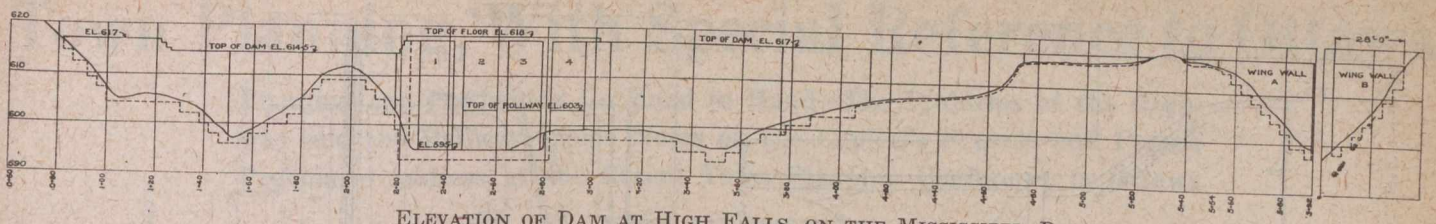
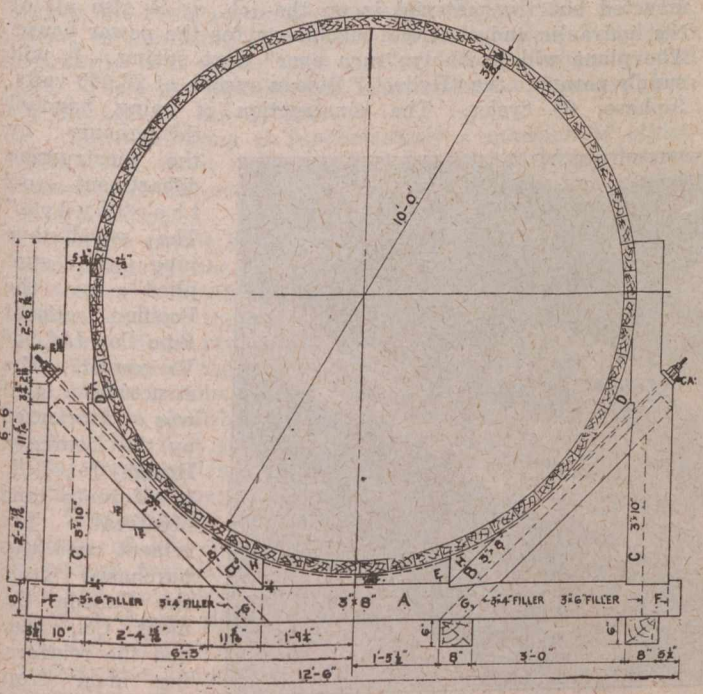


ELEVATION OF DAM AT HIGH FALLS, ON THE MISSISSIPPI RIVER

gate house, then the grade is 2% for 100 ft., then 4% for 36 ft., and 40% for about 11 ft. at the intake.

The gate house substructure is 27 ft. wide by 30 ft. long and 22 ft. high to the floor of the superstructure. Behind the racks the width tapers to 17 ft. The water section varies from 20 ft. in width by 13 ft. in height to a circular section 10 ft. in diameter, ending in a reinforced concrete elbow which connects with the continuous-wood-stave pipe line leading to the distributor in the power house.

The wood-stave pipe line is 10 ft. inside diameter, approximately 320 ft. long, and is built of British Columbia

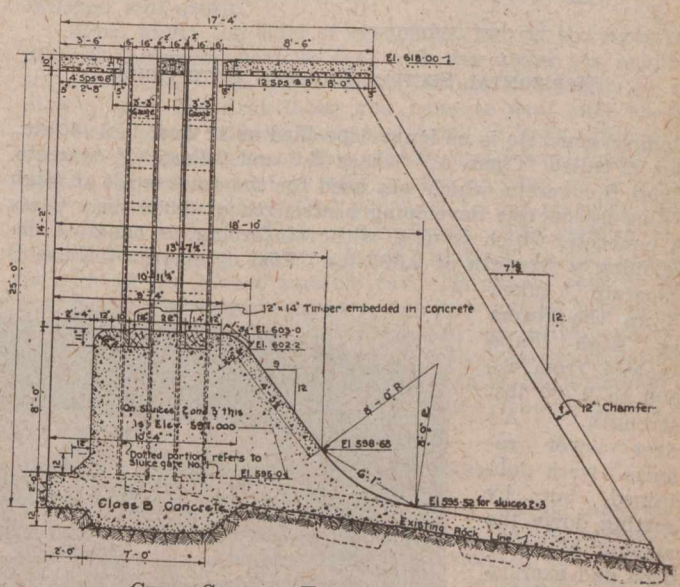


WOOD-STAVE PIPE, SHOWING SADDLE DETAILS

fir staves 3⅝ ins. thick. It is supported by timber saddles spaced at 6-ft. centres.

