

Section 3.05 Mobile Mechanized Equipment

1. Scope

This section establishes safety requirements for heavy equipment, powered industrial trucks (forklifts), aerial lifts, and mobile mechanized equipment (to include rental equipment) at all Reclamation facilities and constructions sites.

2. General Requirements

Qualified personnel must operate mobile mechanized equipment in compliance with this section, applicable Department of Transportation (DOT) regulations, and Occupational Safety and Health Administration (OSHA) Standards 29 CFR 1910 and 29 CFR 1926. See Appendix 3.05-B, Applicable Standards and Regulations, for a list of applicable reference materials.

3. Responsibilities

a. Area Office Manager

- Shall ensure qualified personnel inspect all mobile mechanized equipment, as required by this section.

b. First-Line Supervisors

- Shall provide training to employees assigned to operate mechanized equipment and ensure that employees are proficient and qualified, as required by this section.
- Shall assign only trained and qualified employees to operate mobile mechanized equipment.

c. Employees

- Shall obtain and complete all training and evaluations for the mobile mechanized equipment the employee is assigned to operate, as required by this section.
- Shall inspect and perform maintenance on all mobile mechanized equipment, as appropriate and as required by this section.
- Shall demonstrate proficiency to operate mobile mechanized equipment.
- Shall meet the physical requirements of any job that requires the operation of mobile mechanized equipment.
- Shall meet the DOT licensing requirements for on-highway operations and possess a current commercial drivers' license (CDL) and comply the applicable OSHA standards on jobsites where DOT is not applicable.
- Shall comply with applicable operating instructions, limitations, regulations, and written safety programs and plans.

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d. Contracting Officer's Representative

- Shall ensure contractors complete inspections as required by this section when the contractor's mobile mechanized equipment arrives at the Reclamation site.
- Shall receive verification from the contractor that contract employees are trained and qualified for the mobile mechanized equipment the contract employee is assigned to operate, as required by this section.

4. Training Requirements

a. Initial

The initial training program requirements must consist of the following:

- a review of the operator's manual or competent trainer-prepared operational manual/handout based on information from the manufacturer, instructions by lecture, discussions, interactive computer learning, videos, or written material,
- practical, hands-on training that includes demonstrations performed by the trainer, and
- practical hands-on exercises performed by the trainee under direct observation of the trainer. Trainers shall complete a proficiency evaluation of each operator at the conclusion of the training.

Qualified trainers must conduct the training on the type of equipment the trainee will be operating on the job. When differences exist between equipment used for training and equipment being used on the job, the trainer will explain those differences, in detail, to the trainee prior to use.

b. Certification

- Industrial Trucks. Industrial truck operators must have and maintain the appropriate certifications. An evaluation of each powered industrial truck operator's performance shall be conducted at least once every 3 years.
- Commercial Driver's License (CDL). Obtain a CDL for equipment as required by local, State, and Federal requirements. For CDL requirements including drug testing, see Reclamation Safety and Health Standard (RSHS) Section 1.21, Motor Vehicle Safety.
- Heavy Equipment. Operators of heavy equipment, other than the equipment listed in paragraphs 3.05.4.b.(1), Industrial Trucks, and 3.05.4.b.(2), Commercial Driver's License (CDL), of this RSHS, do not require certification; however, the operators shall receive training in accordance with paragraph 3.05.4.a, Initial, of the RSHS and 29 Code of Federal Regulations (CFR) 1926.21(b)(2).

c. Proficiency Qualification

Mechanized equipment training shall follow the manufacturers' requirements for safe proficient operation.

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d. Lack of Proficiency

First-line supervisors shall immediately stop an operator who demonstrates a lack of proficiency when operating mechanized equipment. Employees shall receive refresher training anytime an operator has been observed to operate mechanized equipment in an unsafe manner, has been involved in an accident or near-miss while operating the mechanized equipment, evaluation shows lack of proficiency, conditions in the workplace have changed that could affect safe operation, or the operator is assigned to a different type of equipment.

e. Recordkeeping

- **Training Documentation.** The training provider shall document initial training on all mechanized equipment to include the name of the training organization, if one is used; instructor's name and signature; operator's name; date of the training; the make, model, and configuration of the mechanized equipment used in the evaluation; proficiency of operation; and any attachments included in the training. This RSHS includes Attachment 3.04-C, Heavy Equipment Operator Training Documentation Form, for use as training documentation. If the training provider uses another tool to document training, it shall capture the required information listed in this paragraph.
- **Records.** Reclamation shall keep records in the Department of the Interior's approved repository and manage records in accordance with the Information Management Handbook as referenced in Reclamation Manual Directive and Standard, Information Management (RCD 05-01).

