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**SIEMENS**

Siemens-Bauunion GmbH.  
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PROGRESS ON THE SHANNON

2<sup>nd</sup> YEAR

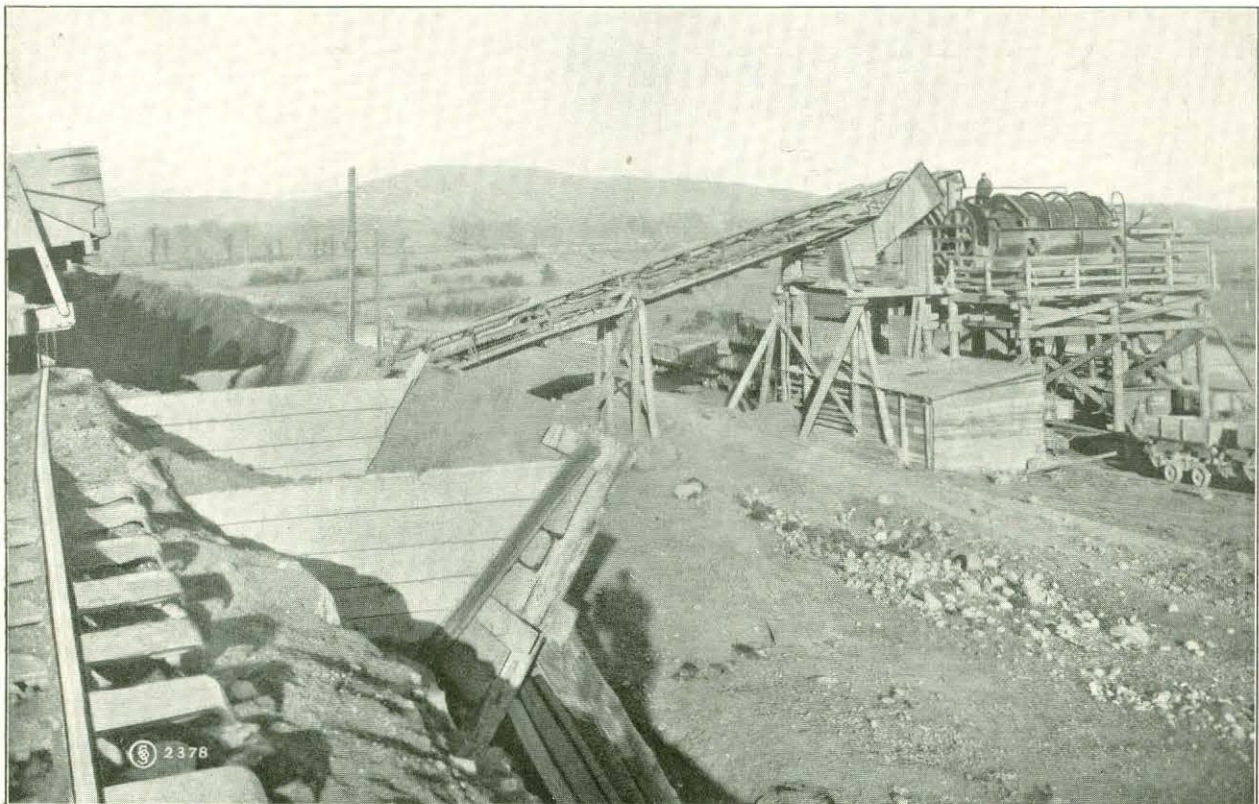
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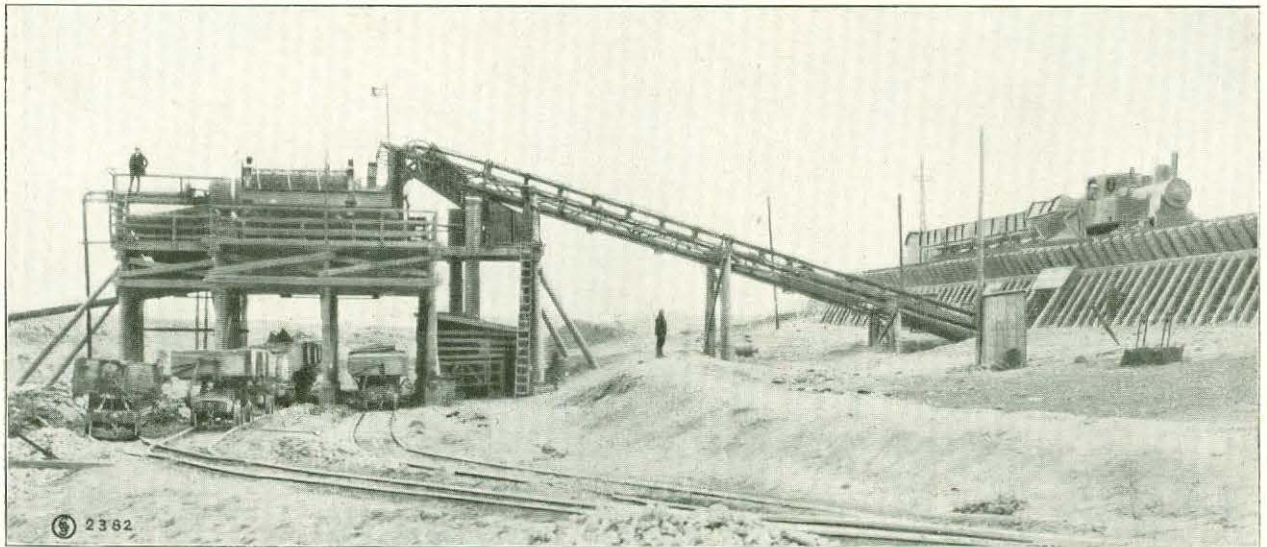
## The Gravel Washing Plant at the Weir

