

## CONSTRUCTION

*Roading in Waikato Development Area.*—*Mangakino-Whakamaru Road* (Left Bank), (Length, 5 Miles): Base-course and top-course metalling have been completed and tar primer applied for the full distance.

The Mangakino Stream Bridge, 280 ft. long and consisting of two 85 ft. and one 110 ft. spans (24 ft. roadway), has been completed in reinforced concrete.

*Tokoroa-Whakamaru Road* (Right Bank): Base-course metalling (5 miles between 12m. and 17m.) has been completed, also the 10-ft.-diameter high-level culvert at the Mangakowiriwiri Stream.

*Maraetai-Waipapa Road*: A contract has been let for and work is in hand on the formation and culverting of  $4\frac{1}{2}$  miles of this road from its junction with the Maraetai Power-house access road.

*Maraetai Power-house Access Road*: Construction in reinforced concrete of a 220 ft. span arch bridge across the Waikato River is proceeding.

Surveys for 12 miles of road to Waipapa from the Tokoroa-Whakamaru Road, near Tokoroa, are in hand: also for the Maraetai to Waipapa Road, from  $4\frac{1}{2}$ m. to the Waipapa Dam site.

*Mangakino Village.*—One hundred and twenty-two houses for staff and workmen's accommodation have been erected during the year, making a total of 717.

A community hall (floor space 9,113 square feet) has been completed.

Three miles of streets have had a dust-proof seal coat of bitumen applied, making a total of 7 miles of streets so treated.

For sewage-disposal, an additional imhoff tank and a set of sludge-drying beds for 500 persons have been installed.

The population of the town and adjacent single men's camp is 3,700.

*Maraetai Power Scheme.*—The diversion tunnel was completed during the year, including grouting of the soffit of the arch throughout and complete grouting at the gate shaft and spillway junction.

The spillway intake abutment piers have been completed and the arch of the sloping leg from the intake to the diversion tunnel excavated and lined. Removal of the remaining rock in this section is in hand.

The coffer-dams required for dewatering the power-house and dam foundation areas have been completed, also the dewatering. Grouting round this area was done to minimize the leakage of ground water, a precaution that was eminently successful.

Excavation for the arch dam and thrust blocks is nearing completion; consolidation grouting of the foundation rock for the right thrust block has been completed.

Twelve thousand cubic yards of concrete have been placed in the power-house foundations and draft-tube zones. The steel frame for the power-house workshop and three bents of the power-house superstructure frame have been erected in place.

The concrete-aggregate crushing, washing, and screening plant, the aggregate stock-pile and reclaiming conveyor, the cement unloading shed and silo, the concrete weighing-batching plant, and two  $7\frac{1}{2}$ -ton capacity traversing cableways for handling concrete and other materials to the power-house and dam were designed and have been completed and successfully operated. These units are designed to enable a maximum of 84 cubic yards of concrete to be manufactured and placed per hour. Twenty-five thousand cubic yards of concrete aggregate have been processed and delivered to stock-piles.

Drilling and grouting the cut-off curtain, which is to extend for approximately 1,000 ft. into the country rock from each dam abutment, has been continued. That on the left bank is practically completed, and on the right bank approximately 60 per cent. completed. A total of 79,400 ft. of holes has been drilled and 4,790 tons of cement used for grout.