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PROGRESS ON THE SHANNON

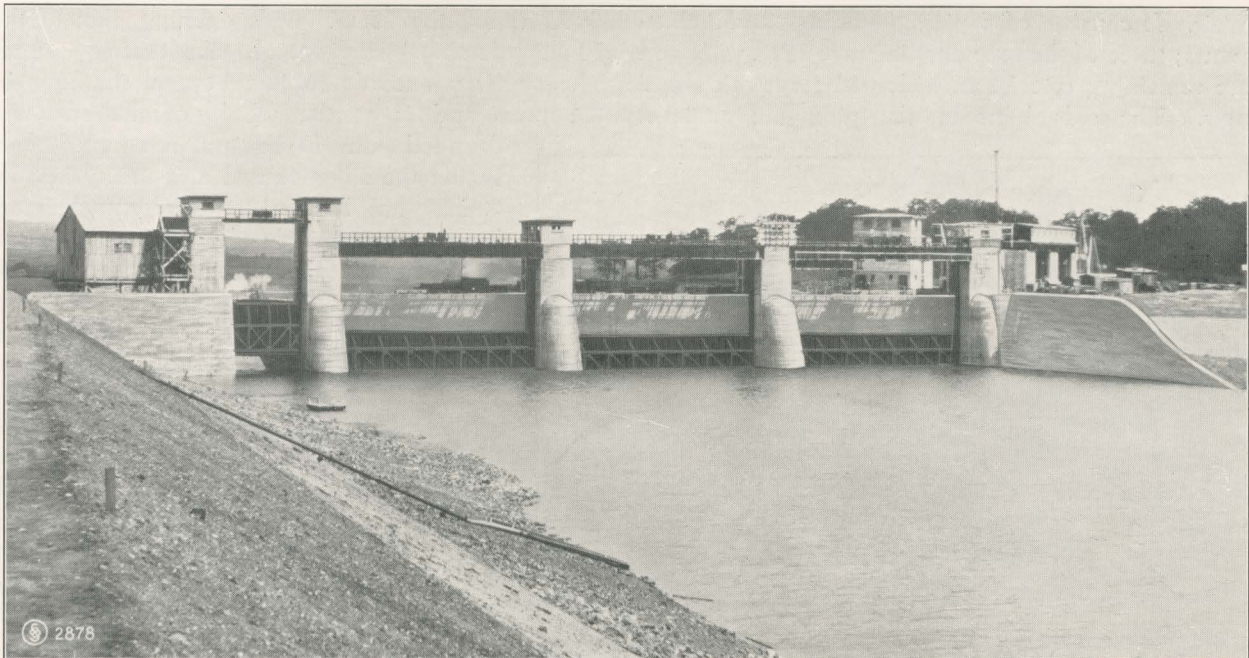
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The Intake Building

Part I

As already roughly outlined in our June 1927 No. 9 pamphlet, the Intake Building, controlling the Head Race at the inlet, lies at an angle of approximately 135° to the Weir and is connected to it by one abutment common to them both as can be seen on the revised photo of the plan of the Weir (Ref. to pamphlets March 1929 and June 1927).

The purpose of the Intake Building is to cut off in case of emergency the supply of water to the canal. In the ordinary course of events, when the turbines are working, the gates remain open with the same water level in the Shannon upstream and Head Race at the Intake. The structure on the whole roughly resembles in principle that of the



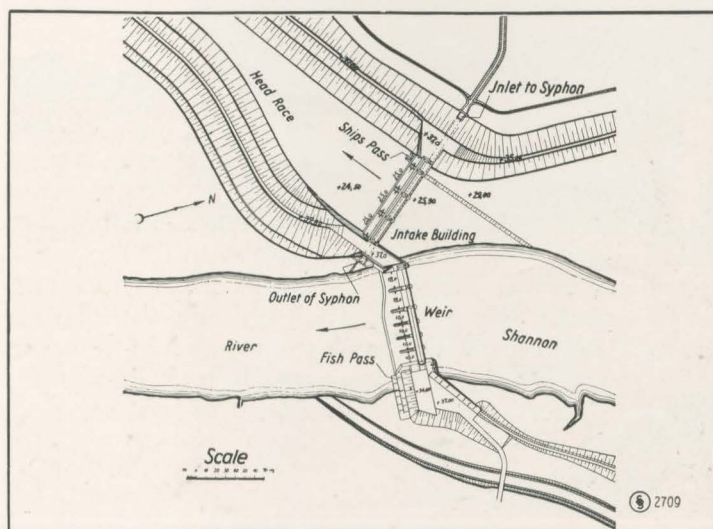
View of the Intake Building from the right Head Race bank.



