



Concrete Pumping

ISSUES:

On Nov. 20, 2023, a concrete pump truck flipped due to outriggers being set directly on dirt instead of a recommended concrete slab or other supportive material, causing fatal injuries. On Jan. 15, 2023, a concrete pump truck burned after hitting power lines in Richardson, Texas. On Oct. 21, 2022, a pump hose exploded at Chico Airport, killing a worker. The cause of the explosion was a clogged pipe in the cement truck.

SOURCES OF CONCRETE PUMPING HAZARDS:

Hose Hazards: One of the most common concrete pump hazards comes from emptying the concrete delivery hose. Upon releasing compressed air to clean the hose, pressure pockets can make the hose whip around chaotically, leading to severe injuries.

Power Lines: Contact with power lines can be lethal, potentially resulting in the loss of limbs or death. Most power-line hazards result from operator error.

Concrete Burns: Wet cement can cause chemical burns due to its alkalinity, and untreated burns can result in blood poisoning and scarring.

Electrical Issues with the Truck: Without routine maintenance, concrete pump trucks may malfunction or shock operators during troubleshooting.

Hydraulic Leaks: Leaks from damaged fittings, connections, and hoses can lead to faulty or inoperable equipment.

Boom Awareness and Placement: Booms are extremely heavy; inattentive operation can damage lights, HVAC systems, sprinklers, or the pump itself.

Rough Mixes: Incorrectly batched concrete can be unstable for pumping, wearing out quickly or producing structurally unsound material.

Oil Leaks: Oil can reach temperatures up to 176°F,

causing severe burns. Attempting to stop high-pressure oil leaks with bare hands can result in gangrene.

Holding Valves: Improper removal of holding valves can cause burns or impact injuries.

Compressed Air: Compressed air should never be used to clear blockages.

REGULATIONS: CONCRETE AND PUMP TRUCKS

OSHA Subpart Q, 1926.702(e)(1): Concrete pumping systems using discharge pipes must have supports designed for 100% overload.

OSHA Subpart C, 1926.20(b)(4): Only qualified employees may operate equipment, including the truck, outriggers, and pumping system.

OSHA Subpart C, 1926.21(b)(2): Employers must instruct employees on hazard recognition, avoidance, and relevant regulations.

OSHA Subpart E, 1926.95(a): Personal protective equipment (PPE) for eyes, face, head, extremities, and respiratory devices must be provided, used, and maintained. Ear protection must be used when exposure exceeds limits.

OSHA General Duty Clause, Section 5(a)(1): Employers must provide a workplace free of recognized hazards, with OSHA able to rely on consensus standards, guidelines, or manufacturer manuals for compliance.

ADDITIONAL STANDARDS AND GUIDANCE:

Concrete Pump Manufacturers Association: Safety standards for pumps, placing booms, and delivery systems.

American Concrete Pumping Association Safety Manual: Guidance on stability, ground support hazards, outrigger positioning, and soil conditions.

APPLICATION SUMMARY HAZARDS:

Blowouts: Overpressurized hoppers or pumps can rupture, causing death, injury, or property/environmental damage.

Hose Whipping: High-velocity hose movement can cause severe injury or death.

Falling from Height: Contact with hose movement can cause falls.

Pump Truck Tipping: Insufficient foundation to resist forces from boom extension and pumping can be catastrophic.

Skin Problems: Wet cement is caustic, abrasive, and moisture-absorbing.

Eye Irritation: Cement can irritate eyes.

Respiratory Distress: Cement dust or mist can cause respiratory symptoms.

BIG FOUR AND PUMP TRUCK HAZARDS:

Fall Hazard: Pumping at height (walls and elevated decks) increases danger from hose whipping.

Struck-By Hazard: Blocked pipelines can fail, sending shrapnel or concrete projectiles.

Overhead Power Hazard: Booms can reach up to 200 ft., creating electrocution risk even if the truck chassis appears at a safe distance.

Pump Truck Tipping Hazard: Boom extension and pumping forces can overwhelm insufficient foundations, causing catastrophic failure.

DO'S OF CONCRETE PUMPING:

- Review the manufacturer's manual for the pump being used.
- Use trained and certified operators.
- Inspect safety straps on tip hoses and hanging

attachments for wear.

- Ensure all safety pins are properly installed in couplers.
- Prepare the ground effectively using outrigger pads.
- Operators and distribution personnel must always wear appropriate PPE.
- Use only boom equipment that is working correctly and has up-to-date inspections.
- Remove all personnel from the area when air enters the placement system.

DON'TS OF CONCRETE PUMPING:

- Never use a boom to replace a crane.
- Don't open a coupling while it is pressurized.
- Never climb on hydraulic systems to clean clogged lines.
- Don't stand in front of the discharge end of the cement pipeline.
- Never handle clogged hoses under pressure.
- Don't operate or set up a concrete pump in the dark.
- Don't ignore clearance distances to power lines.

American Concrete Pumping Association. Safety Manual. American Concrete Pumping Association, 2022.

Concrete Pump Manufacturers Association. Safety Standard for Concrete Pumps, Placing Booms and Delivery Systems. CPMCA, 2022.

Occupational Safety and Health Administration. 1926 Subpart C – General Safety and Health Provisions. U.S. Department of Labor, 2023, <https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.20>.

Occupational Safety and Health Administration. 1926 Subpart E – Personal Protective and Life Saving Equipment. U.S. Department of Labor, 2023, <https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.95>.

Occupational Safety and Health Administration. 1926 Subpart Q – Concrete and Masonry Construction. U.S. Department of Labor, 2023, <https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.702>.

Occupational Safety and Health Administration. General Duty Clause, Section 5(a)(1) of the Occupational Safety and Health Act. U.S. Department of Labor, 2023, <https://www.osha.gov/laws-regs/oshact/section5-duties>.

U.S. Bureau of Labor Statistics. "Fatal Occupational Injuries in Construction." BLS.gov, U.S. Department of Labor, 2023, <https://www.bls.gov/iif>

OUR PURPOSE

Lead. Make a difference. Build a better future!

OUR VALUES

Safety: First. Last. Always!

Steadfast Integrity: Be honest. Treat other with respect.

Exceptional Service: Align goals. Add value. Develop lasting relationships.

Commitment to Excellence: Take ownership. Constantly improve.

Focus on Team: Listen. Collaborate. Communicate. Execute.

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