Introduction

Motor Vehicles, Machinery and Mechanized Equipment

ALL TERRAIN VEHICLES, UTILITY VEHICLES, AND SPECIALTY VEHICLES
Section 18 of the USACE “Safety and Health Requirements Manual” –
EM 385-1-1
Introduction

Objectives

Upon completion, the student should have an understanding of the requirements found in section 18 of EM 385-1-1, specifically:

- Guarding and safety devices
- Operating rules
- Transportation of personnel
- Public roadway use vehicles
- Trailers
- Machinery and mechanized equipment
- Drilling equipment
- ATVs
- Utility vehicles and
- Specialty vehicles.

The course should take about 70 minutes to complete.
Review

You need a license to operate motor vehicle.
Dump trucks inspected when brought onto USACE job.
All vehicles must be inspected on a scheduled maintenance program.
Prior to use, vehicle inspection to include: service, parking and emergency brakes; tires; horns; steering; coupling devices; seat belts; controls; safety devices and accessories. Vehicle not safe: Remove from service.
Inspections, tests, maintenance, and repairs by qualified person per manufacturer.
When needed, all vehicles must have headlights, taillights, stoplights, turn signals and 3 emergency flares.
Review

Guarding and Safety Devices
Self-propelled construction/industrial equipment, need a backup alarm.
Reciprocating, rotating, or moving parts, hot surfaces of equipment must be guarded
Equipment to provide safe footing and access ways.
Vehicles, must have service and parking brakes.
A safety tire rack or cage required for split rims, or rims equipped with locking rings
Do not remove guards except for immediate repairs, lubrications, or adjustments (power shut off).
Seatbelts and anchorages required in all motor vehicles (buses optional).
Falling object protective structures (FOPS) required primarily when the operator is exposed to falling object hazards
Seat belts and ROPS(Rollover Protective Structure) must be installed on:
  • Crawler and rubber-tire tractors
  • Off-the-highway self-propelled pneumatic-tire earth movers
  • Motor graders;
  • Water tank trucks having a tank height less than the cab;
  • Other self-propelled construction equipment
Guarding and Safety Devices

ROPS are not required on:

- Trucks designed for hauling on public highways;
- Crane-mounted dragline backhoes;
- Sections of rollers and compactors of the tandem steel-wheeled and self-propelled pneumatic tired type that do not have an operator's station;
- Self-propelled, rubber-tired lawn and garden tractors and side boom pipe laying tractors operated under special conditions;
- Cranes, draglines, or equipment on which the operator's cab and boom rotate as a unit.

ROPS may be removed if justified by AHA/accepted by the GDA.

Long-bed end-dump trailers used in off-road hauling should be equipped with a roll-over warning device.
Review

Operating Rules

Operators when USACE motor vehicles in motion:

• cellular telephones with hands-free devices only
• no eating, drinking, smoking
• GPS systems only if they do not create sight hazards for the operator.
• no portable headphones, earphones, or other listening devices allowed
• practice defensive driving and complete training every 4 years, use seat belts, keep vehicle under control, stay within speed limit, use headlights as required, keep in gear on downgrades
• no stopping/parking unsafely

To leave vehicle unattended:

• shut off motor
• remove key
• set parking brake
• engage gear in low, reverse, or park

Vehicles carrying loads that project beyond the sides or rear of the vehicle must carry a red flag, not less than 144 in$^2$ at or near the end of the projection.

Do not get between towed vehicle and towing vehicle except when hooking or unhooking

When backing, use signal person or spotter or walk behind vehicle to view the area

Loading Vehicles:

• leave cab while the vehicle is being loaded if not protected
• load cannot block driver’s view, must be distributed, chocked, tied down, or secured and covered if necessary.
Review

Transportation of Personnel

- do not exceed seating capacity
- personnel trucks need anchored seating arrangement, a rear end gate, and guardrail, steps or ladders

Passengers:

- no loose tools/equipment with personnel
- keep arms or legs inside vehicle body, no standing
- in cold or inclement weather vehicle must be enclosed.
- no explosives, flammables or toxic substances with personnel
- no getting on or off any moving vehicle
Review

Public Roadway Use Vehicles

• A motor vehicle is a sedan, van, SUV, truck, motorcycle, etc., for use on public roadways (Including construction equipment driven on public highways).
• Every motor vehicle must have:
• An operable speedometer, fuel gage, horn, defrosting and defogging device; rearview mirrors; power starter, windshield and wiper; non-slip surfaces on steps; cabs, cab shields, etc.

Trailers

• Trailer must have safety chains or cables.
• Trailers with power brakes must have a breakaway device.
Machinery and mechanized equipment

Machinery and mechanized equipment is defined as equipment intended for use on construction sites or industrial sites and not intended for operations on public highways.

