

fitting of the joints might be better and stronger than if only round bush timber had been used, as at first intended. Except 40 ft. at the eastern end, which is floored with damaged totara planks, the decking is all composed of split white-pine slabs, roughly dressed, and secured to stringers by spikes. This split decking was used for the sake of economy, as sawn decking would have cost £30 additional, but the sawn decking would have made a stronger and better-looking job. The abutments of the low-level bridge are sills bolted into the papa, the bolt-holes being grouted up with cement concrete. Each span is independent of the others, so that in the event of one span being carried away by floating timber the others may not be affected. Most of the cost is in the piers; the stringers and decking are comparatively inexpensive. So, to avoid risk of the piers being damaged in the event of heavy timbers smashing the stringers, the whole superstructure is only fastened to the caps by hook-bolts, which are, however, strong enough to overcome the buoyancy and resist any ordinary shocks. The difficulty experienced in driving the rails (those previously in stock proving to be too light, thus necessitating the procuring of heavier ones), the squaring and dressing of the timber-work, and other extras found to be advisable in the course of the operations, have all contributed to make the cost considerably greater than that stated in my report of the 10th January, 1898, and in your authority of the 14th January, 1898. My requisition of the 3rd December shows this. There I put the extra sum required to complete the structure at £150. The total cost of the bridge has turned out to be—Iron rails, £36 3s. 3d.; ironwork, £4 17s. 8d.; ropes, spikes, wire, &c., £17 10s. 3d.; haulage, £21 17s.; horse-feed, £7 9s. 8d.; sundry accounts, £11 19s. 7d.; wages, £233; inspection, £34 10s.; contingencies, £2 8s. 3d.; total, £369 15s. 8d. This includes a considerable amount of extra plant still in hand. Including cost of material and plant previously in hand, at present charged against permanent structure, the total cost of low-level bridge will be about £500, or, approximately, £2 per running foot. Although I was aware that the amount authorized was being overrun, I could neither stop the work nor judiciously cheapen it during the course of it. The work is well done for the money, and could not be done appreciably cheaper. The weather throughout was most favourable for the work, the river being most of the time at an abnormally low level. The bridge is extensively used by all kinds of traffic, including stock. Approaches at easy grades have been formed down to it. There are fences guiding on to the bridge, but there are no handrails or guards on it. A notice has been posted up to the effect that no loads of over 2 tons are allowed to cross the bridge, nor is any speed above a walking-pace permitted. Besides being of great advantage for public traffic, the bridge will be almost indispensable for conveying material, &c., across the river when the permanent structure is proceeded with. The late flood was 4 ft. over the decking, or 10 ft. above summer level. The bridge sustained no damage, and stood the test very well. Several large snags which were caught on the bridge have now been cleared off.

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WELLINGTON EAST.

Potaka Road (Awarua Block), Ngaio.—This road, which passes through bush country, has been formed and is now open for horse traffic for 1 mile 10 chains. For another 50 chains the bush has been felled and cleared, but will not be available for traffic until graded and formed. Contracts are in progress for felling and clearing a further length of 60 chains. The following are the details of the operations during the year: 140 chains of road-line felled and cleared; 90 chains of formation 6 ft. wide; 1 log bridge 22 ft. long; 276 cubic yards of slips cleared; 56 chains of water-tables opened, and 358 cubic yards of rock excavated.

Mangakokeke (Awarua Block).—During the year this road has been felled and cleared for a distance of 43 chains, and, as it runs through flat country, is now passable for horse traffic for the entire length.

Upper Kawatau Road (Awarua Block).—The completion of two co-operative contracts for bush-felling has cleared this road-line for 63½ chains, 33 of which, being level, is fit for horse-traffic. About 60 chains of this road passes along steep cliffs, where, to insure safety, it will be necessary to have a formation of at least 8 ft. in width. This work will certainly be very costly, in consequence of the nature of the country entailing extensive rock-excavations.

Kawatau Valley Road (Awarua Block).—This road has been graded and pegged for 35 chains; bush felled and cleared 169½ chains, connecting with the Aputa Road; widened to 16 ft. for a distance of 89 chains; 64 chains have been metalled, 12 ft. wide; a temporary log bridge, 46 ft. in length, has been erected; twelve culverts (nine 12 in. by 12 in., two 18 in. by 18 in., and one 3 ft. by 2 ft.), 216 ft. in length, have been laid; 3,670 cubic yards of slips cleared; 810 chains of water-tables opened; 2,211 cubic yards of rock excavated; two chains of corduroying laid; 141 chains of drains cut; and 1 chain of embankment formed. The length of road where the bush has been felled is not yet passable for horse traffic, being steep sideling ground requiring formation. Considerable damage was done to the lower part of this road by the Easter floods of last year, 15 chains of formation being almost washed away, and a truss bridge of 56 ft. span being destroyed. It is proposed to replace this bridge by one of 80 ft. span. The work of widening the sideling and an exceptionally heavy block cutting deviation in papa rock is now in progress. The length of this road to maintain is four miles, the first of which is very expensive, owing to the numerous papa rock slips.