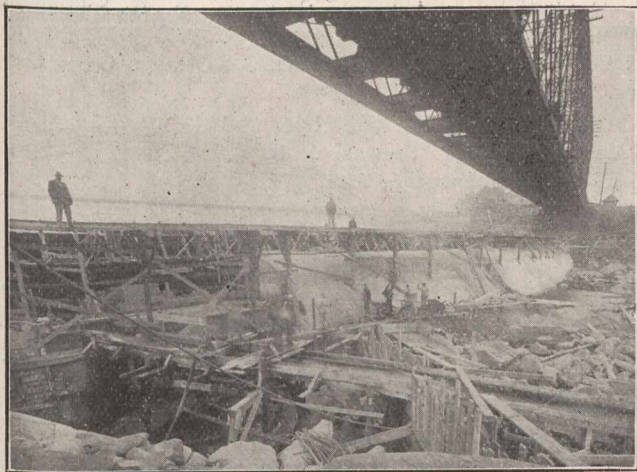


The contract was let to the Aberthaw Construction Company, Boston, Mass., who began work in July, 1908, and was completed in about four months.

The dam is of very irregular cross section, the crest, of course, remaining the same throughout its entire length, but the base varying with the depth of the river bed. At the maximum it is 38 feet deep. It changes direction five times.



**Down Stream Side of Bellows Falls Dam.**

The down-stream face of the old crib dam served to some extent in place of forms in placing the concrete. Elsewhere matched spruce was used. The concrete was mixed in the proportion of 1:3:5. Almost 80 per cent. of the crushed stone was brought down to a size that would pass through a 2-inch screen. Rubble stones were at least one cubic foot in volume.

In the construction of the mixing plant which was designed by the contractors a platform was provided for re-

ceiving through chutes. Through the medium of these pockets, which were built in the correct ratio of volume, the proper mixture was insured, the bags of cement being emptied into the mixer from a special platform.

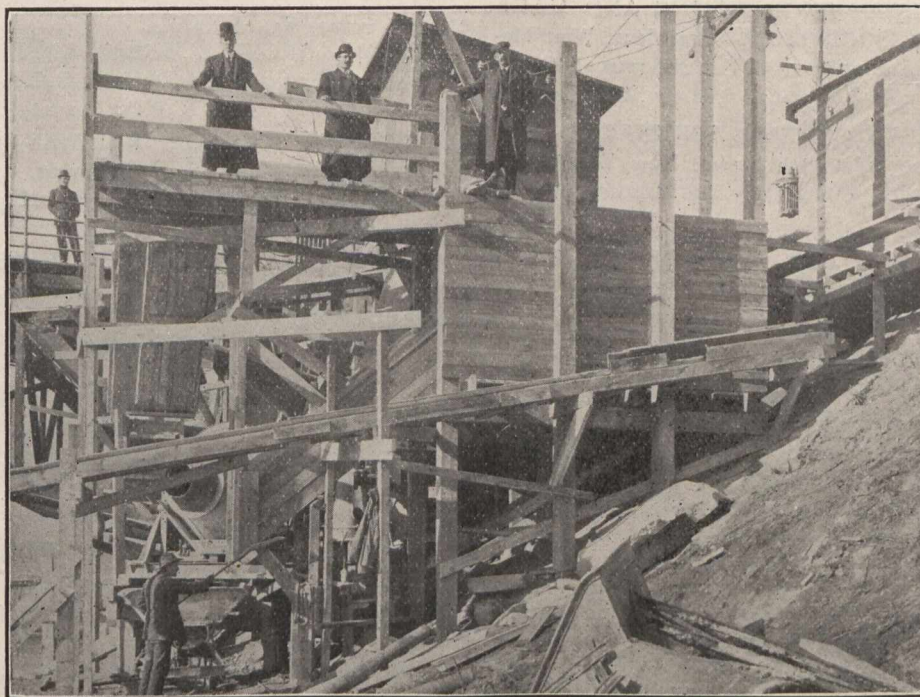
Gravel and sand were taken from a pit about one-eighth of a mile away, and stone from a quarry at a distance of three-quarters of a mile. Gravel was handled at the pit by a  $\frac{1}{2}$  cubic yard orange peel bucket in connection with a derrick having a 70 foot boom and 40 foot mast. The contractors maintained a screening plant at the gravel pit. All sand and stone were carted to the mixing plant.

The working gang averaged about 125 men. The cost of labor per cubic yard averaged about 12 cents at the mixer. A total of about 15 cents per cubic yard was chargeable to the original cost of the mixer plant and the electrical operation of the mixer, and about 30 cents per cubic yard to transportation, dumping and placing. The form work cost approximately 9 cents per square foot of surface contact.

The concrete was deposited along the top of the dam by means of the cars which were propelled by hand. It was dumped into chutes leading to the base of the dam and there spread by laborers.

Coffer dams were required throughout most of the work, particularly on the Vermont side where the greatest trouble with water was experienced. These were generally built of 12 inch logs, bolted together with cross logs 10 ft. on centres. These coffer dams, which were constructed as rafts, were towed out into the stream and there sunk to the level of the dam foundation. Four-inch spliced and grooved sheeting was driven to a firm foundation by a maul. It was then withdrawn and trimmed if necessary for the final driving to bed rock.

The work was done in sections with bulk heads installed at right angles to the general direction of the coffer dam



**Mixing Plant.**

ceiving the wagon loads of sand and stone, and connecting therewith were a cement runway, chutes for sand, gravel and stone. Power was furnished by a 35 horse-power motor. A centrifugal pump supplied water for washing, and a 21 cubic foot Smith mixer delivered concrete by gravity into Koppell dumping cars. These cars run from one end of the dam to the other on a 24-inch track, supported on a timber trestle about 4 feet above the crest. Beneath the upper platform pockets were provided for gravel and stone which was re-

work, parallel to the face of the dam. After the completion of the concrete work dynamite was employed to blow up the crib work. A derrick was first employed to remove the stones which were previously used to sink the crib. The total amount blasted out of the river bed in the preparation of the dam footings was about 300 cubic yards; the total amount of concrete was about 5,250 cubic yards. The aggregate cost of the work, including forms, coffer dams, pumping and incidental charges, was approximately \$43,500.