5. Pre-job Briefing and Planning Requirements

The first-line supervisor shall include all employees involved in a project in the pre-job briefing and planning requirements prior to starting work. The first-line supervisor and the relevant employees shall plan and review the Job Hazard Analysis (JHA) to ensure the written JHA includes appropriate procedures for job tasks. First-line supervisors shall conduct a post-job JHA review per RSHS 1.04, Work Safety Planning, paragraph 1.04.5.d.(9), Post-job JHA Review, and shall verify an employee has the proficiency to utilize the mechanized equipment to do their job, at a level sufficient to meet the hazards identified in the JHA.

6. Hazardous Environmental Conditions (Weather/Other)

Operators shall not operate mechanized equipment when hazardous environmental conditions (weather/other) will not allow for the safe operation of the equipment.

7. Personal Protective Equipment (PPE)

Operators shall wear appropriate PPE while operating mechanized equipment per the manufacturer's requirement or the hazard assessment.

8. Other Safety Equipment

Any additional safety equipment used during the operation of mechanized equipment must not impede or restrict the operation of the original safety equipment installed by the manufacturer.

9. Safe Practices

a. Unusual Equipment Configurations

- Requirements. Operators shall not use equipment in unusual configurations, those which are not addressed in the manufacturers' operations and maintenance manual, until the following information and procedural documents have been obtained or developed:
 - equipment manufacturer's written approval, and
 - after receiving no response or a negative response from the manufacturer, an evaluation and documentation from a professional engineer, who is versed in the particular type of equipment.
- Exceptions. Exceptions to these requirements include hydraulic excavating machine hoisting operations conforming with the applicable provisions in this section.
- Speeds. Operators will not operate equipment above posted speed limits or at speeds greater than those reasonable and safe considering weather conditions, traffic, road conditions, type and condition of equipment, and manufacturer's recommendations. Operators must always maintain control of the equipment and be able to stop within the clear-sight distance.
- Gears Engaged. Operators shall not operate any vehicle on a downgrade with gears in neutral or with the clutch disengaged.
- Towing. The first-line supervisor shall not permit employees to stand or walk between a towed vehicle and the towing vehicle, except when hooking or unhooking the vehicles.
- Unattended at Night. Construction project equipment left on publicly accessible roadways overnight should comply with the respective elements of the Manual of Traffic Control Devices (MUTCD), 2009 Edition, which is incorporation by reference in 1926.200(g)(2). Where work is in progress off a roadway, equipment shall be delineated by signs, cones, lights, reflectors, or lighted/reflective barricades to identify the location of the equipment.
- Unauthorized Riding. Operators shall not allow employees to ride in or on mobile equipment unless they are sitting in a seat designed and installed for that purpose.
- Securing Loads. Qualified personnel shall ensure that the trailer used to transport equipment is rated to safely handle the weight of the equipment and its attachments. Qualified personnel shall properly distribute, chock, tie down, or otherwise secure the load on every piece of mobile equipment. Operators must also secure tools and material during transport and, where possible, keep stored items and personnel in separated locations.

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- Seats and Seatbelts. Operators shall not allow passengers to ride on or in equipment unless they are seated with installed seatbelts fastened. This excludes stand-up operating equipment that is not equipped with a belt-type restraint system or a fall protection system. All operators and/or employees are required to use the provided restraint system for stand-up operating equipment if one is available.
- Emergency Equipment. First-line supervisors shall provide operators of all trucks and combination vehicles operated on public roads, including all buses and vehicles carrying flammables, explosives, or hazardous materials, with emergency equipment. Operators shall carry at least 1 portable fire extinguisher, minimum 5- pound 3-A:40-B:C-rated, and a first aid kit meeting the requirements of the American National Standards Institute (ANSI) Z308.1 and RSHS Section 1.05, Medical Services and First Aid.
- Wheel chocks. Operators shall use 2-wheel chocks for each vehicle or trailer where there is a possibility that the vehicle will move or shift because of roadway conditions or loading or unloading of the vehicle or trailer, as required in 29 CFR 1910.178(k)(1), Mechanical Means to Secure Trucks.
- Fire extinguishers. Operators must ensure that all fire extinguishers on equipment are inspected and in a serviceable condition.
- Backup alarms. Operators shall ensure all Reclamation-owned bi-directional heavy equipment and rental equipment alarms are operable and audible above any background noise at the work site.
- Horns. Operators shall ensure that bi-directional machines, such as rollers, compactors, front-end loaders, bulldozers, and similar equipment, are equipped with a horn distinguishable from the surrounding noise level, which shall be operated as needed when the machine is moving in either direction. The horn shall be maintained and operational.
- Overhead Powerlines Observer. An observer shall be designated for the purpose of providing timely warning for all operations where it is difficult for the operator to maintain the required minimum approach distances from overhead powerlines by visual means. The observer must be positioned to visually monitor the clearance between the equipment and the power lines. The designated observer cannot be assigned other duties that interfere with the ability to give a timely danger warning to the equipment operator.