**F**or the construction of the large concrete buildings, the Weir, Intake Building, Power Station as well as the Bridges over the Head Race and the Culverts and Syphons below the Head Race, the preparation of large quantities of aggregates is necessary. The large crushing and washing plants at Ardnacrusha and Clonlara produce sand, chips and broken stone

out of the rock material excavated on the Head and Tail Races. In order not to reduce the output of broken stone by the production of larger quantities of fine sand which are necessary for the grading of the concrete, the gravel obtained from the excavation of the Head Race is also used as aggregate for concrete. The nature of the ground



"Bavaria" washing plant



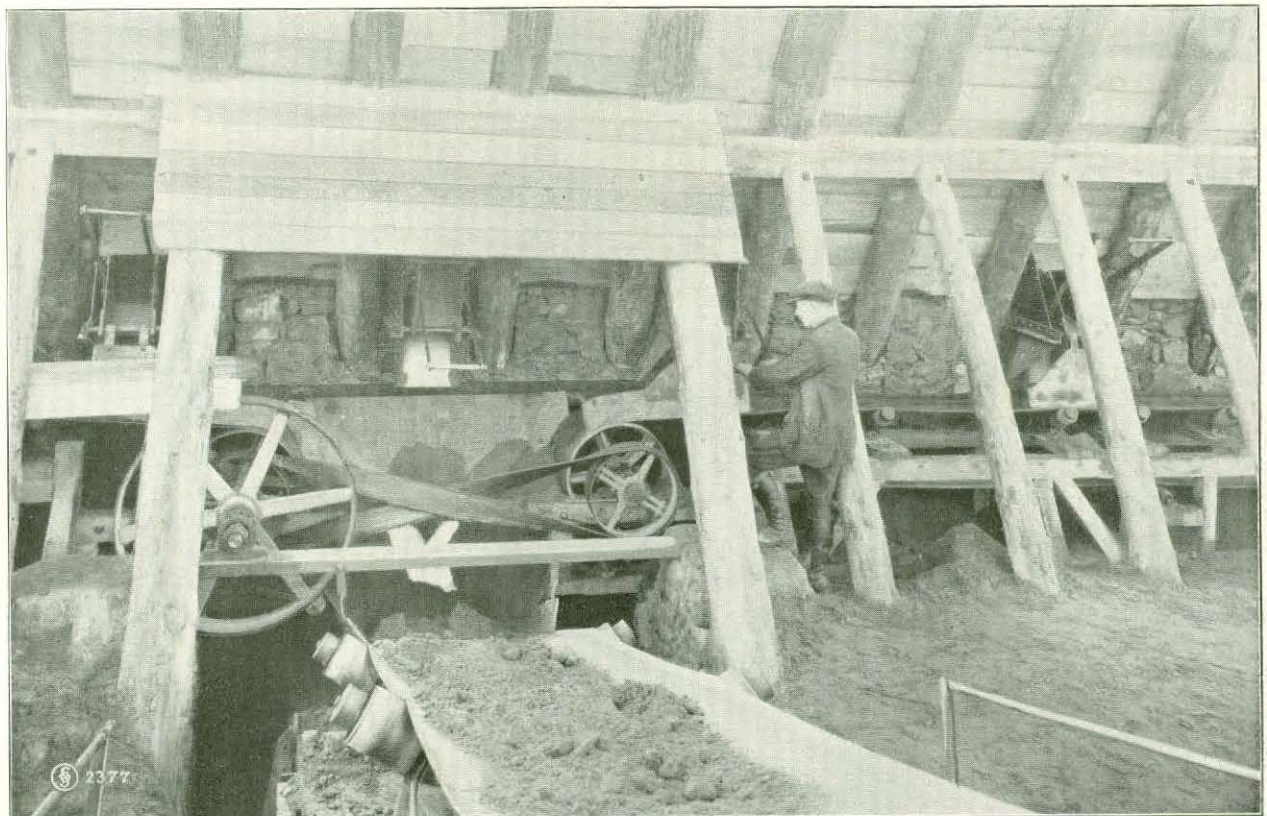
Washing plant with Conveyor belt and Silos

