CALIFORNIA
Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.
VI. Co-worker Safety

16. Safety Rules For Workers Assigned To The Pump

16.1 **WARNING** You must know how to stop the pump and boom. Have the operator show you the locations of the emergency stop switches (Figure 74).

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Figure 74
Know how to stop the unit in an emergency
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16.2 **WARNING** You should wear the same personal protective equipment (PPE) as the operator. Goggles, hard hat, ear protection, and rubber gloves are especially important when working near the hopper (Figure 75).

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Figure 75
Wear the same personal protective equipment as the operator
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* Breathing mask needed when cement dust (or other toxic dust) is present in the air.
16.3 ✪ DANGER ✪ Electrocuton hazard! If the pump or boom becomes energized with high voltage and you are in contact with any part of it, you are at risk of electrocution! You should monitor the movement of the boom and alert the operator if the boom comes within 20 feet of the wires (50 feet above 350 Kv) of an electrical wire. (See Figure 76.)

Figure 76
If the pump becomes energized, everything that touches the pump is also energized

16.4 ✪ DANGER ✪ When power lines are in the area that the boom will be moving to complete a pour, a spotter must be employed whose only job is to warn the operator if the boom comes within 20 feet of the wires (50 feet above 350 Kv). The spotter must understand the responsibilities assigned, and must be able to judge a 20 or 50 foot distance. Use visual aids such as cones to help the spotter to understand the danger zone. (Figure 77.)

Figure 77
Use of cones can assist with identifying the danger zone

16.5 ✪ WARNING ✪ Keep an eye on the movements of the boom, even when there are no electrical wires nearby. Alert the operator if the boom is nearing any obstruction or hazard. Where job site safety is concerned, two sets of eyes and ears are better than one.
16.6 **WARNING** Crushing hazard. Never, ever position yourself between the ready mix truck and the pump! Stand to the side, where the driver can see you (Figure 78).

![Figure 78](image_url)

**Figure 78** Never stand between the ready mix truck and the pump

16.7 **WARNING** When backing in ready mix trucks, use clear and concise hand signals (Figure 79).

![Figure 79](image_url)

**Figure 79** Use clear, concise hand signals

16.8 **WARNING** If handling the chutes of a ready mix truck, keep your hands clear of the hinged areas.

16.9 **WARNING** Do not allow the ready mix driver to put concrete in the pump hopper until the pump operator gives him the OK. Filling the hopper early can cause the pump to plug.

16.10 **WARNING** If you see foreign material that could create a blockage coming from the ready mix truck, alert the operator to stop the pump. Do not attempt to remove the material from the hopper or grate while the hydraulic system is ready to work. (See point 16.19 on page 64.) If necessary, depress the E-stop button to stop the pump and alert the operator.

16.11 **WARNING** Never allow the ready mix driver to clean out in the hopper, because it can create a blockage. (Water will wash the cement and fine sand from the course aggregate causing segregation.)

16.12 **WARNING** Do not operate the pump or boom unless you are also a trained operator and the regular operator has released the controls to you. **There must not be more than one operator at a time.** This does not apply to stopping the pump or boom if there is a need to do so.
16.13 **WARNING** Do not let the concrete level in the hopper become low! If air is sucked into the material cylinders, the pump will compress the air. Compressed air always poses a hazard as it is expelled from the hopper or the delivery pipeline (Figure 80). If air is taken into the material cylinders, take the following steps to minimize the hazard:

1. Stop the pump immediately. Hit the emergency stop button if that is the quickest way to stop the pump. There will be an expulsion of compressed air the next time the concrete valve shifts. If possible, fill the hopper with concrete to help contain the expulsion. Do not put your face directly over the hopper.

2. Alert the operator of the problem. It is his job to know the procedures for safe removal of air from the pump and delivery system. These procedures include pumping in reverse for a couple of strokes.

3. Persons standing at the discharge end or near the delivery line must be warned to move away until all of the air has been purged. Warn them to stay a reasonable and prudent distance beyond the reach of the end hose or point of discharge (Figure 80).

4. When the pump is restarted, don’t assume that the first little air bubble is the end of the compressed air.

5. Do not allow anyone near the discharge until concrete runs steadily from the end and there is no movement of the delivery system.

