Activity Hazard Analysis (AHA) — Forklift and Material Handling Operations

Overall RAC: **M** · SAMPLE formatted to EM 385-1-1 (15 March 2024) and ENG Form 6206 (SEP 2024) conventions. Adapt every step, hazard and control to actual site conditions; requires competent-person preparation, SSHO review and Government acceptance before the definable feature of work begins (EM 385-1-1 2024, para 2-6). Contracts solicited before 15 March 2024 remain governed by the 2014 edition — verify which edition your contract cites.

JOB STEPS	HAZARDS	CONTROLS	RESIDUAL RAC
Mobilization: deliver forklift/telehandler to site and complete pre-use certification	Equipment arrives with undetected mechanical defects (brakes, steering, hydraulics) and is placed into service	• Have a qualified mechanic inspect each machine before initial use and keep the one-time inspection report at the work site (18-5.a(2)). • Have the Competent Person inspect and document each machine on a checklist before it is placed into use, submit the checklist to the KO/COR, and correct all deficiencies before service (18-5.b(1)). • Give the KO or COR advance notice of equipment entering the site so the inspection can be observed and spot-checked (18-5.b(1)(d)). • Verify the rated capacity plate is posted on the vehicle, clearly visible to the operator, including alternate ratings for any removable counterweights (18-8.i(2)).	L
	Truck rollover or crushing during offload of the forklift from the delivery trailer	• Offload on firm, level ground using ramps rated for the machine weight, with the delivery driver's tie-downs released only after ramps are set. • Keep all personnel clear of the offload path and in a safe position while equipment is being unloaded (14-8.a(7)). • Inspect road and shoulder conditions in advance to confirm clearances and load capacities are safe for machine passage (18-5.c).	L
Site setup: establish travel routes, pedestrian separation, and laydown/storage areas	Pedestrian-forklift conflict in shared work zones	• Lay out dedicated forklift travel routes and physically separate pedestrian walkways with barricades or delineators; keep stairways, passageways, gangways, and accessways free of materials and obstructions at all times (14-8.b(7)). • Post speed limits and require operators to travel at a speed that permits stopping in a safe manner (18-8.i(7)). • Restrict storage areas to authorized personnel only (14-8.b(8)). • Require high-visibility apparel for all personnel working near equipment travel routes (Ch 5 PPE).	M
	Laydown area sited under or near overhead power lines	• Do not store materials directly under power lines unless safe clearance is achieved, and document the situation in the AHA (14-8.b(4), Ch 11). • Plan telehandler boom travel paths so no part of the machine or load encroaches on minimum approach distances to energized lines.	L
	Unstable ground, ramps, or dock transitions collapse under machine load	• Verify ground bearing capacity and grade the laydown surface before staging heavy loads; evaluate handling needs by weight, size, distance, and path of movement (14-8.a(3)). • Properly secure dock boards and bridge plates before driving over them, drive over them carefully and slowly, and never exceed their rated capacities (18-8.i(6)).	L
Daily pre-shift inspection of forklift and storage systems	Operating a machine with failed brakes, horn, seat belt, or backup alarm	• Operator checks the machine before each use — service brakes, parking brake, emergency stopping system, tires, horn, steering, seat belts, operating controls, backup alarms/lights, and fire extinguisher (18-5.a(4)). • Competent Person conducts and documents daily inspections of in-use equipment with date, inspector name, items inspected, and PASS/FAIL result (18-5.b(2)). • Tag out and remove from service any machine with a safety deficiency until repaired under the QP-run scheduled maintenance program (18-5.a(1)); keep records on site (18-5.a(5)).	L