does not allow of the use of this material in its unwashed condition. Consequently in the vicinity of the Weir Building Site a large gravel washing and sieving plant has been erected to prepare the excavated material for concreting purposes.

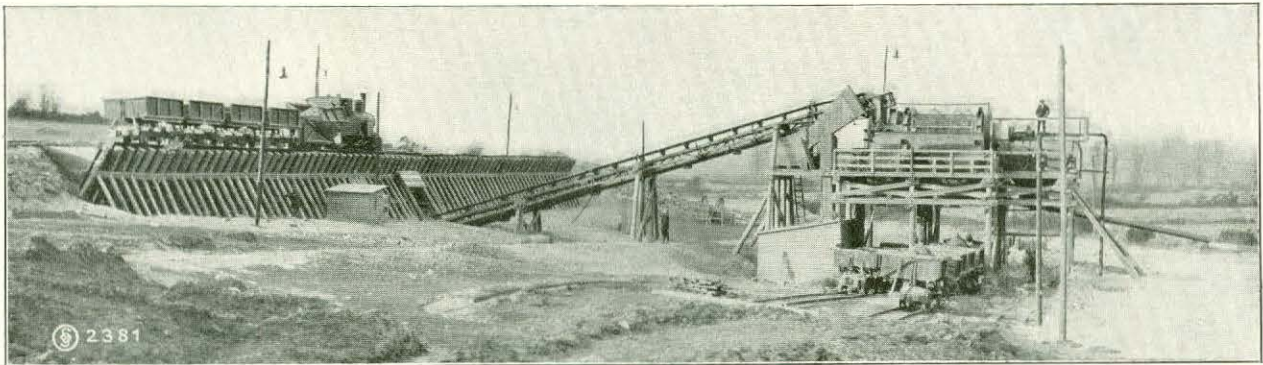
Our second picture gives a clear view of the whole plant. The process is purely mechanical from the

time the material is brought to the plant until it comes out as material suitable for concreting purposes. Labour is only required for the supervision of the machinery and for the opening and closing of the silo valves.

The unwashed material is brought from the excavation pits to the silos on a banked branch of



