

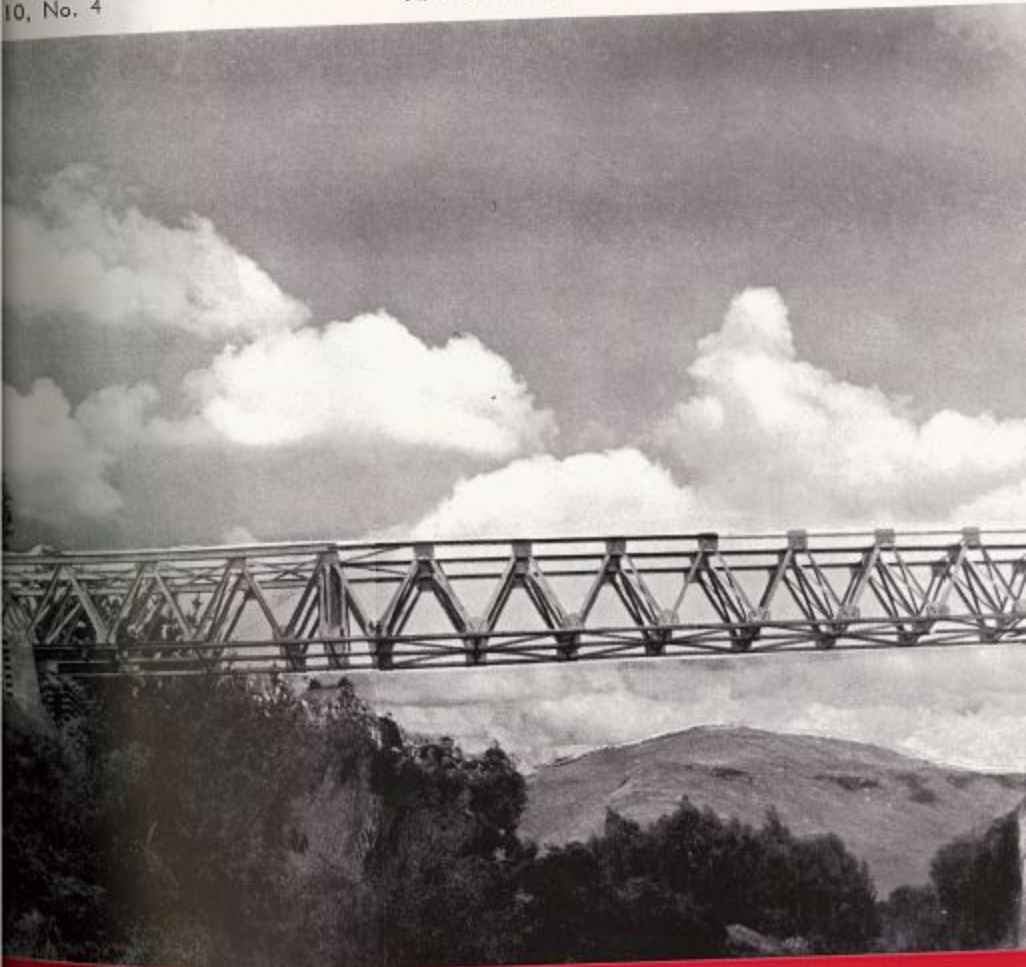
NEW ZEALAND

# Engineering

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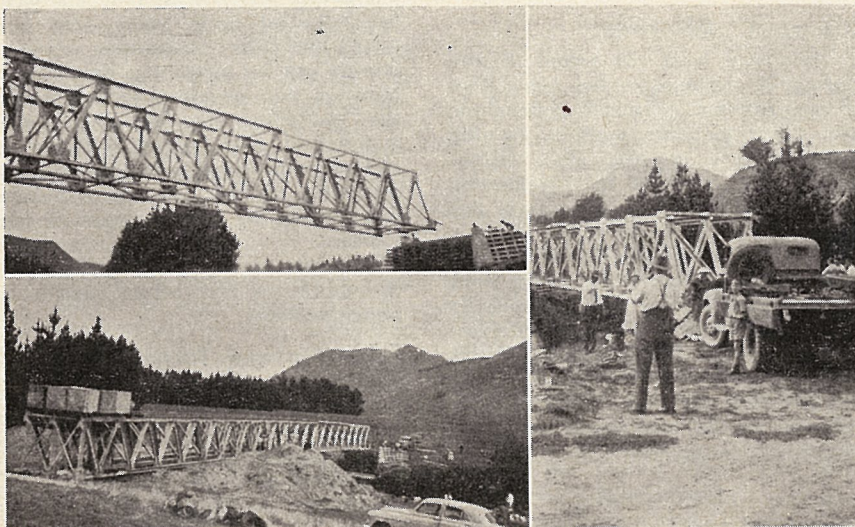
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# Of Engineering Interest



70 ft. pull in final stage of the launching

## Bridge Replacement with Callender-Hamilton

**A**BOUT twelve miles north-east of Taihape, in the Rangitikei County, the Napier road crosses the Moawhango River, which at this point flows through a fairly steep-sided deep cutting, about 100 ft. across.

