



# **SANFORD UNDERGROUND RESEARCH FACILITY**

**SOUTH DAKOTA SCIENCE AND TECHNOLOGY AUTHORITY**

## **Mobile Equipment and Powered Industrial Truck Standard**

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## **Revision History**

<b>Rev</b>	<b>Date</b>	<b>Section</b>	<b>Paragraph</b>	<b>Summary of Change</b>	<b>Authorized by</b>
01	4/28/2026	NA	NA	Initial Release	CCR 1264

## 1.0 Purpose

The purpose of this standard is to establish minimum requirements for the safe operation of mobile equipment and Powered Industrial Trucks (PITs). This includes requirements for training, evaluation, authorization, inspection, and safe operation of equipment. This standard does not replace task specific procedures or manufacturer requirements, which shall also be followed.

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

- OSHA 29 CFR 1910.178
- OSHA 1910.178(l)
- OSHA 29 CFR 1926.602 – Material Handling Equipment
- OSHA 29 CFR 1926.20 and 1926.21 – Safety Training and Education
- OSHA General Duty Clause, Section 5(a)(1)
- ANSI/ITSDF B56.1 2020 Safety Standard for Low Lift and High Lift Trucks
- South Dakota Vehicle Code
- Manufacturer Operating Manuals

## 2.0 Scope

This standard is applicable to all personnel, regardless of affiliation, at Sanford Underground Research Facility (SURF).

## 3.0 Definitions

**Attachment** – A device installed on equipment that affects its operation, load handling, or function. Attachments shall be approved for the specific equipment and used within manufacturer or engineering-defined limits.

**Authorized Operator** – An individual who has completed required SDSTA training, practical instruction, evaluation, and documented authorization to operate specific mobile equipment or PIT types. Authorization shall be maintained within the Learning Management System (LMS).

**Bulldozing** – Using a powered industrial truck to push one or more loads with the forks or load rather than properly lifting and transporting the load. This practice is prohibited.

**Certified Evaluator** – A person designated by the Environment, Safety and Health (ESH) Department who has been determined to be competent, through training, experience, and demonstrated knowledge, to evaluate operator competency on mobile equipment. The Certified Evaluator is authorized to conduct, document, and verify practical demonstrations and performance-based evaluations to ensure operators can safely and effectively operate assigned equipment in accordance with SDSTA standards, applicable regulatory requirements, and manufacturer guidelines.

**Competent Person** – A competent person is someone capable of identifying existing and predictable hazards in the workplace and who has the authority to take prompt corrective measures to eliminate them.

**Evaluation** – A documented demonstration of an operator’s ability to safely inspect, operate, and control equipment, recognize hazards, and respond appropriately to abnormal or emergency conditions. Evaluations shall be conducted by a certified evaluator or qualified trainer prior to independent operation.

**Learning Management System (LMS)** - A software application or web-based technology used to plan, implement and assess a specific learning process.

**Mobile Equipment** – Any self-propelled or power-propelled vehicle or machine used to transport personnel, materials, or equipment, or to perform work activities. Mobile equipment includes, but is not limited to, loaders, skid steers, haul trucks, utility vehicles, aerial equipment, and underground equipment.

**Mobile Equipment Pre-Use Inspection** – A required operator-performed inspection conducted prior to use to verify that equipment is safe and functional. Equipment shall not be operated until the inspection is completed. Inspections shall be documented in accordance with SDSTA requirements.

**Periodic Inspection** – A scheduled and documented inspection conducted in accordance with manufacturer recommendations and SDSTA maintenance requirements.

**Powered Industrial Truck (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 Trainer** - A person who has a recognized degree, certificate, or professional standing—or extensive knowledge, training, and experience to effectively deliver instruction, evaluate competence, and ensure safe work practices in mobile equipment/PIT operations.

**Rated Capacity** – The maximum load that equipment is designed to safely lift, carry, or handle under specified operating conditions, including configuration and attachments, as established by the manufacturer or approved engineering documentation.

**Restraint System** – Manufacturer-installed seat belts or operator restraint devices designed to protect the operator during operation, including rollover or sudden movement events.

**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.

**Spotter** – A trained individual who provides direction to an equipment operator when visibility, maneuverability, or environmental conditions limit safe operation.

