

The capacity of the reservoir, which is located in a natural hollow about one mile from Goldstream station on the Esquimalt & Nanaimo Railway, is 136,000,000 gallons. The water, on arrival by the flow line, is cascaded down steps, in order to aerate it and then passes either direct into the pressure pipe to the city, or else to the reservoir.

The watershed area of the reservoir is about one square mile. The pressure pipe line from the reservoir to the distribution system in Victoria is about $10\frac{3}{4}$ miles long, of which about four miles is of $\frac{5}{16}$ inch, and the remainder $\frac{3}{8}$ inch plate, made into a continuous riveted

steel conduit 36 inches in diameter, with five sectionalizing valves. The connections for the Saanich distributing system are shortly to be installed. The approximate elevations above the sea level are: Sooke Lake, 567 feet; Humpback reservoir, 380 feet.

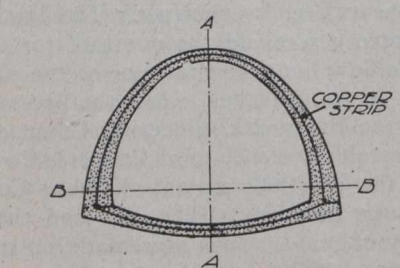
The project has been carried out under the direction of Mr. C. H. Rust, city engineer and water commissioner for Victoria. Mr. Wynn Meredith, consulting engineer, supervised the work. Besides Mr. Boyd Ehle the resident engineers were Messrs. E. E. Carpenter, H. Hartwell and F. L. Young.

EXPANSION JOINTS FOR MONOLITHIC CONCRETE PRESSURE PIPE.

CONSIDERABLE interest has centered around the details of expansion joints for use in pressure pipe constructed of concrete. The accompanying diagram shows the design and arrangement of the joints that are being made in the Winnipeg-Shoal Lake aqueduct. In the construction of this pipe line the invert will be laid first in sections 15 ft. in length. Between the adjacent ends of these sections copper expansion strips

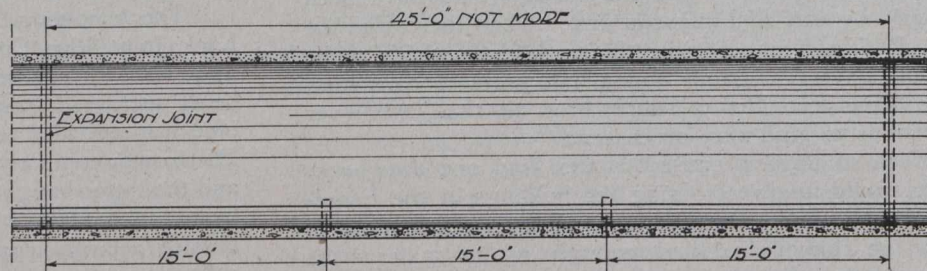
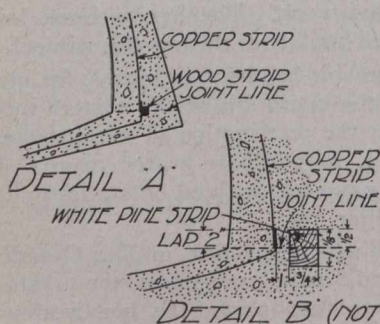
concrete occurs the offset portion will simply open up without any tendency to break the bond between the anchorage surfaces of the copper and the concrete.

In order to prevent any percolation through the horizontal joints between the arch and the invert concrete, the engineers of the Greater Winnipeg Water District, under whose direction the aqueduct is being built, are using in the joint a continuous $\frac{3}{4}$ -inch by $1\frac{1}{8}$ -inch well-seasoned

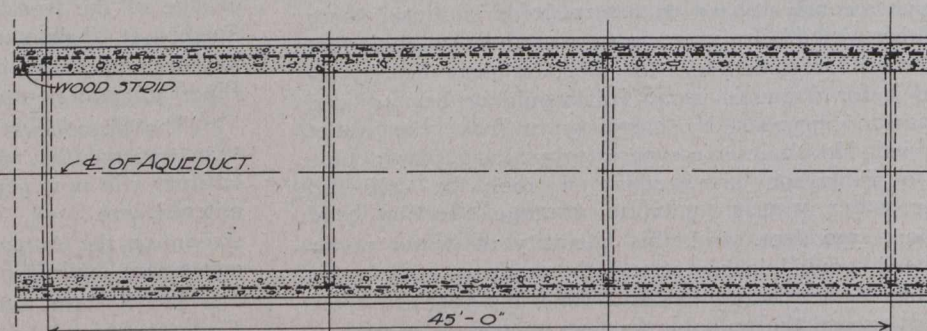


*20 GAUGE 6" WIDE BEFORE BENDING

SOFT COPPER STRIP FOR EXPANSION JOINTS



SECTION A-A



PLAN OF INVERT AT B-B

Details of Expansion Joint for the Winnipeg-Shoal Lake Aqueduct.

will be inserted as shown. These strips will each consist of a sheet of No. 20 gauge copper, 6 ins. wide, and extending across the full length of the joint. This strip is bent along the centre line to form a half-inch offset, as illustrated, this offset occurring exactly on the joint between the adjacent concrete faces.

After the invert has been allowed to thoroughly set, the arch is constructed upon it in sections 45 ft. in length, the joint occurring in all cases directly over every third joint in the invert. In the 8 ft. circular section of the aqueduct the expansion joints in the arch are to be placed at not more than 30 ft. centres. A copper strip of the same dimensions as noted above is also used in the arch. The idea underlying the use of this copper strip, bent as shown in the drawing, is that when any contraction in the

white pine strip, dressed on two opposite sides, to form a seal. This strip is to be built into the concrete of the invert throughout the length of the aqueduct in the position shown in detail B, and care is to be taken to protect it from disturbance until the concrete shall have completely set.

The matter of expansion joints for concrete pressure pipe is one of great importance. The above information, concerning the form of joint adopted by the District, was supplied us by Mr. W. G. Chace, chief engineer, and should be of considerable interest. The aqueduct is to be 447,300 ft. in length (84.73 miles) with a capacity of 85 million gallons a day; with a variable gradient and variable cross-sections to correspond, and with considerable internal pressure, chiefly in the last 26,000 feet of its length at the Transcona end.