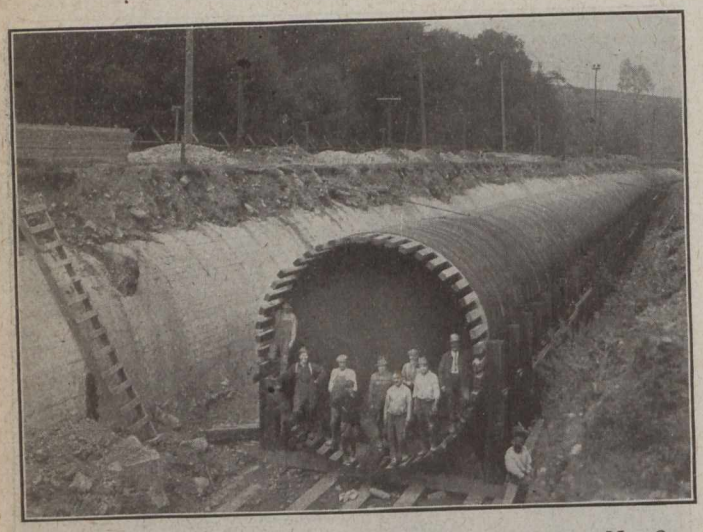
reason of the fact that these sections are in particularly exposed parts of the Queen Victoria Park much frequented by tourists. It was, therefore, desirable to restore the surface of the park to its original condition after the pipe had been placed.

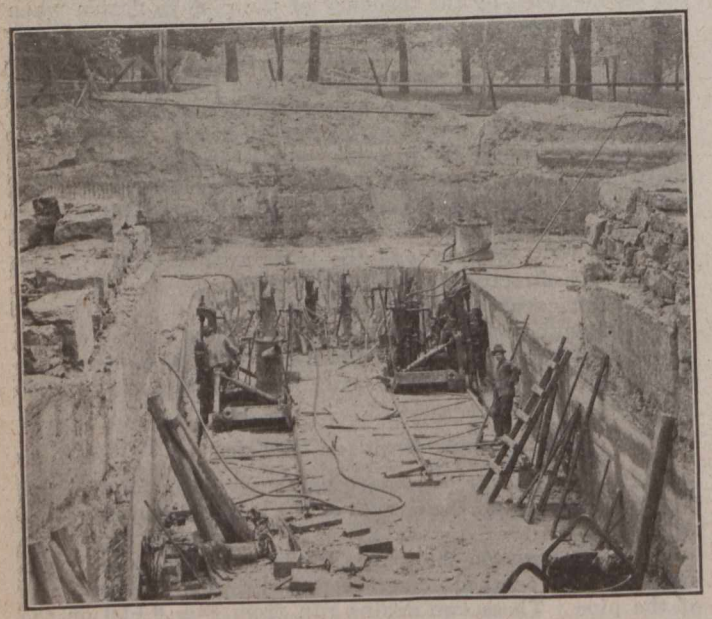
At Station 65+77 the wood stave pipe ends, and the distributor begins. The distributor is made of steel plate ⅝ inches thick, 13.5 feet in diameter, and 179 feet 6 inches long.



No. 3 Conduit, Showing Mudsills in Position—No. 2 Concrete Conduit Exposed

To this distributor four penstocks are connected by means of bell-mouthed tees. These tees are built up of steel plate bent to shape, and are riveted to the distributor. The distributor is completely encased in concrete and the surface of the park above it will be restored to its original condition as soon as it is placed.