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	Racking, pallets, or storage components fail under load	• Inspect storage systems (racking, shelving, blocking) and packaging (containers, pallets) per the manufacturer's instructions; remove from service any component showing deterioration, leakage, or weakness (14-5.a). • Inspect work areas daily for adequate housekeeping and record the findings in daily inspection reports (14-5.c).	L
Load pickup: engage, tilt, and carry palletized and bundled materials	Overload or off-center load causes longitudinal or lateral tip-over	• Verify load weight against the posted rated capacity before every pick and never exceed the rating, including reduced ratings at extended boom reach on telehandlers (18-8.i(2)). • Center the load on the forks, tilt the mast back, and carry the load only as high as necessary to clear the road surface (18-8.i(8)). • Use the manufacturer-approved attachment and load chart for non-palletized picks; keep the operator's manual on the machine.	M
	Falling material strikes the operator or nearby workers	• Use the overhead guard as protection against falling small material — and do not rely on it to withstand a falling capacity load (18-8.i(5)). • Band, block, or interlock loose bundles so the load is stable and secured against sliding or collapse before lifting (14-8.b(1)). • Do not move materials over or suspend them above personnel unless positive precautions protect them from falling objects (14-8.a(4)).	L
Traveling with loads across the site, including grades and congested areas	Struck-by: pedestrians or other trades hit by moving forklift or its load	• Sound the horn at intersections, doorways, and blind corners; travel in reverse when the load blocks forward visibility, or use a spotter. • Operate at a speed that permits stopping safely for site conditions (18-8.i(7)) and keep to the established equipment routes. • Ensure all persons are in a safe position while materials are being loaded, unloaded, or moved (14-8.a(7), 14-8.b(8)).	M
	Tip-over on ramps and grades	• On all grades, tilt the load back and raise it only far enough to clear the road surface (18-8.i(8)). • When ascending or descending grades over 10 percent, drive loaded machines with the load upgrade (18-8.i(9)). • Keep the seat belt fastened and stay with the machine in a tip-over — do not jump.	M
	Unattended machine rolls or is operated by unauthorized personnel	• When leaving a PIT unattended, fully lower the forks, neutralize the controls, shut off power, and set the brakes; chock the wheels on any incline (18-8.i(4)). • Only trained, qualified, and designated operators per para 18-3 may operate the equipment (18-8.i(3)).	L
Stacking and storage in laydown areas and inside structures	Stacked material collapses onto workers	• Stack, block, interlock, and limit the height of bagged, containered, bundled, or tiered material so it is stable and secured against sliding or collapse; stack as low as practical and never higher than 20 ft (14-8.b(1), 14-8.b(1)(a)). • Step back and cross-key bagged material at least every 10 bags high; do not stack cement or lime bags more than 10 high without setback (14-8.b(16)). • Stack manually handled lumber no more than 16 ft high on stable, level sills, and taper loose brick stacks above 4 ft (14-8.b(15), 14-8.b(17)). • Segregate noncompatible materials and store per the manufacturer's recommended method (14-8.b(11), 14-8.b(5)).	L
	Material stored at openings or on platforms creates fall/falling-object hazards	• Inside buildings under construction, keep stored materials at least 6 ft from hoist-ways and floor openings and 10 ft from exterior walls that do not extend above the stored material (14-8.b(6)). • Do not store material on scaffolds, work platforms, or runways in excess of load limits (14-8.b(9)).	L

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	Manual handling strains and sprains when breaking down loads	• Follow the handling hierarchy: engineer out the handling need, then mechanical devices, then manual means with a handling aid such as a dolly or cart, then safe lifting techniques (14-8.a(3)). • Train employees on safe lifting techniques before manual handling tasks (14-3.a).	L
Hoisting suspended loads with a telehandler (winch, hook, or rigging configuration)	Suspended load drops, swings, or overloads the machine	• Do not use PITs or telehandlers to hoist loads unless the equipment manufacturer allows it and provides the procedures (16-8.ee(1)); when configured to hoist and lower a suspended load, comply with Chapters 15 and 16 in addition to 18-8.i (18-8.i(1)). • Operators, riggers, and others involved in the hoisting operation must have written proof of qualifications (16-3.j, 16-8.ee(2)(b)). • Keep the manufacturer's load rating charts for the approved attachment on site and follow them (16-8.ee(2)(d)). • Rig with inspected slings and hardware per Chapter 15; never use banding or strapping as rigging to hoist bundled materials (14-8.a(6)). • Use taglines to control the load where its movement may endanger personnel; use only nonconductive taglines near energized lines (14-8.a(5)).	M
Elevating personnel on a forklift-mounted work platform (only where no other practical method exists)	Platform detaches, tips, or occupant is ejected during elevation	• Use a forklift-mounted platform only when there is no other practical method, with a platform the forklift manufacturer specifically allows, referencing ANSI B56.6, with a compatibility letter on site if the platform is third-party (22-8.s(1)-(3)). • Securely attach the platform to the carriage and forks, secure the carriage and forks against pivoting forward, and deactivate any rotator (22-8.s(4)-(6)). • All occupants use fall restraint per Chapter 21 and maintain firm footing; do not tilt the platform (22-8.s(12)-(13)). • Set travel controls to neutral and the parking brake before elevating, verify the mast is vertical and the machine level and on firm footing, and verify the platform path is clear of electrical wires and overhead obstructions (22-8.s(11), (17)-(19)). • Operator remains at the controls the entire time personnel are elevated; never travel with the platform raised or occupied (22-8.s(15)-(16), (21)).	M
Refueling, parking, housekeeping, and demobilization	Fire during refueling or from fuel storage in the laydown area	• Shut down the engine before refueling and refuel in a designated area away from ignition sources; a QP supervises storage, handling, and use of flammable liquids per 29 CFR 1926.152, NFPA 30/30A (14-4.d(2), 14-8.b(21)(a)). • Inspect dispensing hoses per the manufacturer's instructions and immediately replace hoses with cuts to reinforcement, blistering, soft spots, coupling slippage, or kinking (14-5.d(1)). • Keep the machine-mounted fire extinguisher charged and inspected (18-5.a(4)(j)).	L
	Debris, dunnage, and banding left in work areas cause trips, punctures, and lacerations	• Inspect work areas daily for adequate housekeeping and record findings in daily inspection reports (14-5.c). • Dispose of waste and scrap per 14-8.c and 29 CFR 1926.252; remove all nails from reusable lumber and dunnage before stacking it for storage (14-8.b(15)(c)). • Secure the machine at end of shift: forks fully lowered, controls neutralized, power off, brakes set, wheels chocked on inclines (18-8.i(4)).	L