b. Inspection Requirements

- Initial Inspection. The operator must conduct an initial inspection on all mobile equipment before conducting required onsite brake performance tests to ensure that the equipment is in safe condition per the operator's manual and that it meets the original design specifications or has been modified with manufacturer approval or professional engineer certification and the standards of this section. The operator must conduct inspections at the site and record the inspection using Appendix 3.05-A of this RSHS. A Reclamation representative must review the form, when applicable. Operators or qualified personnel

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must repair and reinspect unsafe equipment before it is returned to service and/or before the brakes are tested. The operator must inspect, and document equipment exempted from brake tests before that equipment is used.

- **Periodic Inspection.** The operator must inspect equipment in service at the beginning of each daily work shift. First-line supervisors must keep daily inspection logs within the unit and must not place the inspected unit into service unless applicable equipment and accessories are in safe operating condition, including:
 - service brake,
 - secondary brake,
 - parking brake,
 - windows,
 - tires,
 - warning devices,
 - steering mechanism,
 - operating controls,
 - wipers,
 - defrosters,
 - coupling devices, and
 - fire extinguishers.

c. Maintenance Requirements

- **Removal from Service.** The operator or maintenance technician must remove equipment from service whenever an unsafe condition is detected. No employee may place the unsafe equipment back into service until it has been repaired and tested or inspected to ensure that the equipment is safe to operate.
- **Repair Shutdown.** The operator must shut down and secure equipment from any accidental release of hazardous energy (see RSHS Section 1.13, Control of Hazardous Energy, Lockout/Tagout), while making repairs or adjustments unless operation is essential to making the adjustments or repairs. All energy isolation devices shall be used during the repair process if required.
- **Refueling.** Refueling is subject to the requirements set forth in the operator's manual and in RSHS Section 3.01, Standards for Material Handling, Storage, and Disposal.
- **Tire Repair.** Supervisors shall provide a safety tire cage that operators shall use when inflating, mounting, or dismounting tires installed on "split rims" or rims equipped with locking rings or similar devices. Welders shall not weld on rims unless the tire has been removed. Operators shall reference the appropriate OSHA wall chart or equivalent poster when performing tire repairs:
 - OSHA Publication 3401, Tubeless Truck and Bus Tires Wall Chart,
 - OSHA Publication 3402, Tube Type Truck and Bus Tires Wall Chart, or
 - OSHA Publication 3403, Multi-piece Rim Matching Chart.

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- **Blocking.** Operators shall block or crib equipment or parts suspended or held aloft by cables, hydraulic cylinders, slings, ropes, hoists, jacks, or manufacturer-supplied hazardous energy control devices, or lower the equipment or parts to a supporting surface before permitting employees to work in, under, or between pieces of equipment or parts.
- **Brake Repair.** Operators shall use a vacuum with a high efficiency particulate air filter to clean asbestos-lined brake assemblies. Operators shall not use compressed air for cleaning asbestos-lined brake assemblies. Operators shall refer to RSHS Section 2.02, Asbestos, paragraph 2.02.4.b.(2), Prohibited Work Practices, if working on asbestos-lined brake assemblies.

d. Testing Requirements

Operators shall conduct operational tests required by the manufacturer's maintenance and operational manuals at the recommended intervals, including onsite brake tests when included in operational tests for specific equipment. Operators shall appropriately log test results and make them available.

e. Requirements for On-Highway Equipment

Trucks over 10,000 lb. (GVW). Operators using tractor/trailer combinations, transmix trucks, dump trucks and buses, and self-propelled and rubber-tired truck cranes and excavators shall meet the applicable requirements of this RSHS, Appendix 3.05-A of this RSHS, and all applicable DOT requirements contained in 49 CFR 390-399, Federal Motor Carrier Safety Regulations. When on-highway equipment is used at the worksite, operators shall follow the applicable OSHA and DOT requirements.