**Three-Point Contact** – A safe method of mounting and dismounting equipment using three points of contact at all times.

**Travel Path** – The intended route of equipment movement that shall be evaluated for hazards, obstructions, ground conditions, and personnel exposure prior to and during operation.

## 4.0 Responsibilities

### 4.1. SURF Laboratory Director

#### 4.1.1. Ensures accountability of the requirements of this standard with direct reports.

**4.2. SDSTA Department Directors**

- 4.2.1.** Ensure personnel under their supervision are trained and meet the requirements of this standard.
- 4.2.2.** Verify training records are submitted to ESH.
- 4.2.3.** Provide a complete list of equipment currently in use and any equipment to be brought onsite to the ESH department for training and documentation.
- 4.2.4.** Provide operations manual to ESH for training development.
- 4.2.5.** Ensure that only authorized operators use equipment.

**4.3. Project Managers**

- 4.3.1.** Ensure that only authorized operators use equipment.
- 4.3.2.** Ensure personnel under their supervision are trained and meet the requirements of this standard.
- 4.3.3.** Coordinate with ESH for scheduling training.
- 4.3.4.** Ensure third party training records are provided to ESH.

**4.4. ESH Department**

- 4.4.1.** Maintains SDSTA's mobile equipment and PIT certification programs within the LMS.
- 4.4.2.** Maintains PIT certification records, evaluations, and authorization lists.
- 4.4.3.** Certifies Mobile Equipment Evaluators.
- 4.4.4.** Conducts oversight and updates this standard as necessary.
- 4.4.5.** Submit ESH-7000-F-003 Mobile Equipment and Powered Industrial Truck Evaluator Certification Letter for approval.

**4.5. Supervisors**

- 4.5.1.** Ensure that only authorized operators use equipment.
- 4.5.2.** Ensure personnel under their supervision are trained and meet the requirements of this standard.
- 4.5.3.** Immediately remove from service any equipment with defects.
- 4.5.4.** Ensure employees comply with all requirements of this standard.

**4.6. Certified Evaluators**

- 4.6.1.** Complete the required training.
- 4.6.2.** Conduct mobile equipment/PIT evaluations.
- 4.6.3.** Follow the ESH-7000-WI-010 Mobile Equipment and Powered Industrial Truck Evaluation Work Instruction when conducting evaluations.
- 4.6.4.** Submit mobile equipment/PIT operator evaluation form to ESH.

**4.7. Operators**

- 4.7.1.** Complete all required LMS courses and practical evaluations.
- 4.7.2.** Perform pre-use inspections.
- 4.7.3.** Operate equipment safely and in accordance with training and manufacturer instructions.
- 4.7.4.** Report hazards and deficiencies.
- 4.7.5.** Wear seat belts and restraint systems or operator restraints when required.

## 5.0 Instructions

### 5.1. General Requirements

- SDSTA vehicle operators shall hold a valid driver's license for the applicable vehicle class and provide license information to SDSTA in accordance with the applicable SDSTA-(Manual)-187303 SDSTA Policy-Procedure Manual.
- Operators shall be authorized by SDSTA and complete required certification through the LMS before operating equipment.
- Operators shall operate equipment within manufacturer limitations and site conditions and shall not operate while impaired, fatigued, or distracted.
- Personnel are prohibited from being under unblocked or unsupported raised equipment. (e.g. blades, buckets, forks, etc.)
- Operators shall maintain exclusive control of equipment and shall not leave it unattended unless implements are lowered, controls neutralized, brakes applied, and power is shut off.
- Seat belts and restraint systems shall be worn at all times when available. Roll over protection structure (ROPS) and other safety structures shall remain installed and unmodified.
- Unsafe conditions, near misses, malfunctions, or equipment damage shall be reported immediately.
- All personnel operating personal vehicles, bicycles, motorcycles, or other self-propelled equipment on SURF property must comply with the South Dakota Vehicle Code, as well as all SDSTA traffic, parking, and transportation regulations.

