Concrete Pump Safety

NATIONAL
Ready Mixed Concrete Company

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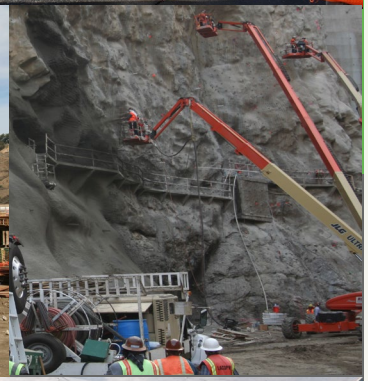

It has been estimated that 70% to 85% of ready-mix concrete is placed utilizing pumps.

The most common pumps we encounter are: “Placing Booms” or “Tower Pumps”, “Trailer Pumps” both pea gravel and big rock, “Boom Pumps” from 15-70 meters, “Grout” or “Shotcrete Pumps” and the utilization of multiple pumps servicing large job sites.

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We can also encounter combinations of equipment, such as trailer pumps supplying concrete to boom pumps or a boom pump’s boom connected directly to another boom pump.

Here we see a crane, supporting a large tremie, being supplied concrete by a boom pump.

Today we are going to look at some basic “Safety Points” that will work in almost all of these situations.

Introduction

Common injuries around concrete pumps at job sites include:

- Eye
- Leg
- Hand
- Drivers may also be covered by concrete that was splashed or sprayed which can lead to additional injuries and concerns.

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Introduction

- It is important that RMC truck drivers, pump operators and others working around concrete pumps, are aware and recognize the hazards associated with them.

- Pointing out hazards that may impact the well-being of the customer as well as the driver's own safety is always the best and right thing to do.

Concrete Pump Safety

Topics:

1. General Safety Practices for Drivers

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2. Arriving at the Pump Location

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3. Overhead Power Lines

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4. Backing to the Pump

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5. Unloading Concrete to the Pump

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1. General Safety Practices for Drivers
2. Arriving at the Pump Location
3. Overhead Power Lines
4. Backing to the Pump
5. Unloading Concrete to the Pump
6. Wash-down and Departing the Jobsite

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General Safety Practices for Drivers

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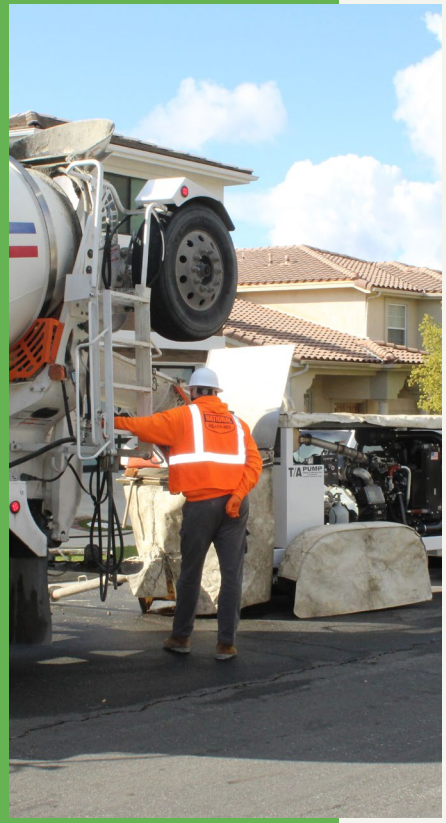

1. General Safety Practices for Drivers

- Always wear Personal Protective Equipment (PPE) when working near a concrete pump: Safety glasses or googles, hard hat, ear protection, high-visibility vest or other similar outerwear, appropriate footwear, and rubber gloves.

1. General Safety Practices for Drivers

- Never stand on and avoid walking across a concrete hose while it's in use. Concrete pumps can develop line pressures greater than 1000 psi! Pipelines and hoses can move without warning. Do not touch any concrete pump pipe clamps or hoses. Alert the operator if you see a problem.

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1. General Safety Practices for Drivers

- Avoid getting on the pump unless it's absolutely necessary.
- Keep your distance when monitoring the hopper. Never look into the end of a connected pipe or hose.