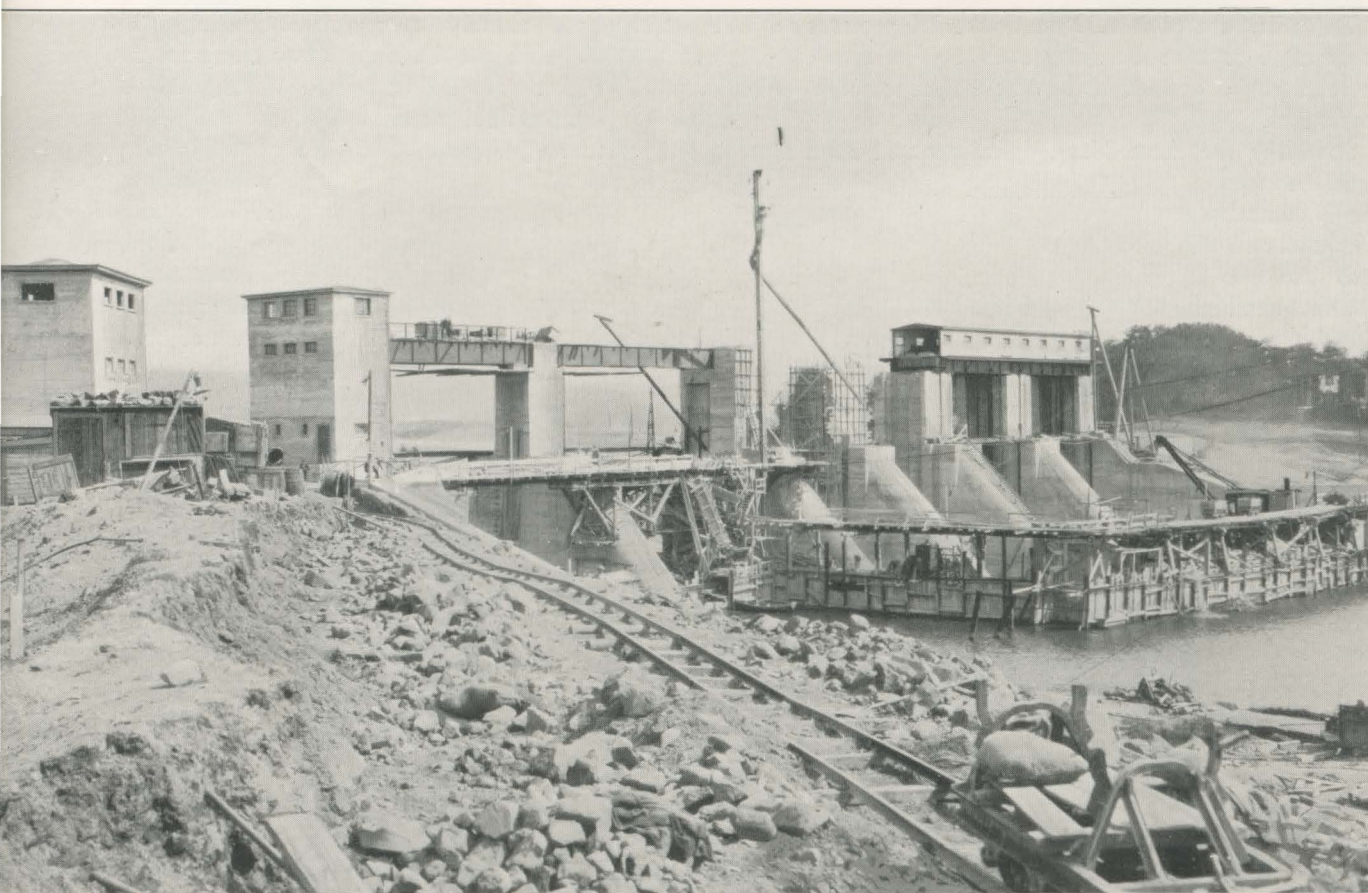
General view of Weir and Intake Bu

Weir. It consists of 3 piers 4 m-thick and 2 abutments; three of the four openings are 25 m. wide and the remaining one 10 m. wide will serve as a ships' pass. The sills between the piers are at level