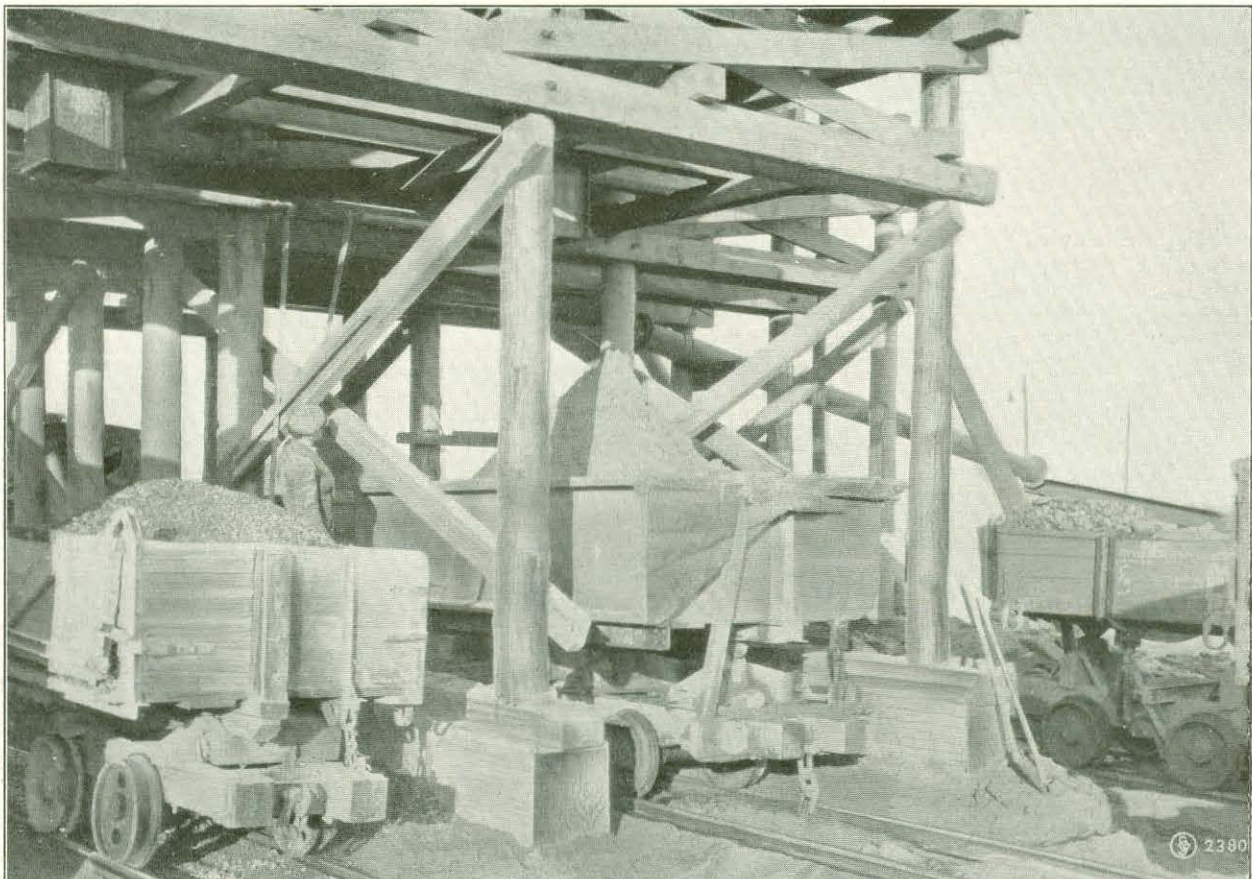
The unwashed material is transported by belts running below the silos on to the conveyor belt up to the washing plant