### 5.2. Training Requirements

- All mobile equipment and PIT operators shall complete training in accordance with the ESH-12000-S-001 ESH Training Standard.
- Training shall be appropriate to the type of equipment and the conditions under which the equipment will be operated.
- Training shall consist of formal instruction, practical training, and demonstrated competency through evaluation.
- Training shall cover, at a minimum:
  - Equipment operating instructions.
  - Operating limitations and controls.
  - Recognition and avoidance of hazards.
  - Required inspections and removal from service criteria.
  - Use of required safety features, including seat belts and restraint systems.
  - Safe travel practices and right of way rules.
  - Emergency procedures.
- Operators shall demonstrate competency through evaluation by a certified evaluator or qualified trainer.
- The evaluation shall be documented within Jotform, using Mobile Equipment and PIT Operator Evaluation Form, prior to the operator being permitted to operate equipment without supervision.
- The evaluation shall include demonstration of the ability to:
  - Conduct required pre-use inspections using Pre-Use Inspection Form (Part# 7060).
  - Safely start, operate, and shut down equipment.
  - Maintain control and operate within equipment limits.
  - Identify hazards and maintain safe travel paths.

- Handle loads safely, when applicable.
  - Respond appropriately to equipment malfunctions or emergency conditions.
- Refresher training or retraining shall be required when:
  - The operator is involved in an accident, near miss, or equipment damage incident.
  - The operator is observed operating in an unsafe manner.
  - New equipment is introduced or significant operational changes occur.
  - The operator has not operated the equipment for a period of time that could affect safe operation.
- Only trained, evaluated, and authorized operators shall be permitted to operate mobile equipment or PITs. Equipment shall not be operated until required training, evaluation, and documented authorization have been completed.
- Additional PIT specific requirements in Section 5.4 shall apply when the equipment is classified as a Powered Industrial Truck.

### **5.3. Mobile Equipment/PIT Pre-Use Inspections**

- Pre-Use Inspection Form (Part# 7060) shall be completed and documented by the operator prior to each use.
  - Attachments shall be inspected prior to use when installed on the equipment.
  - When defects or safety related deficiencies are identified that could affect safe operation, the equipment shall be removed from service, tagged or otherwise marked to prevent use, and shall not be returned to service until corrected.
- Periodic inspections shall be conducted and documented in accordance with manufacturer recommendations.

### **5.4. Operation of Mobile Equipment and PIT**

- Equipment shall be operated at safe speeds appropriate to conditions.
- Only trained, evaluated, and authorized operators may operate PITs.
- Operator evaluations shall be conducted at least once every three years.
- PITs shall not be operated if found to have defects, damage, or unsafe conditions and shall be removed from service until corrected.
- When a PIT is damaged or causes property damage, it shall not be returned to service until repaired and inspected as necessary.
- If equipped with a seat belt or restraint system, its use is mandatory.
- Under all travel conditions, equipment shall be operated at a speed that permits it to be brought to a stop safely.
- Operators shall maintain clear visibility. A spotter shall be used when visibility or maneuverability is limited, and equipment shall stop immediately if contact with the spotter is lost.
- Operators shall use horns to communicate movement:
  - Two blasts forward
  - Three blasts reverse
  - One blast stop.
  - Horns shall be sounded at blind corners, intersections, and as required underground.
- Travel paths shall be inspected and kept free of hazards, and operators shall obey posted signs, barricades, and designated travel lanes.
- Operators shall maintain safe clearances from pedestrians, structures, edges, loading areas, and fixed objects.

- Operators shall reduce speed on uneven terrain, slopes, wet surfaces, and underground haulage ways.
- Only stable and safely arranged loads shall be handled.
- Loads shall be within rated capacity, secure, and carried low during travel.
- Off-center loads shall be handled with caution and only when the equipment can be operated within its rated capacity and stability limits.
- Underground operations require reduced speed and horn use at intersections and blind areas.
- Operation across slopes that increase rollover risk is prohibited.
- Equipment shall not be operated in a manner that creates uncontrolled movement, loss of stability, or risk to personnel or property.
- Parking requirements include:
  - Forks/attachments shall be fully lowered
  - Controls neutralized
  - Parking brake applied
  - Power shutdown
  - Rail stops in place for railed equipment near shafts
  - And at least one of the following:
    - Wheel chocks on uneven ground.
    - Park in designated parking spaces.
    - Park in parking ditches.
    - Park in front of an established berm.
    - Turn wheels to curb.