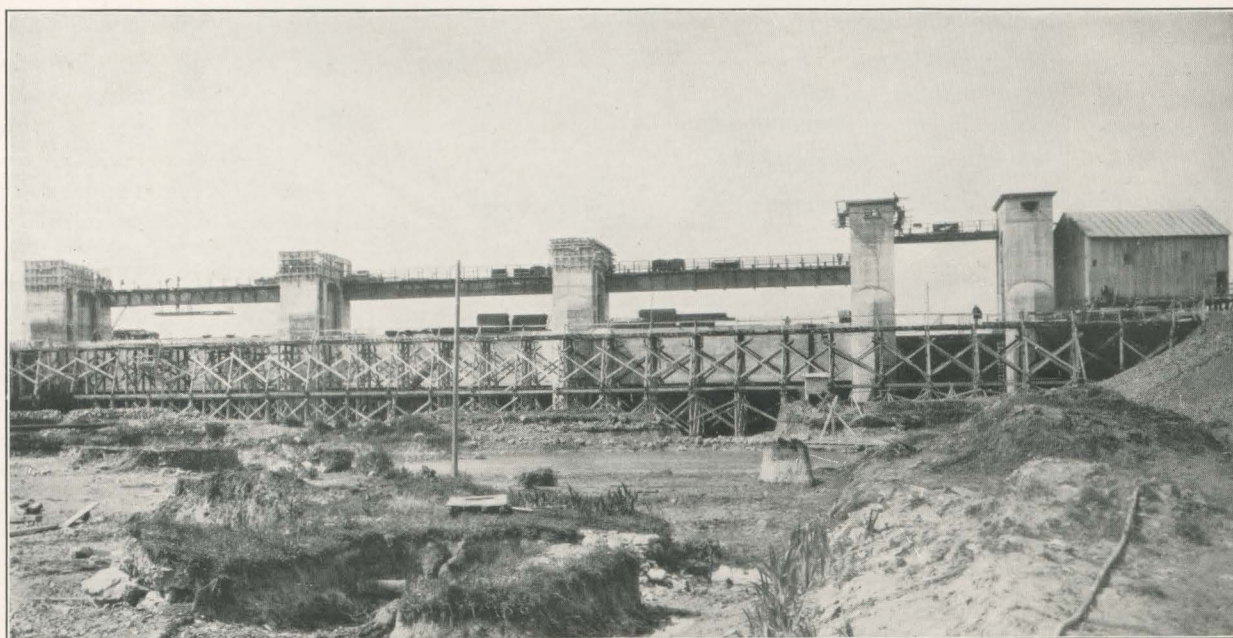
+ 25.90 for the 25 m. wide opening, that of the 10 m. wide ships' pass is at a higher level of + 29.80. The spillway extends to just beyond the ends of the piers and is as the whole of the structure founded on Devonian red sandstone. Inside the sill a tunnel measuring 4.00 m. $\times$ 3.20 has been constructed, which, working on the principle of an inverted syphon, discharges the Black River into the Shannon below the Weir. The portion of the tunnel lying outside the length of the Intake Building, namely under the banks of the Head Race, is made in reinforced concrete inside a trench excavated in rock. At the entrance to the inlet pit of the syphon a small fish pass has been provided to enable the fish to go up and down the Black River. The sills and spillway have been made in concrete throughout without a special granite facing as in the case of the Weir, as no big rush of water can take place since the water levels in the Shannon and the canal will always be the same, while the canal is in operation.