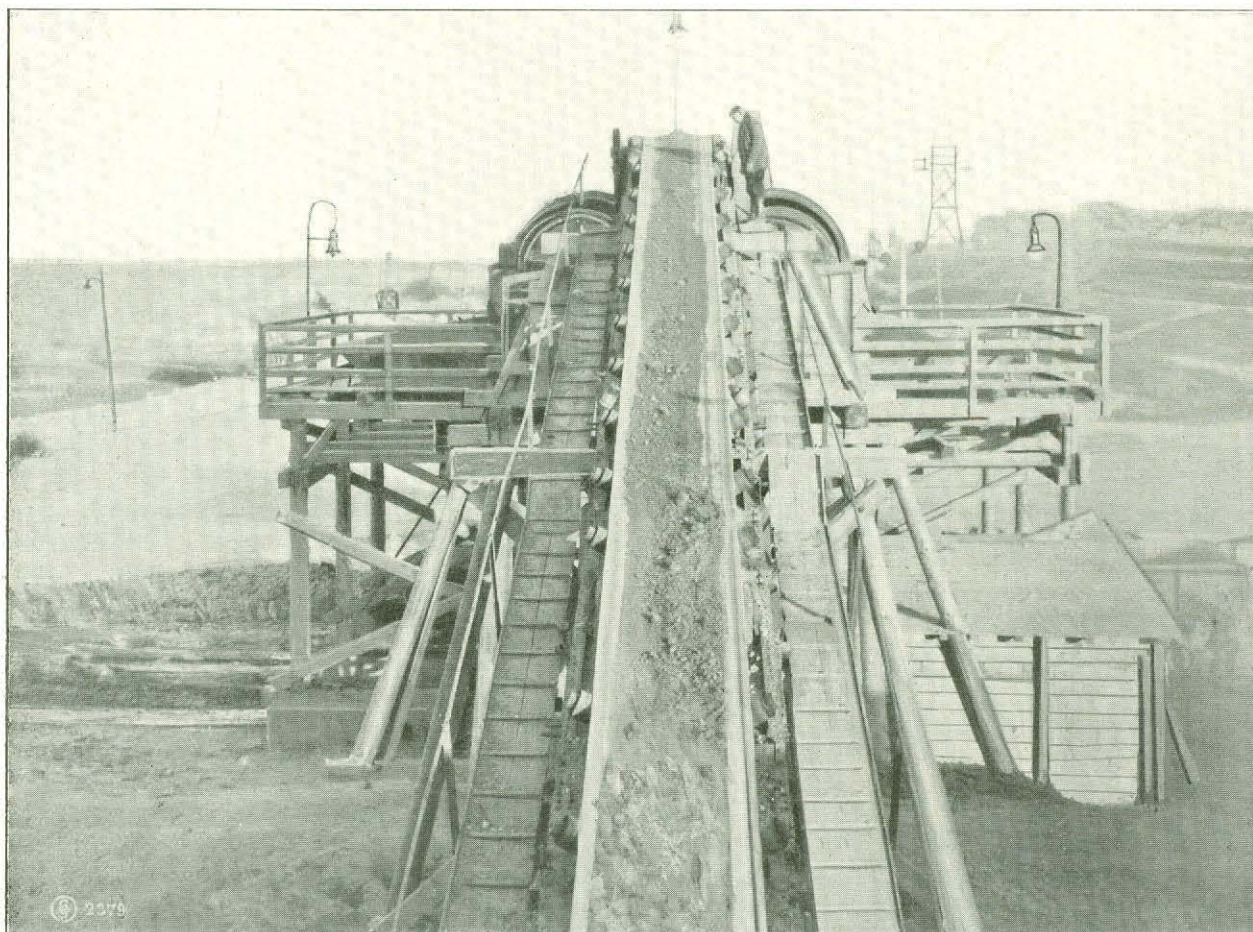
General view

the main transport line. With a capacity of 150 cbm and the total length of the silos being 62.0 m, 15 self tipping trucks, each containing 5.3 cbm, can be emptied without moving the train. In this way the trucks can be emptied in the shortest possible time. The longitudinal walls of the silos consist on the one side of a retaining wall built of stones and on the other side of planks sloping at an angle of  $60^\circ$  to the wall. Strong round uprights, which are anchored in the lower part of the stone wall and are supported by struts on the upper part, take up the pressure of the material on the timber planks.

One of our pictures shows the emptying of the silos by means of round valves, of which there are altogether 32 on the whole length of 62.0 m. By means of a lever one workman can easily supervise the valve and govern the supply of fresh material. Two 0.5 m belts each 30.0 m long, which run horizontally under the silo, transport the material on to one-metre belt. This belt in its turn brings the material to a washing plant at right angles to it and down a gradient of 1:4. A 15 KW electrical motor works these 3 belts at a rate of 1.8 m/sec. The plant consists of 2 modern "Bavaria"



Removal of washed material from the silos of the gravel washing plant



Conveying the material to the washing plant

washing and sieving machines, working parallel to each other and erected at a level permitting the washed material to be tipped straight into the trucks, leaving sufficient room for the locomotives to pass.

These "Bavaria" washing machines consist of a washing drum divided into two for the first and second washings and of rotary washing and sorting drums. The gravel is dropped into the first washing drum and is then brought by means of two large scoops in to the second washing drum, where it is transported by spiral transporters in a longitudinal direction, during which time the first sieving process is carried out. The coarse part of the material falls out into the overflow silo which is common to both machines. The rest of the material falls through the inner drum into the outer one which is provided with a very fine sand mesh. This fine-meshed sieve separates the sand from the gravel, which is brought by means of 2 spiral transporters to the scoops and eventually to the gravel and sand silos. The washing drum rotates inside a water-filled drum so that during the whole process the material is constantly in water.

The clean water enters the washing drum at the overflow end and the waste water comes out at the

end where the material is put in. The very coarse material is further washed by means of a sprinkler.

The drums rotate 6 times a minute and are worked by a 12.5 KW electrical motor with belts and cog wheels. The arrangement is such that the machines can work independently of each other.

Under the silos 3 tracks are provided to remove the material. No interruption of the washing process can occur, as the dimensions of the silos are such that the machines can continue working when the silos are full. The silo outlets are closed with round valves and can be regulated from below by means of a long lever. A locomotive provides the plant with empty trucks and takes the filled trucks to their respective destinations.

The whole plant is designed to deal with 30 to 35 cbm of unwashed material per hour. The water required for the cleaning of the material varies between 2 and 5 cbm per 1 cbm of unwashed material. A centrifugal pump has been erected for supplying the water to the plant from a distance of 300 m.

3 gradings of washed material can be obtained for concreting purposes. These are as follows:

0 — 7 mm, 7 — 38 mm, 38 — 100 mm.