f. Mechanized Equipment Requirements

- **General.** Mechanized equipment and operations must meet the requirements of this section, including Appendix 3.05-A.
- **Operator Enclosure.** Qualified personnel shall equip crawler tractors, loaders, or forestry machines with operator area enclosures when used in tree-clearing operations or other operations where objects may intrude into the operator's area.
- **Certification of Rollover Protective Structures (ROPS) and Falling Objects Protective Structures (FOPS).** First-line supervisors shall verify that the ROPS and FOPS are certified by one of the following methods:
 - manufacturer or PE's written confirmation that the structures meet required design criteria, or
 - permanent labels attached to the structure.
- **Modification or Repair of ROPS and FOPS.** Operators or other qualified personnel shall remove damaged or decertified ROPS and FOPS from service until the modified, repaired, or damaged ROPS or FOPS are recertified or replaced.

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- Accessories. The first-line supervisor shall ensure all crawler equipment includes accessories as specified in 29 CFR 1926.601(b)(1) through 1926.601(b)(13)(ii).

g. Requirements for Off-Highway Wheel Construction Equipment

- General. Off-highway wheeled construction equipment, including but not limited to loaders and tractors, scrapers, dumpers, graders, rollers and compactors of mass greater than 3 tons, water wagons, and similar-type equipment must conform with this RSHS, applicable provisions of this section, other relevant RSHS sections, and Appendix 3.05-A.
- Braking Systems and Performance Tests. All braking systems must conform to the criteria shown in Appendix 3.05-A of this RSHS. First-line supervisors must ensure all equipment, regardless of age, includes a safe and operable service braking system, an emergency stopping (brake) system, and a parking brake system. Any equipment manufactured before 1980 must conform to the Society of Automotive Engineers (SAE) Standard under which it was manufactured. The Contracting Officer Representative (COR) or their delegated representative must verify that brake performance tests on each piece of equipment have been completed after qualified personnel perform the initial inspection. First-line supervisors will not return equipment with any failed inspection into service until corrective measures have been taken to ensure its safe operation.
- Requirements for Agricultural and Industrial Equipment. Agricultural wheeled tractors, utility wheeled tractors, and industrial equipment, including but not limited to tractors, loaders, backhoe loaders, trenchers, and similar type equipment will be designed, operated, and maintained in a safe condition. All equipment must have service and parking braking systems that can stop and hold the equipment on any surface.
- Requirements for Industrial Trucks. All industrial trucks must meet the requirements set out in 29 CFR 1910.178, Powered Industrial Trucks.
- Requirements for Aerial Lifts. Unless otherwise provided in this section, 29 CFR 1910.67(b)(1) requires that aerial lifts acquired for use on or after January 22, 1973, shall be designed and constructed in conformance with the applicable requirements of the ANSI A92.2-1969, Vehicle Mounted Elevating and Rotating Work Platforms. Aerial lifts acquired before January 22, 1973, which do not meet the requirements of ANSI A92.2-1969, may not be used after January 1, 1976, unless they have been modified to conform with the applicable design and construction requirements of ANSI A92.2-1969. Aerial equipment may be made of metal, wood, fiberglass reinforced plastic, or other material; may be powered or manually operated; and is deemed to be an aerial lift whether or not it is capable of rotating about a substantially vertical axis.
- Construction Project Design Safety Requirements.
 - Roads. All roads, including haul roads, on the project site must be designed in accordance with the requirements contained in this section. Operators shall not

