Transport Roads & Maritime Services

NSW GOVERNMENT

Test method T1104

Compression force/deflection characteristics of elastomeric bridge bearings

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Revision Summary

Ed/Rev Number	Clause Number	Description of Revision	Authorisation	Date
		Reformatted and Revision Summary Added	D. Dash	June 2001
Ed 2/ Rev 0	All	Reformatted RMS template	J Friedrich	November 2012

Note that Roads and Maritime Services is hereafter referred to as 'RMS'.

The most recent revision to Test method T1104 (other than minor editorial changes) are indicated by a vertical line in the margin as shown here.

Test method T1104

Compression force/deflection characteristics of elastomeric bridge bearings

1. Scope

This method sets out the procedure for testing the compression of elastomeric bridge bearings to determine the compression force/deflection characteristics of individual bridge bearings.

2. Apparatus

(a) A compression testing machine with a table bed such as is used in transverse testing with surface area larger than the surface area of the bearing to be tested. The range of the machine to cover the required design compressive force to be applied to the bearing plus an overload of 50 per cent.

(b) A special upper platen to be fitted to the machine so designed as to provide a large surface area suitably braced as that no local deformation of the surface takes place under the compressive force. The bearing face of the platen to be maintained plane within a tolerance of 50m within the width of the specimen to be tested.

(c) Steel plates machined and sand-blasted on both sides and maintained plane within a tolerance of 50m within the width of the specimen to be tested. The plates to be of such a size as to overlap the bearing under test by a least 25 mm all round. The upper platen described above (b) may be used directly if of suitable size.
In the case of larger bearings it may be necessary to build up a system of steel plates in such a way that the load is transmitted to the bearing without distortion of the plate immediately in contact with the bearing.
The plate immediately above and in contact with the bearing to be fitted with a device at each end for holding a direct reading dial gauge. The steel plate upon which the bearing rests on the bed of the machine to extend beyond the upper plate so that the dial gauge stems may rest directly on its upper surface.

(d) Direct reading dial gauges reading to 25m and with a travel in excess of the expected compression deflection of the bearing under test.

3. Procedure

(a) Place the bearing in position on a steel plate on the bed of the testing machine. Place a steel plate fitted with dial gauge holders on top of the bearing lining up the plates and bearing directly under the upper platen of the testing machine.

(b) Fix the dial gauges in position adjusting the heights so that the stems of the gauges rest on the steel plate immediately below the bearing.

(c) Precondition the bearing by applying a force equal to 150 per cent of the design force twice, examining the bearing on each occasion for signs of splitting or other defects.

(d)

(e) In the case of unreinforced bearings and strip bearings remove the force and release the bearing from the steel plates. In the case of bearings containing steel plates, after the second preconditioning, reduce the force to 10 per cent and proceed with the compression testing as in (f) below.

(f) Reposition the bearing and apply a force equivalent to 10 per cent of the working force and set the dial gauges at zero.

(g) Increase the compressive force at increments of 10 per cent of 1.5 times the design force and record the deflection on each dial gauge at each interval.

4. Calculation

(a) Average the dial gauge readings at each increment of compressive force.

(b) Calculate the compressive stress by dividing the compressive force at each load increment by the effective plan area of the bearing in the case of unreinforced bearings. Where steel reinforcing is present use the plan area of the steel plates.

(c) Calculate the compressive strain at each load increment as a percentage of the unloaded thickness of the bearing if no steel plates are set in the bearing.
If steel plates are set in the bearing use the net thickness of rubber present (excluding the thickness of any steel plates present) in the calculation.

(d) Plot the compressive stress in MPa against the per cent strain.

5. Report

(a) Report the percentage strain at the specified design force and include the plot to the compressive stress against the per cent strain as part of the report.

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