Equipment To Be Used

• Forklift (vertical mast, Class IV/V) with posted rated capacity plate (18-8.i(2))

• Rough-terrain telehandler with load charts for each approved attachment (16-8.ee(2)(d))

• Manufacturer-approved fork attachments, booms, and work platform (ANSI B56.6, 22-8.s)

• Rigging: slings, shackles, taglines (Ch 15; nonconductive taglines near energized lines, 14-8.a(5))

• Pallets, dunnage, blocking, and racking inspected per manufacturer's instructions (14-5.a)

• Wheel chocks, dock boards/bridge plates rated and secured (18-8.i(4), 18-8.i(6))

• Barricades, delineators, and signage for pedestrian separation

• Machine-mounted fire extinguisher, backup alarm, seat belt, overhead guard (18-5.a(4), 18-8.i(5))

• Manual handling aids: dollies, carts, pallet jacks (14-8.a(3)(c))

Training Requirements

• PIT operator training per 29 CFR 1910.178 — classroom plus practical, on the same type of truck used on the job; employer certification with operator name, training date, evaluation date, and trainer identity (18-3.f, 18-3.f(1))

• Refresher training and evaluation at least every 3 years, and after unsafe operation, an accident or near miss, a failed evaluation, assignment to a different PIT type, or a workplace change affecting safe operation (18-3.f(2))

• Written proof of qualification for operators and riggers involved in suspended-load or personnel-hoisting configurations (16-3.j, 16-8.ee(2)(b))

• Safe lifting techniques training for all employees performing manual handling (14-3.a)

• AHA review and signature by every involved employee before starting work (2-6.d(2))

• Fall restraint system use for any personnel working from a forklift-mounted platform (22-8.s(12), Ch 21)

Inspection Requirements

• One-time qualified-mechanic inspection of each machine before initial use, report kept on site (18-5.a(2))

• CP inspection with documented checklist before equipment is placed into use; checklist submitted to KO/COR; re-inspection at least annually and whenever equipment returns to the project (18-5.b(1))

• Operator pre-use check each shift: brakes, parking brake, emergency stop, tires, horn, steering, seat belts, controls, backup alarms/lights, fire extinguisher (18-5.a(4))

• Daily documented CP inspection of in-use machinery with date, inspector, items, and PASS/FAIL (18-5.b(2))

• Storage system, pallet, and container inspections per manufacturer's instructions; damaged components removed from service (14-5.a)

• Daily housekeeping inspection of work areas, recorded in daily inspection reports (14-5.c)

• Fuel dispensing hose inspections; immediate replacement of hoses showing permanent damage (14-5.d(1))

• Advance inspection of roads and shoulders for clearance and load capacity before machine passage (18-5.c)

Competent / Qualified Person Requirements

• Equipment inspection Competent Person — inspects and documents each machine before it is placed into use, daily while in use, and at least annually (18-5.b(1)-(2)); designate by name on the AHA per 2-6.d(4)

• Qualified mechanic — pre-initial-use vehicle/equipment inspection (18-5.a(2))

• Qualified Person — runs the scheduled maintenance program per manufacturer's instructions (18-5.a(1)) and supervises flammable liquids storage and dispensing (14-4.d(2))

• Qualified riggers and operators with written proof of qualification for any suspended-load (rigging/winch/hook) configuration (16-3.j, 16-8.ee(2)(b))

References

• EM 385-1-1 (2024) Ch 14 — Material Handling, Storage, Disposal, and Conveyors

• EM 385-1-1 (2024) 14-8.a — Material Handling — handling hierarchy, taglines, no loads over personnel

• EM 385-1-1 (2024) 14-8.b — Material Storage — stacking, stability, and clearance requirements

• EM 385-1-1 (2024) 14-5 — Inspection Requirements — storage systems and daily housekeeping

• EM 385-1-1 (2024) 18-8.i — Powered Industrial Trucks (PITs), Forklifts, and Telehandlers (ANSI/ITSDF B56.1)

• EM 385-1-1 (2024) 18-3.f — PIT Operator Training per 29 CFR 1910.178

• EM 385-1-1 (2024) 18-5 — Inspection Requirements — vehicles, machinery, and mechanized equipment

• EM 385-1-1 (2024) 16-8.ee — PITs/Telehandlers configured to hoist suspended loads (with Ch 15 rigging)

• EM 385-1-1 (2024) 22-8.s — Forklift/PIT-Mounted Work Platforms

• 29 CFR 1926.602(c) — Lifting and hauling equipment (Subpart O — Motor Vehicles, Mechanized Equipment)

• 29 CFR 1926.250 — General requirements for storage of materials (Subpart H)

• 29 CFR 1926.251 — Rigging equipment for material handling (Subpart H)

• 29 CFR 1926.252 — Disposal of waste materials (Subpart H)

• 29 CFR 1910.178 — Powered industrial trucks — operator training (invoked by EM 385-1-1 para 18-3.f)