



### LOSS OF AIR CONTENT IN PUMPED CONCRETE

It is normal to lose between 0.5% and 1.0% air content at discharge from concrete pumps. But the use of long boom pumps with the new 5" line, when the boom is in an orientation with a long, near vertical downward section of pipe, can result in an air content at discharge that is half or less of the concrete when it is going into the pump hopper. While there is some controversy over how frequently air loss occurs in pumped concrete, it happens frequently enough that it needs to be taken seriously.

#### Why Air Loss Occurs

Air loss will occur when the concrete in a vertical or near vertical downward pipe is heavy enough to overcome frictional resistance, resulting in a slug of concrete sliding down the pipe. One theory is that as the concrete slides down the pipe, it develops a vacuum, which greatly expands the air bubbles in the concrete. When these bubbles hit an elbow in the boom or a flat surface, they collapse. Field experience suggests that air loss is greatest with highly flowable concrete having high cement content.

#### What to Do About It

- Keep concrete from sliding down the line under its own weight. Avoid vertical or steep downward boom sections where possible.
- Be cautious with high slump concrete, especially with mixes having high cement content and mixes containing silica fume.
- Use an extra section of rubber hose to create a 6' diameter loop in the main hose.
- When poring decks, lay 10' to 20' of hose horizontally.
- Reduce the rubber hose size from 5" down to 4".