1. General Safety Practices for Drivers

- If the pump looks unsafe to work near, drivers should not unload. They should advise the operator of the unsafe conditions. If the operator cannot correct the unsafe condition, they are to contact their supervisor and/or their dispatcher.

1. General Safety Practices for Drivers

- Be aware of the “Hazard Zones” around a pump. These include the charge hopper, the reduction elbow, hoses, clamps and pipes. Due to equipment malfunction or metal fatigue, they are all common points of failures.

Arriving at the Pump Location

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2. Arriving at the Pump Location

- “Stop, Scan and Plan” for any potential hazards.
- Inspect the route from the road to the pump before pulling on site.
- Advise the pump operator and any others necessary that you have arrived on site.

2. Arriving at the Pump Location

- If you’re delivering at night, ensure your truck has proper lighting.
- If using mirrors to back up to the pump, they must be clean and properly adjusted.

2. Arriving at the Pump Location

- Always use a spotter when approaching the pump.
- Be aware of the spotter, operator and others as you approach.
- Make note of the pump's outriggers.
- Make note of where you will be washing out.

Overhead Power Lines

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3. Overhead Power Lines

- Concrete booms can extend quite a distance from the pump and very high overhead, often within the reach of most power lines.
- If a pump boom contacts an electrical power line, EVERYONE on the job or working near the pump can receive an electrical shock capable of causing death.

3. Overhead Power Lines

- Metal booms, equipment frames, rebar, reinforcing mesh and wet concrete can conduct electricity.
- If a pump becomes energized with high voltages from overhead power lines, the electricity can arc towards anyone standing near the equipment.

3. Overhead Power Lines

- If you see a pump boom get too close (within 10’ as a general rule), immediately stop the flow of material and tell the pump operator.
- If contact is made and you are inside your truck, stay inside and do not touch any metal inside the cab.

3. Overhead Power Lines

If you must leave the equipment due to an extreme emergency, such as a fire, set the brake, then jump from the equipment with feet together. Do not touch any part of the equipment when in contact with the ground. Move away from the energized equipment by shuffling your feet in very small steps careful to keep your feet close together. Continue to move away from the equipment for at least 25’.

Backing to the Pump

4. Backing to the Pump

Crushing Hazard

- NEVER get between the pump and a mixer. Never let anyone else stand between the pump and a mixer. If more than one mixer is delivering to the pump hopper, make sure no one is trapped between the trucks, or between the mixer and the concrete pump.
- Before you begin backing towards the pump, make sure everyone is clear.

4. Backing to the Pump

- Do not get closer than 10 feet to the pump unless you have a clear view of the spotter who is directing you.
- If you lose sight of the spotter, STOP IMMEDIATELY and reestablish line of sight contact.

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4. Backing to the Pump

- When backing towards the pump hopper, the spotter must use clear and concise hand signals. If you do not understand the hand signals, STOP IMMEDIATELY.
- Take direction from only ONE spotter. Keep your eyes on the spotter at all times while backing.
- If you find yourself acting as the spotter for another mixer truck, make sure the driver is watching you. If the driver is not safely approaching the pump, immediately signal the driver to stop. When stopped, agree on hand signals and discuss any other factors or conditions that would affect a safe approach to the pump.

4. Backing to the Pump

4. Backing to the Pump

- Do not allow anyone to move, raise, lower, operate, adjust, or unfold the discharge chute while backing towards the pump. Stop immediately if someone tries to make a chute adjustment.
- Approach the pump hopper at a speed that allows you to stop immediately. Set the parking brake before leaving the cab. Be sure the transmission is in neutral. Trucks with automatic transmissions can move suddenly if the engine RPM is increased and the transmission is not in neutral.

4. Backing to the Pump

- If your truck hits any part of the pump, report the damage to the operator immediately. Even seemingly small damage can cause an unsafe operating condition, endangering everyone on the jobsite.

Unloading Concrete to the Pump

5. Unloading Concrete to the Pump

- Roll down your window to be able to hear verbal commands, whistles and horns.
- Do not put concrete into the pump hopper until the operator directs you to do so.
- Find out how to stop the pump in an emergency. Have the operator show you the locations of the emergency stop (E-stop) switches and how they work.
- If an emergency arises, hit the E-stop switch, then tell the operator about the problem.