At the end of the distributor is a section of reinforced concrete pipe 13.5 feet in diameter and 77 feet long, joining the distributor to the surge tank. This reinforced section is laid on a horizontal curve with a short section of tangent,

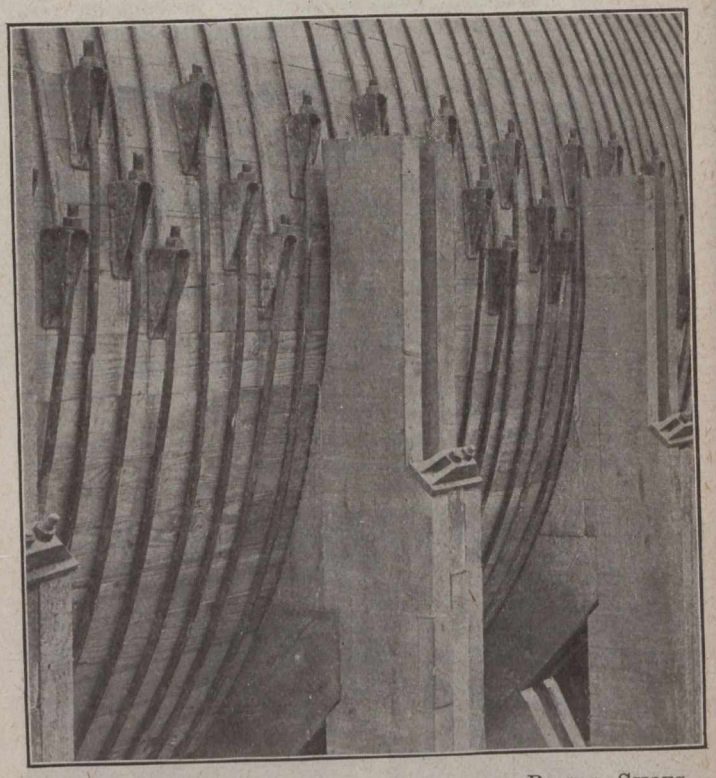


Excavation for Surge Tank and Riser—Sullivan Channellers at Work

and at the end is turned upward in a ninety degree bend to form a connection for the riser of the surge tank.

The surge tank is of the Johnson differential type. The surge-tank riser is fabricated of ½-inch plate with circular angles riveted to the shell to act as stiffeners to withstand the collapsing pressure when the surge in the riser is downward. The weight of the riser is carried on steel brackets riveted to the base and resting on the tank bottom. The bottom ports are formed of an annular opening 9 inches wide, since the diameter of the riser is 12 feet and the diameter of the distributor at the elbow is 13.5 feet. This annular orifice is divided into eight equal parts, each of 3.75 sq. feet area, by the supporting brackets and spacers, which hold the base of the riser rigid, and also carry its weight. Two of these ports at the short turn of the elbow will be blocked, since only 22.5 sq. feet gross area is required for the load changes expected. Another series of port-holes is provided about half way up the riser at elevation 552.4, the lower ports being located at elevation 518, on the bottom of the tank.

The tank shell varies from one-inch plate at the bottom to ¼-inch plate at the top. The bottom is formed of ½-inch plate and is attached to the bottom ring with a heavy angle on the inside. The tank will be back filled eight feet up from the bottom, which rests on a thin concrete base, laid on solid rock foundation. This base was carefully levelled with two inches of dry sand and cement before the tank bottom, after being completely riveted up, was lowered.



Wood Stave Pipe, Showing Details of Bands, Shoes and Saddles

The riser is tied to the roof trusses by tie rods, with turnbuckles for adjustment, to provide stiffness against vibration during load changes. The elevation of the top of the riser is at 587.16, while the top of the tank is at elevation 596. The roof trusses are steel, while the roof itself will be of wood construction. Air is admitted to, and escapes from, the tank through an open space left between the top of the tank and roof. An area of 100 sq. feet of opening is provided for this purpose.

It is not expected that it will be necessary to provide frost proof protection for the outside of the tank, but if such protection is found necessary during operation, it can be readily provided.

The bell-mouthed tees which connect the distributor to the penstocks are built up of ½-inch steel plates joined together by triple-riveted, double-butt, longitudinal joints. The fabrication of these bell-mouthed entrances was an exceedingly difficult piece of plate work, and for this reason the methods used by the Canadian Des Moines Steel Company, who supplied this material fabricated and knocked down, might be of interest.