Inspection:

• Before use and daily when in use.
• Keep inspection records.

Operation:

• Only by designated qualified personnel
• When the manufacturer's instructions or recommendations are more stringent than EM 385, the manufacturer's instructions or recommendations must apply.
• Inspect roads, shoulders and structures in advance of equipment use.
Review

General Safe Practices

• Stationary machinery and equipment must be placed on a firm foundation and secured before being operated.
• Do not operate equipment powered by an internal combustion engine in or near an enclosed area without adequate ventilation.
• Slow moving or parked vehicles on haul roads need yellow flashing light or four-way flashers.
• One 10-BC fire extinguisher needed for each bulldozer, scraper, dragline, crane, motor grader, front-end loader, mechanical shovel, backhoe, and other similar equipment.

Maintenance

• Maintenance, and repairs to follow manufacturer's recommendations and must be documented.
• Shut down and secure equipment away from traffic during maintenance. Block or crib suspended parts.

Parking

• Whenever equipment is parked, the parking brake must be set. Also chock/block wheels or tracks if on incline.

All Powered Industrial Trucks (PITs)

• Post rated capacity on vehicle visible to operator.
• Only trained/authorized operators (certified by employer).
Review

Drilling Equipment
- Operated only by qualified (by training and experience) personnel authorized by employer and per manufacturer operating manual, which must be on jobsite.
- Prior to Drilling, conduct survey to identify overhead and ground hazards, and underground utilities and add to AHA. AHA must include MSDS for drilling fluids, site layout plan and meet 01.A.13.
- Maintain clearance from electrical hazards per table 11-1.

Training
- Members of drilling crews must be trained in:
  1. The operation, inspection, and maintenance of the equipment;
  2. The safety features and procedures to be used during operation, inspection, and maintenance of the equipment; and
  3. Overhead electrical line and underground hazards.
Review

Moving Equipment

- Mast down

Equipment Set-up

- Stable ground, keep level. Use outriggers.
- Parking on or near highway, use yellow flashing lights and cones, flags, signs, etc. during day, and reflector, flares, electric lights at night.

Equipment Operation

- Monitor weather, no loose clothing, etc., use auger guides on hard surfaces, warn employees when starting equipment, channel drilling fluid away from work area, do not misuse hoists, control dust, stop and put auger in neutral for cleaning, cap and flag open boreholes, guard auger.
Review

ATVs
- Vehicles intended for off-road use
- four low pressure tires
- seat straddled by operator.
- Must have horn and brake lights.
- Do not exceed manufacturer's recommended payload/passenger limitations at any time.
- Must use gloves and a DOT-approved motorcycle helmet with full-face shield or goggles.
- No 3-wheeled ATVs allowed.

Utility Vehicles are designed to perform off-road utility tasks such as passenger and cargo transportation.

Training:
- Prior to operation, operator to complete nationally-recognized accredited ATV training course.
Review

Utility Vehicles

• Keep operator manual on vehicle
• Do not exceed manufacturer's recommended load carrying capacity, personnel capacity, or maximum safe vehicle speed.
• Must have horn and brake lights in operable condition regardless of light conditions.

Operators must:
• Be familiar with the use of all controls and understand proper moving, stopping, turning, climbing, descending, traversing, etc. and operator manual requirements
• Wear goggles when in motion and not equipped with a windshield.
• Keep off public roads except to cross.
Review

**Specialty Vehicles**
- All other vehicles not meeting previous definitions. Examples include Taylor-Dunn/Cushman, golf carts, Segway HT, and snow machines.
- An AHA/SOP to include safe operations, limits of operational work areas, required PPE and vehicle safety equipment requirements is required.
- Must have a driver qualification and training program specific to the specialty vehicle.
- Must have one headlight and tail light.
- Do not exceed manufacturer's recommended load carrying capacity, personnel capacity, and maximum safe vehicle speed.
- Secure cargo items as necessary to prevent movement/tipping.
- Do not operate on unimproved surfaces.

**Snow Machines**
- **Training**
  - Hand signals and riding positions
  - Towing of a sled
  - Surface conditions and types
  - Proper apparel while riding dangers to avoid
- **Equipment MUST have:**
  - Working brakes
  - A rear snow-flap
  - A protective shield over all moving parts;
  - Reflectors on the sides or side cowling
Summary

Motor Vehicles, Machinery and Mechanized Equipment, All Terrain Vehicles, Utility Vehicles, and Specialty Vehicles

• Requirements include: General requirements, guarding and safety devices, operating rules, transportation of personnel, motor vehicles for public roadway use, trailers, machinery and mechanized equipment, drilling equipment, all terrain vehicles, utility vehicles and specialty vehicles.

• Should you have any questions you are encouraged to talk with your supervisor or safety and health officer.