



Concrete and Pump Trucks

OSHA Standard Subpart Q Concrete – Reinforcing Steel - 1926.702(e)(1) - (Concrete pumping systems) requires that “Concrete pumping systems using discharge pipes shall be provided with pipe supports designed for 100 percent overload.” Many other OSHA standards impose additional requirements for safely using concrete boom pump trucks to place concrete in construction, including the following sections:

OSHA Standard Subpart C General Safety and Health Provisions – Working Under Loads - 1926.20(b)(4) - “The employer shall permit only those employees qualified by training or experience to operate equipment and machinery.” This applies to operating the truck, outriggers, and concrete pumping system components.

OSHA Standard Subpart C General Safety and Health Provisions - 1926.21(b)(2) “The employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury.”

OSHA Standard Subpart E PPE – 1926.95(a) “Application. Protective equipment, including personal protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reasons of hazards of processes or environment, chemical hazards . . . ” and “Whenever it is not feasible to reduce the noise levels or duration of exposures to those specified in Table D-2, Permissible Noise Exposures, in 1926.52, ear protective devices shall be provided and used. ”

OSHA Standard Section 5(a)(1) of the Occupational Safety and Health Act, also known as the General Duty Clause - requires employers to furnish a workplace which is free from recognized hazards which may cause or are likely to cause death or serious physical harm. OSHA may cite employers for failure to provide such employment even when Agency standards do

not address a particular hazard. OSHA may rely on “consensus standards,” association guidelines, or manufacturer manuals as evidence of recognition of a hazard. Using these materials allows OSHA to address additional requirements for the safe operation and use of “concrete boom pump trucks” on construction projects when Agency standards do not address a particular hazard.

For Example:

1. Manufacturer “operation, maintenance, and parts manual” materials (to address improper concrete discharge-hose operation);
2. The Concrete Pump Manufacturers Association “Safety Standard for Concrete Pumps, Placing Booms and Delivery Systems” (to protect employees from hazards associated with hose ends during pump starts or restarts);
3. The “American Concrete Pumping Association Safety Manual” (to address stability and ground support hazards such as tipping hazards, improper outrigger positioning, and inadequate soil conditions.)

On November 20, 2023, a concrete pump truck flipped due to outriggers set on dirt, causing fatal injuries. On January 15, 2023, a truck in Richardson, Texas, caught fire after hitting power lines. On October 21, 2022, a worker at Chico Airport died from a pump hose explosion, likely caused by a clogged pipe.

APPLICATION SUMMARY HAZARDS:

1. Blowouts: When the hopper and pump are under high pressure vessel can explode, rupture, or discharge its contents. If over pressurized a blowout can cause death, personal injury, property damage, and/or damage to the environment.

2. Hose whipping: The end hose can whip violently at high velocity, which can cause injury or death.
 3. Falling from height: Contact with the hose can cause the worker to fall from height.
 4. Pump truck tipping: The forces and moments created by the extension of the boom and the action of pumping the concrete can be catastrophic if the foundation is insufficient.
 5. Contact with overhead powerlines: The boom can come into contact with overhead powerlines.
 6. Skin problems: Cement can damage the skin because it is caustic, abrasive, and absorbs moisture.
 7. Eye irritation: Cement can cause eye irritation.
 8. Respiratory distress: Cement can cause symptoms of respiratory distress.
6. Operators and distribution employees should always wear the appropriate protective gear.
 7. Only use boom equipment that is working correctly and has had updated inspections.
 8. Remove all personnel from the area when air is entering the placement system.

Don'ts of Concrete Pumping:

1. Blowouts: When the hopper and pump are under high pressure vessel can explode, rupture, or discharge its contents. If over pressurized a blowout can cause death, personal injury, property damage, and/or damage to the environment.
2. Hose whipping: The end hose can whip violently at high velocity, which can cause injury or death.
3. Falling from height: Contact with the hose can cause the worker to fall from height.
4. Pump truck tipping: The forces and moments created by the extension of the boom and the action of pumping the concrete can be catastrophic if the foundation is insufficient.
5. Contact with overhead powerlines: The boom can come into contact with overhead powerlines.
6. Skin problems: Cement can damage the skin because it is caustic, abrasive, and absorbs moisture.
7. Eye irritation: Cement can cause eye irritation.
8. Respiratory distress: Cement can cause symptoms of respiratory distress.

THE "BIG FOUR" AND PUMP TRUCKS:

Fall Hazard: Pumping at Height (Walls & Elevated Decks): End hose whipping and hose movement, in general, are especially dangerous in these situations as contact with the hose can cause the worker to fall from height.

Struck-By Hazard: Other Than Whipping: Pressures in the pipeline, specifically where line plugging has occurred, can cause failures in the piping, joints, and fittings causing catastrophic failure of the pipeline leading to piping shrapnel and projectile aggregate.

Overhead Power Hazard: Pump trucks are commercially available with booms up to 65 meters (approx. 200 ft.) in length. Even if the chassis of the pump truck appears to be a safe distance from overhead power lines a distinct possibility of electrocution from boom contact still exists.

Pump Truck Tipping Hazard: The magnitude of the forces and moments created by the extension of the boom and the action of pumping the concrete is significant, if the foundation is insufficient to resist these forces the results can be catastrophic.

WHAT YOU NEED TO KNOW:

Do's of Concrete Pumping:

1. Review the manufacturer's manual for the pump you are utilizing.
2. Use trained and certified operators.
3. Safety straps should be checked for wear, and used on the tip hose, and hanging attachments.
4. Check all safety pins are in couplers.
5. Prepare the ground effectively using outrigger pads.

"Federal Register :: Request Access." Unblock.federalregister.gov, www.ecfr.gov/current/title-29/subtitle-B/chapter-XVII/part-1926/subpart-Q.

"Federal Register :: Request Access." Unblock.federalregister.gov, www.ecfr.gov/current/title-29/subtitle-B/chapter-XVII/part-1926/subpart-C.

"1926.21 - Safety Training and Education. | Occupational Safety and Health Administration." Www.osha.gov, www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.21.

"1926.95 - Criteria for Personal Protective Equipment. | Occupational Safety and Health Administration." Www.osha.gov, www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.95.

"Elements Necessary for a Violation of the General Duty Clause. | Occupational Safety and Health Administration." Www.osha.gov, www.osha.gov/laws-regs/standardinterpretations/2003-12-18-1.

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