6. If workers are positioned in high or precarious places, warn them to expect a loud sound as the air escapes the pipeline. (Warn them even if they are well away from the discharge.) That way, we can prevent the worker from falling as a result of being startled by the noise.

**Figure 80**
Remove everyone from the discharge area whenever the pump is first starting, restarting after moving, or if air has been introduced into the line.
16.14 **WARNING** When initially priming the delivery system, when restarting after moving, when restarting after adding or removing hoses, or whenever air has been introduced into the line, warn everyone to stay away from the discharge until concrete runs steadily and there is no movement of the delivery system. Personnel should stay back a reasonable and prudent distance beyond the reach of the end hose or point of discharge (Figure 80). Air will be in the line when first starting, when restarting after moving, when a blockage has been successfully removed by “rocking” the concrete, and after the line has been taken apart or opened for any reason.

16.15 **WARNING** Never use compressed air to clear a blockage! The operator is responsible for knowing the safe blockage removal procedures. It is unsafe and unnecessary to use compressed air. If the pump pressure can’t move it, air pressure won’t either.

16.16 **WARNING** Never stand on, sit on, or straddle a pipeline while it’s in use, or whenever it is pressurized. Pipeline wears out with each stroke of the pump. If the pipe bursts, you want to be to the side of it, not on top of it (Figure 81).

16.17 **WARNING** Expulsion hazard! (See Figure 82.) Never open a pipeline that is under pressure. The pump must be run in reverse for at least two strokes and then stopped before opening a pipeline. If the pipeline is pressurized with air, do
not open it. The operator is responsible for knowing how to safely release the air pressure. Even after the pump is reversed, use a shovel or other tool that will assure a safe distance from clamps to avoid concrete blowing in your eyes.

Figure 82
Never open a pressurized pipeline

16.18  **WARNING**  Be careful when handling pipeline or any other heavy object. Learn how to lift without using your back. Get assistance if needed.

16.19  **WARNING**  Crushing/amputation hazard! Never put your hands, feet, or any other body part into the water box, concrete valve, or hopper when the hydraulic system is operational or ready to operate! Never stand on the hopper grate! (See Figure 83.)

Figure 83
Never put your body in the machine!
GENERAL RULES

16.20  **WARNING** Never lift or remove the hopper grate for any reason (Figure 84).

![Figure 84](agitguy.png)

Figure 84
Lifting hopper grate exposes the agitator and the concrete valve

16.21  **WARNING** Do not remove the water box covers or grates when the machine is stroking (Figure 85). Do not remove the water box cover (to add water, for example), until the operator has disabled the machine. Replace the covers before the operator restarts the pump.

![Figure 85](donotrem.png)

Figure 85
Do not remove the water box covers when the machine is stroking

16.22  **WARNING** Keep unauthorized personnel off of the pump.
16.23 **WARNING** Mount or dismount the pump or truck using the **3 Point Rule**. One hand and two feet or two hands and one foot are to be in contact with a secure surface at all times (Figure 86).

17. **Safety Rules For The Placing Crew**

17.1 **DANGER** **Electrocution hazard!** If the pump or boom becomes energized with high voltage and you are in contact with any part of it, you are at risk of electrocution! You should monitor the movement of the boom and alert the operator if the boom comes within 20 feet (50 feet above 350 Kv) of an electrical wire. (See Figure 87.)
17.2 **DANGER** When overhead wires are in the area that the boom will be moving to complete a pour, a spotter must be employed whose only job is to warn the operator if the boom comes within 20 feet of the wires (50 feet above 350 Kv). The spotter must understand the responsibilities assigned, and must be able to judge a distance of 20 or 50 feet. (Figure 88.)

17.3 **WARNING** Keep an eye on the movements of the boom, even when there are no electrical wires nearby. Alert the operator if he is nearing any obstruction or hazard. Where job site safety is concerned, two sets of eyes and ears are better than one.

17.4 **WARNING** Never use compressed air to clear a blockage! It is unsafe and unnecessary. If the pump pressure can’t move it, air pressure won’t either. Stand away from the discharge and the line if anyone attempts to use compressed air in this manner.

17.5 **WARNING** Do not look into the end of a plugged hose or pipe while it’s pressurized!
17.6  **WARNING** Wear Personal Protective Equipment (P.P.E.) when working around a concrete pump (Figure 89). The gloves should resist concrete lime burns. If you will be working in the concrete, protect your feet and hands with rubber boots and gloves.

