered, fabricated and reviewed attachments, need not have the full engineering analysis repeated. Documentation shall be provided by reference to an existing approved Engineering Note and detailing of all differences. A load test shall still be required.
- Attachment Load Test
 - If the PIT is equipped with front-end attachments other than factory installed attachments, the user may request that the truck be marked to identify the attachments and show the approximate weight of the truck and attachment combination at maximum elevation with load laterally centered.
 - Commercially manufactured PIT attachments do not need to be load tested unless the attachment has been altered, repaired, or modified. In this case a qualified person must be consulted, and documentation is needed to show ratings and load test.

5.4. Operations

- PITs shall only be used in the environment, atmospheres, and surfaces for which they are designated by the manufacturer for use as per 29 CFR 1910.178(c).
- Warehouse Practices
 - PITs operators shall use precautions while working at the loading dock.
 - PITs operators shall maintain sufficiently safe clearances for aisles, pedestrian traffic walkways and at loading docks or passages specified.
- Use of Restraint Devices
 - If the PIT was manufactured with a seat belt and/or restraint device, its use is mandatory.
 - Take the PIT out of service if the seat belts and/or restraint devices are damaged or missing.
- Prohibited and Restricted Work Practices
 - The practice of split-forking or free rigging is prohibited.
 - The practice of bulldozing is prohibited. Only stable or safely arranged loads shall be handled. Caution shall be exercised when handling off-center loads which cannot be centered.
 - The use of a spinner knob on the steering wheel is not allowed except on stand-up rider trucks where steering is designed to be accomplished with one hand and a steering wheel

is used or if the PIT is equipped with an anti-kickback device on the steering mechanism. The operator must exercise caution when using a spinner knob to avoid over-controlling the vehicle that would cause the vehicle to tip over.

- Unauthorized personnel shall not be permitted to ride on PITs. A safe place to ride shall be provided where riding of trucks is authorized.
- Damage to PITs
 - When a PIT is damaged, it shall be locked and tagged “out of service”. An ESH-(3000-F)-173324 First Report shall be filled out and submitted to the ESH department as soon as possible or before the end of the shift in the event of an incident. If there is significant damage, an investigation will be conducted on the incident. Do not return to service until repaired and, if applicable, until acceptance testing has been completed.

5.5. Driving PITs on Public Roads

- At times it may be necessary to drive a PIT on public roads. These are slow moving vehicles that may introduce a collision hazard because of their slow speeds. A PIT equipped with a rotating yellow light or yellow strobe light and an operating horn does not need an escort as long as the rotating yellow light or yellow strobe and the horn are in working condition and the lights turned ON. A PIT without a yellow strobe or rotating beacon requires an escort when transiting.

6.0 Documented Information/Related Document

- 6.1.** ESH-(3000-F)-173324 First Report
- 6.2.** OSHA 1910.178, Powered Industrial Trucks
- 6.3.** ANSI/ITSDF B56.1-2020 Safety Standard for Low Lift and High Lift Trucks