Owing to the difficulty experienced in keeping design work ahead of construction, a certain amount of time has necessarily elapsed before final detailed plans of some schemes have been available. Specially trained staff has been entrusted with the designing of particular structures which involve difficult features, and the information and experience now available will enable the design-work to proceed more expeditiously. Wherever possible, the formation of approach ramps or cuttings has been commenced in advance, up to within suitable distance of the site of the proposed structure. This practice allows a certain amount of consolidation to take place, in readiness for traffic when the structure itself has been finished.

All overbridges are being constructed in reinforced concrete, and, because of their long life, special consideration is being given to the alignment of the bridges and approaches, and to vertical sight distances. The minimum curvature, except in special cases, is 10 chains radius, with 400 ft. vertical sight distance. The vertical curve in all cases is built into the bridge. The minimum width of deck will be 22 ft.

Pile-foundations are not generally required, so that where material for the construction of the ramps is not available on short haul, the bridge is often designed much longer, at no additional cost over the whole job.

The longer bridge has the advantage that it does not cover up frontage of properties as does an earth fill, and still leaves a strip of road reserve for access purposes.

A brief description of some typical overbridges is as follows :—

Styx.—Length, 575 ft. ; roadway, 30 ft., with 2-ft. wide kerbs on each side. Grade approaches 1 in 20. Bridge on straight except for one end span. Bridge on skew of about 50° to railway. Bridge has been used in preference to bank, down to a height of about 6 ft. This was economical on account of the high cost of filling, and the fact that access was required at ground-level parallel to the bridge, and if bank had been used retaining-walls would have been necessary. A contract has been let for this bridge. The total cost of the bridge only will be £7,521, or about 8s. per square foot.

Mokoia.—Three 30 ft. spans ; roadway, 24 ft., all on a curve of 10 chains radius. The bridge spans a fairly deep cutting, giving ample clearance to the railway. The centre-line of railway is 9½° skewed to the radial line at the centre of bridge, and all piers and abutments are parallel to centre-line of railway. The approximate cost will be £1,420, or about 13s. 6d. per square foot.

Pokeno.—Length, 125 ft., consisting of three continuous spans 32 ft., 61 ft., and 32 ft., supported on piles. Roadway, 24 ft. The bridge is on a skew of 30° to the centre-line of railway, and is wholly on a curve of 25 chains radius. The bridge is canted at ½ in. to the foot, and this cant, combined with the skew piers and vertical curve, makes the determination of deck-levels complicated. The cost is £3,600, and the cost per square foot £1 4s.

Oio.—Length, 130 ft. ; roadway, 22 ft. Continuous spans of 40 ft., 50 ft., and 40 ft., supported on pile piers. The bridge is straight and on a vertical curve. The skew to the railway is about 30½°. The piers and abutments are parallel to the railway, giving the same complicated deck-levels as is evident in the Pokeno design. Owing to the necessity of providing access to the passenger platform and for a tramway, these features could not be avoided. The estimated cost is £3,200, or £1 2s. 6d. per square foot.

Piriaka.—Length, 135 ft. ; roadway, 24 ft., three 45 ft. simple spans on pile foundations. The railway is on a skew of about 40° to the centre-line of bridge, but the piers are skewed to 60°. This tends to square up the ends of the bridge. The deck reinforcement is all laid parallel to the piers. The estimated cost is £2,570, or about 16s. per square foot.

This design shows the use of a span over the railway longer than necessary, to partly square up the piers. Where the piers are skewed at less than 60° to the centre-line of the bridge, it is usually necessary to lay the deck reinforcement square to centre-line of bridge, which requires varying rod-lengths.

Normanby.—Length, 160 ft. ; roadway, 24 ft. Four 40 ft. simple spans on footing foundations, the whole being on a curve of 7½ chains radius. The centre-line of railway is on a skew of about 39½° to the bridge. For bridges on curves the details are greatly simplified if the piers and abutments can be made radial to the curve. This has been done by adopting what has been named the "step over" pier, which consists of columns outside the horizontal clearance-lines of the railway connected by a cap above the vertical clearance-line. The estimated cost is £2,600, or 13s. 6d. per square foot.

Kiwi.—Length, 200 ft. ; roadway, 24 ft. Four 50 ft. simple spans on footing foundations. The bridge is on the straight, but crosses a curve on the railway on a sharp skew. The piers have been kept square to the centre-line of bridge by adopting a "step over" pier, as in Normanby. The estimated cost is £3,579, and the cost per square foot, 18s. 6d.

Lorneville.—Length, 200 ft. ; roadway, 40 ft., with 4 ft. footway. Five 40 ft. simple spans on footing foundations. The bridge is on a curve of 25 chains radius, and the centre-line of railway is only slightly skewed. Piers and abutments are radial, which makes the details fairly straightforward. The wide roadway was adopted on account of the large amount of stock traffic. The estimated cost is £5,600, or about 13s. per square foot.

Acquisition of Gravel-deposits, etc.

In its last report the Board stated that intimation had been given to local authorities that in approved cases it would acquire metal-deposits, from which supplies could be drawn for highways purposes at cheaper unit rates. As previously explained, the object of this decision was to ensure