![Figure 89 Wear Personal Protective Equipment (P.P.E.)](image)

* Breathing mask needed when cement dust (or other toxic dust) is present in the air.

17.7  **WARNING** When the operator is initially priming the delivery system, restarting after moving, restarting after adding or removing pipes or hoses, or any time that air has been introduced into the delivery system, stand a reasonable and prudent distance away from the tip hose or point of discharge. Do not get near the discharge until material runs steadily and there is no movement of the delivery system. (Figure 90). Compressed air in the line can cause rubber hose to move violently. If the operator tells you that air is coming in the delivery system, proceed as follows:

- Get to ground level (if in a high place) and remain well away from the discharge or at least take cover.
- Stay away from the discharge. Be sure that all the air is gone before getting near the point of discharge again. It is the operator’s job to know when it’s safe to go back to normal pumping.

17.8  **WARNING** When the pump crew is using compressed air to clean the boom or system pipeline, stay away from the discharge area. *Never try to hold down a pipe or hose that is being cleaned with air.*

17.9  **WARNING** Falling hazard! When pouring columns, slabs, or walls above ground, secure yourself from falling.
17.10 **WARNING** Never open a pressurized pipeline (Figure 91). The pump operator must release the pressure before you open the line. If the line is pressurized with compressed air, let the operator release the pressure and verify that the air has escaped before you proceed. Even then use a shovel or other tool that will assure a safe distance from clamps to avoid concrete blowing in your eyes.

17.11 **WARNING** After removing pipe sections you must **reassemble using gaskets and clamps**. Pipelines assembled without gaskets will leak cement and water, which can cause a blockage.

17.12 **WARNING** Concrete is being moved through the delivery system by pressure. Failure of a pipe, clamp, hose, or elbow is possible. For this reason, spend as little time as possible standing under the boom, and wear protective clothing.
SAFETY MANUAL

17.13 **WARNING** The hose man should not hug the hose, but hold it with both hands, to allow the hose to move freely (Figure 92).

![Figure 92](donthug.png)

**Figure 92**
Do not hug the boom hose

17.14 **WARNING** The hose man should not walk backwards (Figure 93). Walking forward will allow him to see obstacles and avoid tripping.

![Figure 93](walkin.png)

**Figure 93**
Do not walk backwards, stay out of the path of the boom

17.15 **WARNING** The hose man should never position himself between the boom or boom hose and any fixed object like a wall or column (Figure 93).

17.16 **WARNING** Do not kink the end hose. Kinking will cause the pump to create maximum concrete pressure. The pump may unkink the hose by force! (See Figure 94.)

17.17 **WARNING** Never try to support the tip hose with your back or shoulders. Let the hose hang from the boom (Figure 94).
17.18 **WARNING** When using tools or hooks to drag the hose, be sure they are not sharp enough to damage the hose. When using ropes be sure they are strong enough not to break, and regularly check the rope on the bottom of the hose for wear.

17.19 **CAUTION** Be careful when handling pipeline or any other heavy object. Learn how to lift without using your back. Get assistance if needed.

17.20 **WARNING** Crushing hazard! Never position your hands or any body part between the end of the delivery system and a fixed object (e.g., between the tip hose and the concrete form) (Figure 95). Watch for clamps lowering with the line, because they have a larger diameter than the pipes/hoses they connect.
17.21 **WARNING** Do not allow the boom hose to get lower than two feet above the deck to prevent the boom hose from hitting the feet of the hose man, and to prevent the hose opening from being blocked by the deck, which could cause the hose to whip.

17.22 **WARNING** Never stand on, sit on, or straddle a pipeline while it’s in use, or whenever it is pressurized (Figure 96). Pipeline wears out with each stroke of the pump. If the pipe bursts, you want to be to the side of it, not on top of it.

**Figure 96**
Never straddle or sit on a pressurized pipeline

17.23 **WARNING** To avoid confusion and conflicting signals, only one person should signal the pump operator except for the stop signal, which may be given by anyone.

17.24 **WARNING** Before the pour begins, the hose man, the operator and the spotter should agree on hand signals (Figure 97)

**Figure 97**
ACPA recommended hand signals
Information contained in this Safety Manual is not intended to supercede the manufacturer’s recommendations or company policies.