#### **5.5. Mobile Elevated Work Platform Equipment (MEWP).**

- MEWPs shall comply with all applicable requirements of this standard.
- MEWPs shall comply with the ESH-7000-S-007 Fall Protection and Prevention Standard.

#### **5.6. PIT Specific Requirements**

- PITs shall comply with all applicable requirements of this standard.
  - The requirements of this section are in addition to all other applicable requirements of Section 5.0.
- The practices of split-forking, free rigging, and bulldozing are prohibited.
- Forks shall be carried low while traveling.
- PITs shall travel in reverse when the load obstructs forward view.
- Passengers are prohibited unless manufacturer-approved seating is provided.
- Loads shall remain within rated capacity and shall be kept upgrade on slopes.
- Personnel shall only be lifted using approved platforms compliant with OSHA requirements.

#### **5.7. Attachments and Modifications**

- Attachments shall be approved for the specific equipment and used within manufacturer limits.
- Modifications or additions that affect safe operation, load rating, or stability shall not be made without manufacturer approval or documented engineering review.
- The use of unapproved, modified, or makeshift attachments is prohibited.
- When required, engineering documentation shall define:

- Equipment compatibility
- Load ratings and operating limits
- Inspection requirements
- Safe operating procedures
- Attachments shall be inspected prior to use and during periodic inspections in accordance with manufacturer recommendations.
- Equipment nameplates, markings, or capacity information shall be updated as required to reflect the use of attachments.
- Operators shall be trained on the proper use, limitations, and hazards associated with any attachment prior to use.

#### **5.8. Maintenance and Repair**

- Only qualified personnel may perform maintenance or repairs.
- Lockout and tagout shall be applied when required.
- Unsafe equipment shall be tagged out of service until repaired.
- Scheduled preventive maintenance inspections shall be conducted in accordance with manufacturer recommendations and documented.
- Equipment shall not be returned to service until repairs affecting safe operation have been completed and the equipment is determined safe for use.

#### **5.9. Pedestrian Safety**

- Pedestrians have the right of way at marked crosswalks and all underground intersections. At all other points on roadways, pedestrians must give way to vehicles. This includes making positive confirmation with the mobile equipment operator to ensure it is safe to proceed.
- Underground pedestrians shall monitor entrances and travel ways, be aware of mobile equipment, and locations to avoid being struck by or caught in between.
- Personnel shall move into a cutout, shelter hole, or crosscut when rail traffic is approaching. Pedestrian cutouts are identified by red reflectors.
- Do not walk beside or get on or off moving equipment.
- Avoid standing near rail switches or on the inside of curves when equipment is passing.
- Personnel shall not cross over, under, or between railcars unless:
  - The locomotive is fully stopped; and
  - The operator has been notified and has acknowledged the notice.

#### **5.10. Incident Reporting**

- All incidents, near misses, and equipment damage shall be reported in accordance with the ESH-3000-S-001 Incident Management Standard.

## **6.0 Documented Information/Related Documents**

- 6.1.** ESH-3000-S-001 Incident Management Standard
- 6.2.** ESH-7000-S-007 Fall Protection and Prevention Standard
- 6.3.** ESH-7000-WI-010 Mobile Equipment and Powered Industrial Truck Evaluation
- 6.4.** ESH-7000-F-003 Mobile Equipment & Powered Industrial Truck Evaluator Certification Letter
- 6.5.** ESH-12000-S-001 ESH Training Standard
- 6.6.** SDSTA-(Manual)-187303 SDSTA Policy-Procedure Manual

- 6.7.** OSHA 29 CFR 1910.178 – Powered Industrial Trucks
- 6.8.** OSHA 29 CFR 1926.602 – Material Handling Equipment
- 6.9.** OSHA 29 CFR 1926 Subpart O – Motor Vehicles, Mechanized Equipment
- 6.10.** OSHA 29 CFR 1926.20 and 1926.21 – Safety Training and Education
- 6.11.** OSHA General Duty Clause, Section 5(a)(1)
- 6.12.** ANSI/ITSDF B56.1 2020 Safety Standard for Low Lift and High Lift Trucks