

embedded in concrete, which was rammed about them. Between the walls the lock floor is a concrete slab 250 ft. long and 43½ ft. wide and finished to an invert 18 ins. thick along the center and 3 ft. at the sides. The upper end of this floor fits against the circle of the breast wall and the lower end is finished with a line of cut stone blocks. The lower miter sill is carried on piles; it consists of a mass of concrete extending 8 ft. below the floor, which forms both an anchor block for holding down the sills and a cut off against leakage. Two I-beams are laid directly under each sill and through them pass seven bolts, 1½ ins. in diameter and 7 ft. long, the whole being buried in the mass of concrete. The ends of the anchor bolts are threaded and pass vertically through the 18 x 18-in. oak sills, which are held down by large nuts and washers. The upper miter sill is carried on a circular breast wall extending across between the lock walls and is anchored down in the same manner as the lower one.

The breast wall is a mass of concrete faced with heavy cut stone ashlar. It serves to take the ram of ascending boats, thus preventing their bows pushing open the miter of the upper gates from the lower side—a frequent source of accident. In front of the breast wall is another cross wall, which revets the end of the upper reach. It forms with the breast wall a bay, 30 ft. across, and the full width of the lock, 46 ft. From this head well the longitudinal wall culverts are fed in filling the lock. The culverts are 6 ft. x 6 ft. with arched roof and are provided at each end with "Stoney" valves. These allow the water to flow into or out of the lock chamber, with which the culvert is connected by 30-in. pipes, ten on each side.

The method of construction was to lay the whole concrete foundation slab under the walls and across the ends. The floor of the head well, the floors of the culverts and the lower miter sill are all on the same level (El. 125). Upon this the molds for face and rear of walls and for sides of culverts were set up. The concrete was mixed by hand along the sides of the pit and wheeled in until the spring line of the culvert arch was reached. A trestle had then been completed through the lock chamber and two travelling derricks erected upon it. These swung in the concrete with skips. The posts of the trestle served to hold the chamber face molds, which were 14 ft. high. Above this height the lock wall was ashlar, the first course projecting 2 ins. and being rounded to form a rubbing course.

REACH BELOW LOCK NO. 4.

Below Lock No. 4, a reach similar to the mit level extends for nearly 2½ miles. A mile below the lock there is a road bridge like those on the summit level. It is founded on hard blue clay and has given no trouble from settlement. All swing bridges are at right angles to

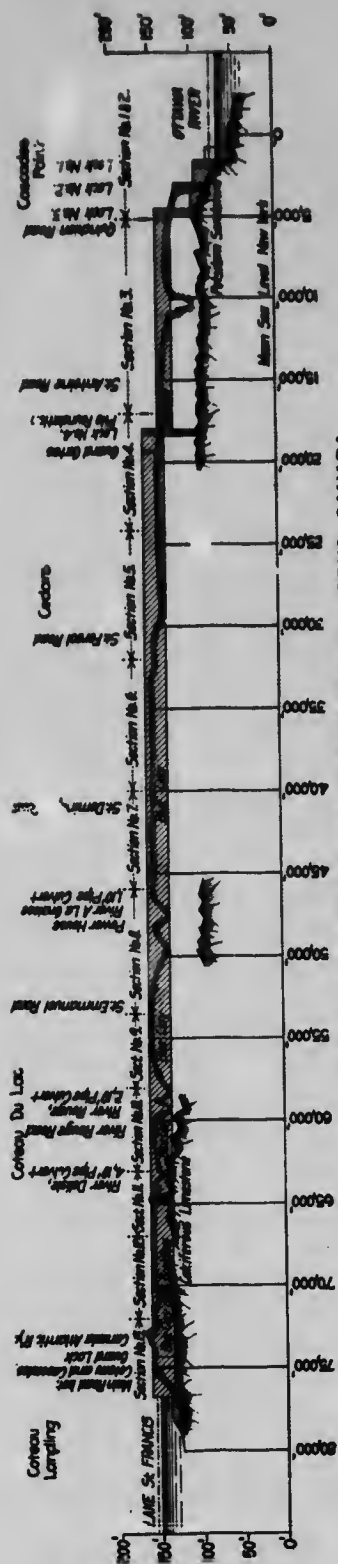


FIG. 3. PROFILE OF SOULANGES CANAL WORKS, CANADA.