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- move any mobile equipment on any road, accessway, or grade unless the roadway widths, grades, and curves are constructed to safely accommodate the movement of the vehicle or equipment at the speeds that are appropriate.
- Grades. Roads shall have a maximum allowable grade of 12 percent. Loading and dumping ramps are exempt from the maximum allowable 12 percent grade if all the following conditions exist:
 - the ramp grade does not exceed 25 percent,
 - the ramp grade does not exceed the manufacturer's maximum grade for the equipment,
 - the maximum grade on which the machine, when loaded to the manufacturer's specified gross weight, can be safely stopped and held,
 - acceptable machine gear range and ground speed for safely descending and stopping on the ramp have been determined by field testing or provided by the manufacturer,
 - a JHA has been developed and approved, and
 - management has approved the action.
 - Loading and Dumping Ramps. This paragraph defines loading and dumping ramps as:
 - sections of haul roads immediately adjacent to loading and dumping areas and the loading site,
 - ramp sections that are less than 200 feet long, with a lower end that (1) either stops on level ground no closer than 200 feet from foot traffic or congested equipment areas, or
 - is not directly aligned to terminate into these areas, and
 - the standards found in the Mine Safety and Health Administration PH20-I-1, Roadways and Dumping Locations Inspection Handbook.
 - Curves. All curves must have open sight lines and as large a radius as practical.
 - Embankment Protection. Owners must construct or install berms, curbs, or barricades to prevent vehicles or equipment from overrunning the edge or the end of the embankment when a difference in road or working level exists. Owners shall construct berms or curbs to one-half the diameter of the tires of the largest piece of equipment using the roadway.
 - Drainage. Owners must design roadways with a slight crown and with ditches provided to facilitate drainage.
 - Posting Speed Limits. Owners must post all roads, including haul roads, with curve signs and maximum and acceptable speed limits. Owners shall limit vehicle speeds on curves to those which permit the vehicle to be stopped within one-half the minimum sight distance.

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- Single-Lane Haul Roads. Owners must provide adequate turnouts on single-lane haul roads with two-way traffic. When turnouts are not practical, owners shall provide a traffic control system to prevent accidents and advise all personnel of the traffic control system and operating restrictions.
- Two-Way Haul Roads. Whenever possible, owners must design for a right-hand traffic pattern on two-way haul roads. Owners must install signs and traffic control devices to safely control travel when a right-hand traffic pattern is not feasible.
- Temporary Traffic Control Plans (TTC). The employer shall develop a TTC plan and install appropriate traffic control devices, including signal lights, signs, cones, and barricades, or provide trained flaggers to ensure the safe movement of traffic. Road Maintenance. Owners must routinely maintain all roadways, including haul roads, in safe condition and eliminate or control dust, ice, and similar hazards. Whenever dust conditions exist, owners shall provide adequate dust control equipment on the jobsite to control the dust hazard.

▲ RSHS Appendix A: Definitions

RSHS Appendix A ([Definitions](https://www.usbr.gov/safety/rshs/index.html)) is available to print at:
<https://www.usbr.gov/safety/rshs/index.html>.

▲ RSHS Appendix B: Additional References and Citations

RSHS Appendix B ([Additional References and Citations](https://www.usbr.gov/safety/rshs/index.html)) is available to print at:
<https://www.usbr.gov/safety/rshs/index.html>.

Appendix 3.05-A; Record of Performance—Inspection and Brake Test—Off-Highway, Wheel-Type Construction Equipment, Loaders, Dumpers, Scrapers, Graders, Tractor Water Wagons, and Similar-Type Equipment

1. General

In addition to complying with equipment manufacturer’s inspection and maintenance recommendations, all nonexempt, off-highway, wheel-type construction machines including loaders, dumpers, scrapers, graders, tractor water wagons, and similar type machines must be inspected and brake tested by the owner and/or contractor: (a) prior to initial onsite operation, (b) at least once annually thereafter, and (c) whenever directed to do so by Reclamation CORs or their delegated representatives.

Such inspections and tests must be performed by the owner and/or contractor in the presence of a Bureau of Reclamation representative. The owner and/or contractor shall record the inspection on the below form. The form will then be signed and submitted to the Reclamation COR or delegated representative. Initial and periodic performance inspections and brake tests must be conducted onsite after each unit has been assembled, reassembled, and/or prepared for operation.

Manufacturer's or owner's offsite inspection and tests must not be substituted for onsite performance inspections and brake tests. Performance brake tests must not be conducted until all appropriate inspection items are found to be available and in acceptable condition. Reclamation employees are prohibited from performing equipment inspections and brake tests for the owner and/or contractors. Owners and/or contractors are required to conduct their own inspections. Reclamation employees may only verify that the inspections were completed. Bureau of Reclamation equipment operators are expected to use the “Performance Inspection Checklist” for all Reclamation-owned equipment covered by this section.

Appendix 3.05-B: Performance Inspection Checklist

Appendix 3.05-B ([Reclamation-Owned and Contractor-Owned Performance Inspection Checklist—Off-Highway Wheel-Type Construction Machines](#)) is available to print at: <https://www.usbr.gov/safety/rshs/index.html>