

diminished somewhat by notching and the effective depth of the trusses is about 10' 6", being somewhat less than one thirteenth of the span. The greater the span the greater the depth required for the truss; the span in this case being considerable, equal to the greatest of which I have seen an example, the depth of the truss should have been about the maximum that is to say, about one-tenth of the span, whereas it is less than the minimum of one twelfth. Add to this defect in the depth of the trusses the insufficiency in depth or width of scantling, very partially compensated for by the superior description of wood the designer proposes to use, and it will be evident that the bridge would not bear even a comparatively moderate weight. The designer has paid considerable attention to the abutments and the approaches of the bridge, to the details of construction, and to the specification; it is a pity, therefore, that he had not given a little more consideration to the effective strength of the main part of his design, which obliges me to place it amongst those not eligible or sufficient. I cannot give him credit for his Estimate, which though in tolerable detail, is quite insufficient: taking one item of material alone, viz., Totara timber; the price, exclusive of labour, is carried out at £6 per thousand feet, 12s. per 100; now considering that the price of pine is from 20s. to 22s. per 100 feet at New Plymouth, as appears by several of the Estimates, and that Totara is a superior hardwood, more costly in preparation, it is not too much to assume that its cost would be at least fifty per cent above that of Pine. In point of fact in one Estimate the rate of 35s. per 100 feet has been taken for Totara, which I believe is not above the mark, if sufficient to pay for its delivery on the spot; thus the item for timber would be about three times that taken in the Estimate for the design under consideration. As the item for the abutments is not in detail I cannot analyze it, but it appears to me small considering there is a certain amount of cut stone in it.

Having now considered each design, I will remark that to endeavour to satisfy the competing designers I have not confined myself to giving a simple arbitrary decision, but have endeavoured to explain in as popular terms as possible, and by reference to examples and actual experiments which are more valuable than simple theory unconnected with practice and experiment, the reasons for my judgment. Doubtless many parties will be dissatisfied, looking on their designs with a partial eye, especially as the only premium that I think ought to be awarded will fall, if I mistake not, on a

Civil Officer under my orders, whose hand writing in the specification I could hardly avoid recognising. This recognition caused me some momentary embarrassment, but it made me feel the necessity of most cautiously and impartially considering my judgment, and having arrived at an opinion it would have been a weakness and an injustice to have hesitated in recording that opinion because it was in favor of a design by a person I believed attached to my Department. It may be also considered that I have been over strict in not recommending the award of a second premium, but when in my firm belief there was not a second design that was by any means eligible or that ought to have been carried into execution, either from defects of strength in the bridge itself, insufficiency of abutments or other causes, the recommendation of an award would have been tantamount to a deception on the Provincial Government who might have carried the second design into execution if apparently at first sight more economical than the best design, (for instance Design No. 15, is very creditable in many respects, and the Estimate low) to their eventual grievous disappointment and loss and my own discredit.

There is one more point to which I would wish to direct attention, it is not adverted to in the Prospectus but it is one upon which the security of the bridge may most material depend. It is understood that trees are brought down the river by freshets and so large as to require one span of upwards of 100 feet to admit of their passing through if coming down with their length across the stream; it is possible that these trees may not be so denuded of branches but that large limbs may be projecting above the water sufficiently to catch the roadway of the bridge, and corresponding limbs be dragging on the ground at the bottom of the river; thus checked in their progress and to a certain degree acting as a dam to the water running down with almost irresistible force, either the branches of the tree or the bridge must yield. None of the designs shew a greater height than 8 feet above the level of the water in the highest freshets, and the best designer, No. 12, gives that clear height; whether this is likely to be sufficient or not I cannot from want of local knowledge decidedly state; the question, therefore, should be maturely considered on the spot, and, if requisite, such increased height be given to the abutments as will place the bridge clear of every obstruction and danger. The cost of the abutments and approaches, and of the appliances for raising the bridge would necessarily be somewhat increased, but this should not be a consideration if the exist-

ence of the bridge would otherwise be at stake.

Should you desire any farther opinion on this subject I shall be happy to afford it to the best of my ability, but future communications in reference to Public Works, Provincial or otherwise, should be sent

through the General Government, for whom I am acting as Inspector.

I have, &c.,

THOS. R. MOULD,
Col. Commanding Royal Engineers,
His Honor the Superintendent,
New Plymouth.

LIST of DESIGNS received for a BRIDGE over the Waiwakaiho River at New Plymouth.

No.	Motto or Device.	Nature of Construction.
1	Star with six points.	Wood, arched girders, trussed with tie rods
2	Circle in a diamond.	Iron, arched latticed girders
3	Triangle.	Wood, arched trussed girders
4	"Publico."	Wood, lattice trusses
5	"Haud ignotus."	Wood, bow girders with suspension rods untrussed
6	Two triangles crossed	Wood, arched girders, depending on abutments.
7	J C with a cross	Wood, cambered girders, under trussed, with tie rods
8	S C with 8 dots	Wood trussed, iron king and queen bolts
9	"Tarry a little in the beginning that we may make an end the sooner."	Iron, hollow girders
10	"Except the Lord build the house they labour in vain that build."	Wood trussed
11	"Qui laborat orat."	Iron, lattice girders
12	"Egmont."	Wood, bow girders trussed and suspension rods
13	V Z	Wood, trussed
14	X X	Wood, trussed
15	Concentric circles	Wood, lattice trusses

THOS. R. MOULD,
Col. Commanding Royal Engineers.

12 March 1858.

RETURN of the names of all persons to whom Scrip has been issued as Military Settlers under the 39th clause of the Land Regulations of the Province of New Plymouth from the 1st to the 31st of March, 1858, inclusive.

To whom issued.	Rank and Regiment.	Date of issue.	Amount.
		1858.	£ s. d.
John Kennist	Private 65th Regt.	19th March	40 0 0
John Watson	" "	" "	40 0 0
John Crozier	" "	22nd "	40 0 0
John O'Neill	" "	24th "	40 0 0
			£ 160 0 0

I. N. WATT,
Provincial Secretary.

Provincial Secretary's Office,
New Plymouth, 31st March, 1858.