The pipe is laid to a 22.4% grade, the difference in elevation between the two ends being about 70 ft. It is banded with 1,025 bands (⅞-in. diameter) of two sections each, these bands being spaced as follows, starting from the gate house: 99 at 7 ins. c. to c.; 79 at 5½ ins.; 91 at 4¾ ins.; 108 at 4 ins.; 123 at 3½ ins.; 144 at 3 ins.; 157 at 2¾ ins.; and 224 at 2½ ins.

The bill of quantities for the pipe line included 2,050 shoes, 62 saddles, 124 saddle rods, 1,030 F.B.M. sills, 124

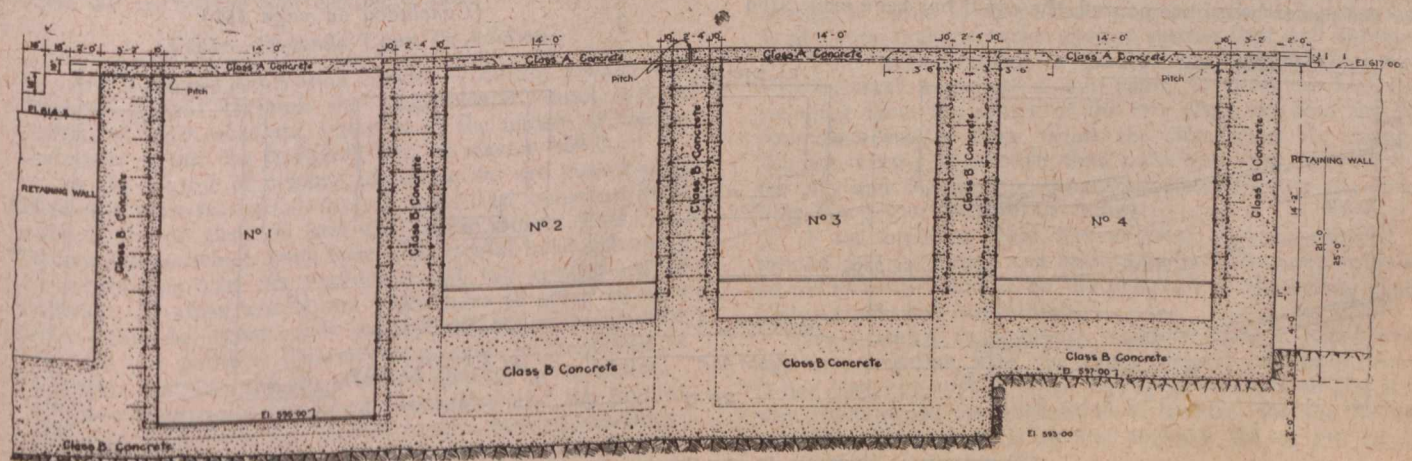


CROSS-SECTION THROUGH SLUICEWAY

washers and 75 cu. yds. of 2-in. stone for use in bringing rock fill to grade.

The power house is situated on the river bank, and its substructure is approximately 94 ft. long by 62 ft. wide. The greater part of the power house substructure is mass concrete, but the distributor which carries the water from the wood-stave pipe to the turbines, is moulded in reinforced concrete. The turbine casings are steel plate, as are also the draft tubes. The tail water level is 532.5 when the forebay is at 614.0, so the gross head on the plant is 81.5 ft. at high level. The velocity in the pipe line at full load is about 6½ ft. per second.

It is of interest to note that the Heath-Edwards surface area method of proportioning materials for concrete was used for the dam, this being the first time that it was used by the "Hydro." According to this system of propor-



LONGITUDINAL SECTION THROUGH SLUICEWAYS OF HIGH FALLS DAM