Moawhango literally means "wheezy moa", though more probably is intended to mean "valley of the moa", and it is centred in one of the historic areas of N.Z. Also rather historic is the wooden bridge which spans the river. Now old and shaky, its capacity to continue carrying heavy loads has been giving concern for some time, and it was decided that complete renewal was necessary. For a number of reasons the decision was made by the County engineer, O. D. Bell, to replace it with a Callender-Hamilton bridge.

First, the urgency of the renewal called for a type that could be erected rapidly. Secondly, difficulty had been experienced in interesting contractors in bridge construction in remote localities, and the adoption of a type that could be erected largely by County Council labour seemed to solve that problem. Thirdly, the site lent itself very well to the erection and launching of a prefabricated type. Finally, it was felt that a substantial saving in the overall cost would be achieved by using a prefabricated steel span. Costs were also reduced in steel and abutment construction by selecting a deck type of span rather than a through type of truss.

The three-truss steel work was in two parts, the 130 ft. clear span, weighing 52 tons, and the 85 ft. 18-ton launching nose. Briefly, the method proposed was to launch the bridge across the river so that the two ends of the main span came to rest upon "pig-sties" of sleepers built up in the abutments; the sleepers would then be removed to lower the top of the trusses to the approach level.

The span and nose were erected on a specially prepared launching site 170 ft. in length on the left bank. It was originally proposed to launch on an up-grade of 1 in 40, but there were drainage difficulties in the cutting. As a compromise, the first 80 ft. of the site was level and the remaining 90 ft. graded up to the launching point over the abutment at 1 in 40. Rails were laid to these grades and the structure erected on them. The launching points were supported by a 22 x 7 R.S.J. under each of the three trusses, the ends of which rested on the pig-sties of sleepers in the abutments.

The launching took place in three stages. The first two stages entailed pulls of 30 ft. to enable further bays to be erected in the rear. The final stage consisted of a pull of 70 ft. to bring the nose to the abutment on the right bank. For this pull a counterweight of 20 tons was placed on the shore end of the truss to counterbalance the nose, etc., during launching.

No difficulty was experienced in moving the truss and nose in any of the three stages of launching. In the final stage, when the nose reached the abutment on the right bank, the launching shoe was 2 in. below the level of the receiving rail and about  $1\frac{1}{2}$  in. off line downstream. The nose was pulled into line with a hand winch and raised about 3 in. with a jack, the receiving rails slid up and spiked down. The nose was then lowered on to the rails and pulled a further 10 ft. to safety.

The erection of the steel commenced on January 24 and the bridge was launched on March 4. After launching, the nose was dismantled when the 130 ft. truss span was ready to be lowered 11 ft. to its final position. All that then remained to be done was the laying of the concrete deck and the fitting of the rails.

## COURSES ON AGGREGATES AND CONCRETE

### Auckland and Dunedin

The N.Z. Portland Cement Association proposes to hold two courses this year in Auckland and Dunedin. Both these courses will be similar to that held at Wellington in August of last year.

The course in Auckland will be held over the week August 22-26, and will be open to persons domiciled in the northern half of the North Island—that is, north of New Plymouth on the West Coast and Napier on the East Coast.

The course in Dunedin will be held over the week October 17-21, and will be open to persons domiciled in the South Island exclusive of Marlborough, Nelson and the West Coast, as these areas were provided for by the course held in Wellington.

Both courses will occupy a full week. Monday morning will be allocated to registration, and Friday afternoon to field inspection. The courses will comprise lectures, demonstrations and films on the testing of aggregates and concrete and other subjects.

Enrolment will be open to clerks of work, construction foremen, precast concrete manufacturers, aggregate suppliers and others interested.

A wide range of publications will be issued to each candidate on the course in addition to lecture notes and specifications. At the conclusion of the course a certificate will be awarded to each person completing.

The course will be directed by M. A. Craven, engineer to the Association. Lectures and demonstrations will be given by well-known engineers and others well experienced in the subjects dealt with.