

A start was made on the concrete spillway weir in July last, but a considerable amount of temporary protection-work was necessary before the site was ready for excavation. The Waikato River at this point is divided into three channels, and in order to proceed with the excavation it was necessary to block the main channel with a sand-bag, timber, and stone gabion wall, 573 ft. long; this enabled excavation work to proceed.

While the excavation was being carried on, the preliminary work of erecting the concreting-plant, storage-sheds, shingle-bins, and cableway for transporting the shingle and material across the headrace was completed. Concreting has progressed steadily, and the weir extended across two channels, a length of 400 ft. In this portion of the weir provision has been made for two gate-openings, one 42 ft. by 14 ft. deep, to receive a power-operated sluice-gate of the Stoney type, and the other 50 ft. by 8 ft. deep, for a Boving automatic crest. Considerable difficulty was experienced in carrying out this work, owing to the great amount of work necessary to divert the water from time to time, and also on account of the very heavy floods which occurred. On the 23rd May the heaviest recorded flood in the Waikato for the last eighteen years was experienced, and generally throughout the work the average river-level was the highest recorded for a number of years.

During the year a great deal of material, including the machinery for two 2,000-kilowatt units, was transported by traction-engine and trailer from Hinuera Railway-station, a distance of 11 miles, and repairs to the Hinuera Valley Road were carried out where necessary.

ARAPUNI.

A contract was let in July, 1924, for the main constructional works involved in the above scheme. Prior to the letting of the contract a certain amount of developmental work was carried out, and during the early part of the year the formation of the access roads was completed and metalling finished. The branch road to the power-house is also formed, and the bridges over the Waikato and headrace were completed. These access roads were then handed over to Messrs. Armstrong, Whitworth, and Co. for maintenance under the terms of their contract.

The Department has also commenced the formation of the deviation of the Waotu-Arapuni Road. The Waiteti Flat deviation has been located, and arrangements have been made for the land-plan survey. The Department is also putting down bores with a calyx drill for the purpose of further investigating the nature of the rock at the spillway and at the dam-site.

Immediately the contract was let the contractors started to erect the necessary accommodation for their workmen, and excellent progress has been made with this. Sufficient provision has been made for 325 single men and 82 married men. The staff cottages and hostel are well in hand. Satisfactory progress has been made with the sewerage systems, and water-supply pipes are now being laid, and the construction of the reinforced-concrete reservoir is in hand. A commodious recreation-hall has been provided, and a regular moving-picture entertainment is supplied twice a week.

The erection of the poles and cables for the permanent reticulation of the village is in hand, a temporary service having been provided in the meantime.

The most important work on this contract during the early stages of construction is the driving of the diversion tunnel, through which the river will be turned, in order to enable the dam to be erected in the present bed of the river. A start was made in October with the clearing of the talus from the outlet, and the excavation of the arch section of the tunnel was commenced at the outlet end in January, and at the intake in April. In February a start was made to cut an incline at the outlet end down to the invert level, but considerable trouble was experienced with water, and after trying out several methods it has been found necessary to install a 10 in. centrifugal pump. Better progress would have been made with this diversion tunnel had it not been for three floods occurring, two in May and one in June, which held up the work to a considerable extent.

At the dam-site and cut-off walls excavation work was carried down as far as possible pending the completion of the diversion tunnel and consequent lowering of the water-table. The contractors are now installing a cableway for use in the erection of the dam proper, as well as for the completion of the excavation and cut-off walls. It was at first proposed to put in a series of large blasts in the gorge in order to form a temporary dam to divert the river through the diversion tunnel, but the contractors, after investigation, decided that the work was unsuitable, and they therefore now propose to construct a needle dam.

A start was made with the excavation of the head-race at both ends, but so far not very much progress has been made. The excavation for the penstock gates and for the spillway weir is in hand. The excavation for the power-house was commenced in November, and fair progress has been made. The spoil from this excavation is being dumped into the river and carried away by the current.

The construction of the anchors and piers for the suspension-bridge across the Waikato River is approaching completion.

After considerable investigation, the contractors opened up an outcrop of greywacke about 60 chains down the river from the Muku Creek quarry-site. The rock proved to be of good quality, and will be quite suitable for the work. In order to transport this metal from the quarry to the dam-site (a distance of approximately 10 miles), the contractors are erecting a cableway capable of transporting 40 tons per hour. The wooden towers of this are now being erected.

At the quarry itself accommodation has been built for the workmen, and a portion of the quarry-face has been stripped, while the foundations, &c., for crushers and machinery generally are being prepared.

Stores, cement-sheds, workshops, and offices have been erected at Putaruru and at the sites of the various works, while temporary substations have been installed at various points of the work; power transmitted electrically from Horahora is being utilized to drive most of the contractors' plant.