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16. PROPOSED BRIDGE SITES, CATARACT GORGE, LAUNCESTON

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At the request of the Public Works Department, Hobart a geological and geophysical appraisal of two alternative bridge sites over Cataract Gorge was undertaken.

GEOLOGY

The geological sequence in this area is:—

Age	Rock Type	Thickness (feet)
Recent	Silt sand and gravel Dolerite talus	approx. 100 up to 40
Tertiary	Clay and sandy clay	up to 500
Jurassic	Dolerite	1,000

FAULTING

Immediately adjacent and to the E of the sites is a buried fault scarp with a probable gradient in excess of 45° produced by a major fault with a displacement of 1,000 feet. No evidence exists for a major fault along Cataract Gorge.

GEOFYSICS

Seismic Surveys

The Bureau of Mineral Resources has conducted two surveys in this area. Polak (1962) surveyed the Launceston city area and demonstrated that 100 feet of Tertiary sediments overlie the dolerite adjacent to Royal Park. Mann (1965) in a survey of the original bridge site determined the location of the depth of weathering at the fault and the overburden adjacent to Cataract Gorge.

Gravity

Longman and Leaman, 1968, in a regional survey of the Launceston area estimated that there are 500 feet of clay E of the fault zone.

Drilling

Percussion drilling by the Mines Department at Royal Park, 1952 and 1963, showed clay, sand and gravel to a depth of 95 feet and at Kings Pier, 1952, 130 feet of these sediments were penetrated.

Diamond drilling for the P.W.D. by James, 1966, was restricted to the W side of the faults in order to determine the depth of weathering and the soundness of the dolerite in this area.

BRIDGE LOCATIONS

Proposal 1. Western Bridge

The southern abutment is located on solid dolerite which is overlain by up to 9 feet of weathered material. The northern abutment is located on solid dolerite which in this case is weathered to a depth of up to 40 feet.

Proposal 2. Eastern Bridge

At the southern abutment solid dolerite is overlain by between 10 and 30 feet of weathered rock. At the northern abutment a major problem would be encountered as this area overlies a fault scarp. Seismic traverse H (Mann, 1965) indicates solid dolerite at a depth of 35 feet on the SW margin and weathered dolerite at a depth of 90 feet on the NE margin. However due to the slope of the fault scarp and the arrangement of the seismic traverse these depths would only indicate a minimum and greater depths to solid rock would be expected. The centre pier presents no difficulties as the foundation rock is solid dolerite overlain by 5 to 10 feet of clay and silt.

CONCLUSIONS

From the available geological and geophysical evidence the W bridge location presents no major foundation difficulties as solid dolerite occurs at a reasonable depth. With the E proposal no difficulties are expected with the S abutment and the central pier but the N abutment would be located on a steeply dipping fault scarp of weathered dolerite overlain by at least 90 feet of clay and silt on the E margin.

Detailed seismic investigation of the N abutment area to determine the gradient of the scarp and the nature of the dolerite bedrock is recommended before drilling is undertaken. One drill hole in this area would reveal the type of bedrock in one locality only and give no indication of the gradient of the slope.

Three drill holes would be required to determine the bedrock conditions and the gradient of the fault scarp.

REFERENCES

- MANN, P. E., 1965. Trevallyn bridge site geophysical survey, Launceston, Tasmania, 1965. *Rec. Bur. Miner. Resour. Geol. Geophys. Aust.* No. 1965/153.
- POLAK, E. J., 1962. Queen Victoria Hospital site seismic survey, Launceston, Tasmania. 1961. *Rec. Bur. Miner. Resour. Geol. Geophys. Aust.* No. 1962/180.