Plan of the Weir and Intake Building



ding from the left Head Race bank



Intake Building in course of construction

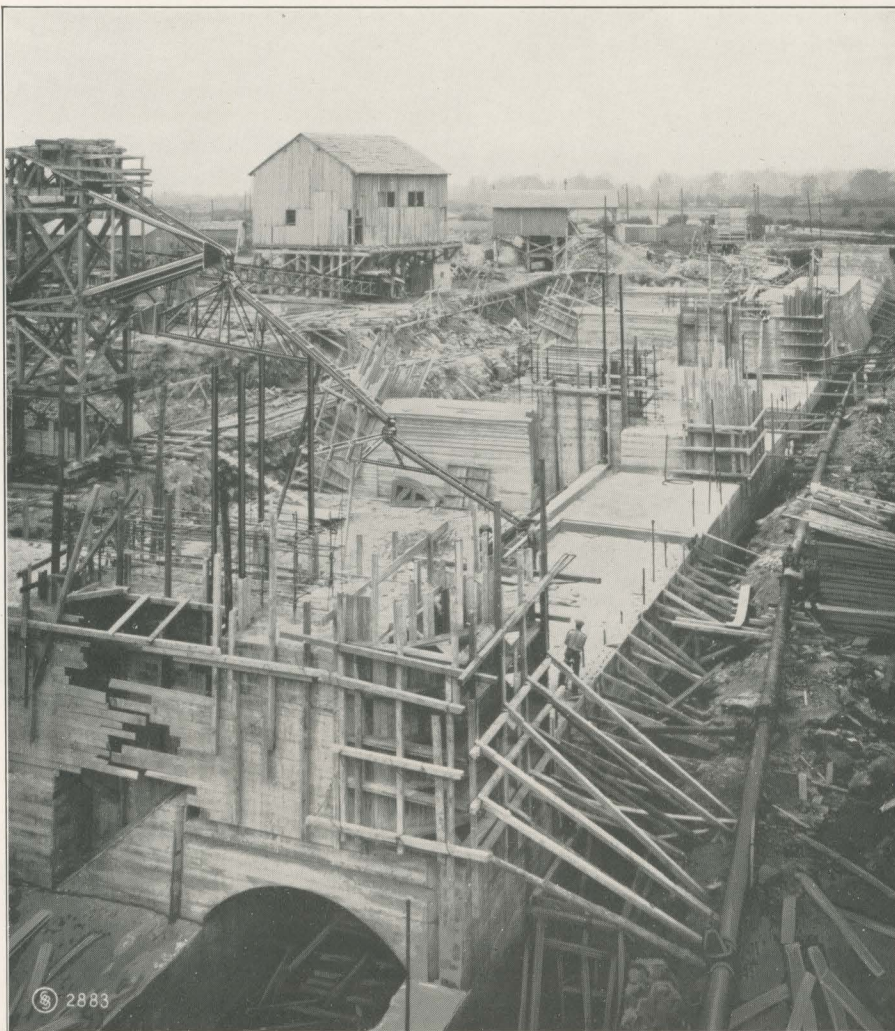
The piers are each 4.00 m. thick with recesses on either side to take the gates and are made in concrete with a considerable amount of steel reinforcement.

Spanning the three 25 m. openings and running right through the 2 central piers and well into the left abutment and ships' pass pier is the submerged curtain wall. This structure is a hollow reinforced concrete beam of very large dimensions measuring 5.40 m. in depth and 2.50 m. in width. On account of the comparatively thin outside and cross walls (30 cm.) the placing of the reinforcement, shutterings and the pouring of the concrete was complicated. The wall during the concreting was supported on

huge centerings extending from level of the sills at + 25.90. The curtain wall is supported at the piers and left abutment by horizontal as well as vertical steel bearings, the horizontal ones taking the weight of the structure, the vertical ones the side thrust which may arise should the canal be emptied while the level in the Shannon above the Weir is

at its highest namely at + 35.70 during full development. All the bearings except one set in the middle pier are sliding bearings designed to allow for longitudinal expansion of the wall, due to temperature variations. The idea of the curtain

wall is to reduce the height of the gates and consequently that of the piers and the size and power of the lifting gear. Should there have been no wall, it would have been necessary to have the gates extending to the highest water level + 35.70; as it is, they only extend to the level of the under side of the wall + 31.60; the three rectangular openings between that level, the sills at + 25.90 and the piers are sufficient to admit the necessary quantity of water



Intake Building in course of construction. The cross section of the syphon can be seen in the foreground

to the canal. As the wall has been left free to move on the bearings inside the piers, it could not be concreted monolithic with them and consequently special water tightening devices at the resulting joints had to be provided to obviate the danger of leakages in the case of it being necessary to run the Head Race dry.