5. Unloading Concrete to the Pump

- Foreign material can cause blockages. If you see foreign material coming from the mixer truck, signal the operator to stop the pump. If you cannot get the operator's attention, hit the E-stop.
- Do not allow the concrete chute rake or any other items to fall into the pump hopper. Do not attempt to grab foreign objects from the pump hopper while it is operating. The pump is remote controlled and can start at any time. Alert the operator to stop the pump if you must remove foreign material from the hopper.

5. Unloading Concrete to the Pump

- You must know how to signal the pump operator to stop the pump if you can't keep enough concrete in the hopper. Some pumps are equipped with horn buttons on the rear of the pump. Have the operator show you how to signal them. Use the emergency stop switch only if you can't get the operator's attention, because there is a restarting procedure from emergency stop that may cause delays.

5. Unloading Concrete to the Pump

- Keep the hopper about two-thirds full. Do not let the material level in the hopper become so low that air is sucked into the material cylinders of the pump. If air is sucked into the cylinders, the pump will compress the air. Compressed air always poses a hazard as it's released from the pump or the delivery pipeline. Before air is sucked into the cylinders, signal the operator to stop the pump.

5. Unloading Concrete to the Pump

- Regardless of how it happened, if air is sucked into the cylinders, the pump MUST BE STOPPED. If you cannot get the operator's attention, hit the emergency stop switch. It is the operator's job to know how to safely remove air from the pump and delivery system. Do not refill the hopper unless directed to do so by the pump operator. Stand away from the hopper and the end of the hose until the operator has removed the trapped air from the delivery system and has signaled you that it is safe to begin unloading again.

5. Unloading Concrete to the Pump

- Stay away from the pump hose end. This is especially important to remember when the material is being placed close to the mixer truck. The tip of the hose may move quickly and unexpectedly, and if it is kinked, it could unkink violently.
- Do not stand or allow anyone else to stand on the hopper grate. If they lose their balance, they can become trapped or killed in the hopper of the machine. Never lift or move the hopper grate for any reason.

5. Unloading Concrete to the Pump

- Keep an eye out for hoses in your work area. They are often moved during the pour, and could enter your working space.
- Don’t walk or stand on hoses. They may be slippery and rupture without warning.
- If possible, it’s best to not walk over them for the same reasons. Hoses can move and whip without warning.
- Avoid walking under the pump’s boom.
- Avoid standing next to the elbow at the back of the pump if at all possible.

5. Unloading Concrete to the Pump

- Avoid walking under the outriggers of the concrete pump.
- Try to avoid overfilling the hopper to the point where concrete spills on the ground. As the concrete dries, it creates a tripping hazard near moving machine parts.
- The pump operator is responsible for the safe operation of the pump and boom. If you have questions regarding correct or safe pumping procedures, talk to the operator.

5. Unloading Concrete to the Pump

- It is not uncommon for pump operators to place plastic sheeting around the pump hoppers to catch spilled materials. These plastic tarps are generally very slippery. Avoid walking on these tarps, and if necessary, pull the tarp away from your walking and working area.

Cleaning and Departing the Jobsite

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6. Cleaning and Departing the Jobsite

- Do not wash out the mixer into the pump hopper. Use the jobsite's washout area.
- At the end of the job, the operator may want the level of material in the hopper to be lower than usual. Do not allow the level to become so low that air is sucked into the material cylinders.

6. Cleaning and Departing the Jobsite

- Do not drive under the boom of the concrete pump when pulling away from the job. Have the operator move the boom to a safe area, or take a different route off the jobsite.
- If the pump operator is going to empty the hopper into your mixer, let him maneuver the hose end with the boom. Do not try to help by directing it in with your hands.

6. Cleaning and Departing the Jobsite

- If the concrete is being pumped back into the mixer truck, stay away from the truck hopper, or sit in the cab of your truck until it's done. If a J hook is used, make sure it is tied down so it can't jump off.
- Make sure the operator knows you're empty and leaving.
- Be sure all personnel are a safe distance from the truck before pulling away from the pump.


Our Goal :
To get each and every one of our team home safely, injury and accident free at the end of every day.
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Thank you for your time.

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