

Report on the overpass–bridge foundation investigation at Lynton Avenue, Hobart

by W. R. Moore

Four trenches were dug to a depth of 12–14 feet to investigate foundation conditions for a proposed overpass bridge on the new southern outlet motorway over Sandy Bay Rivulet.

The trenches were on both banks of Sandy Bay Rivulet close to the approaches to the present Lynton Avenue bridge. None penetrated to rock, all being in infill and alluvium, though weathered and fresh dolerite is exposed approximately 100 feet east of Sandy Bay Rivulet in a stream diversion channel.

The trenches expose a generalized sequence of infill material, a buried soil and sub-soil layer, followed by river gravel and sand below which is light green to blue green clay intermingled with brown quartz ferruginous sand and occasional fresh dolerite boulders.

In trenches 3 and 4 the infill material could not be distinguished from the original soil layer. In trench 3 a collapse of the lower walls is reported to have covered the clay exposures but small amounts of clay were found in the spoil heap of this trench.

There is no sharp lithological break between the soil horizon and the underlying horizon of river gravel and sand but a transitional zone of variable thickness is present above the gravel in which the organic content increases upwards.

The river gravel and sand form the thickest horizon in the trenches and comprise boulder and pebble beds with beds and lenses of sand. The thickness and sequence of these beds are variable from trench to trench.

In trench No. 1 there are eight feet six inches of gravel with lenses of sand, and in trench No. 2 four feet of associated light brown sand regarded as “transitional zone”. In trench No. 3 there are eight feet of gravel and sand and two feet of coarse gravel at the base. In trench No. 4 four feet of gravel is overlain by 18 inches of sand of the “transitional zone”.

In the gravel beds, the pebbles are unsorted, well rounded and of all sizes from boulders to granules. They consist mainly of iron-stained but unweathered hard dolerite with minor Permian siltstone. The percentage of matrix is very low. The associated sand lenses consist of coarse to fine grained quartz ferruginous brown sand.

Underlying the river gravel with a sharp lithological break is light green to green-blue clay of an exposed thickness of three feet to four feet six inches in trenches Nos. 1, 2 and 4. The clay contains patches of coarse dark brown ferruginous material characteristic of deeply weathered dolerite. Many of these have the outline of large boulders and some retain small cores of recognizable but deeply weathered dolerite. A few fresh unweathered dolerite pebbles and boulders are present throughout the clay exposed in the trenches. The size of the dolerite boulders varies from 2–3 inches up to 14 inches. In the green clay small quartzite pebbles, quartz grains, rock fragments and thin white zeolitic veins occur infrequently.

The green clay is impervious to water and springs occur at the contact between gravel and clay.

It is thought that the clay was deposited in a small lake or pond in the Sandy Bay Rivulet. The fresh dolerite boulders probably sank into the muddy bottom of this lake when the gravel was being deposited later.

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