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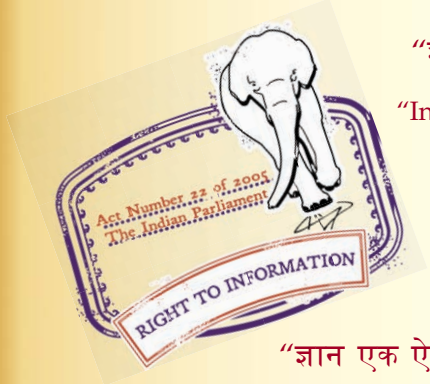

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METHODS OF TESTS FOR AUTOCLAVED CELLULAR CONCRETE PRODUCTS

PART VIII LOADING TESTS FOR FLEXURAL MEMBERS IN DIAGONAL TENSION

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METHODS OF TESTS FOR AUTOCLAVED CELLULAR CONCRETE PRODUCTS

PART VIII LOADING TESTS FOR FLEXURAL MEMBERS IN DIAGONAL TENSION

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Indian Standard

METHODS OF TESTS FOR AUTOCLAVED CELLULAR CONCRETE PRODUCTS

PART VIII LOADING TESTS FOR FLEXURAL MEMBERS IN DIAGONAL TENSION

0. FOREWORD

0.1 This Indian Standard (Part VIII) was adopted by the Indian Standards Institution on 22 March 1973, after the draft finalized by the Cement and Concrete Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 Autoclaved cellular concrete is a class of material, which has been developed commercially abroad and is in the process of development in this country also. A series of Indian Standards on cellular concrete is being formulated so as to provide guidance in obtaining reliable products in autoclaved cellular concrete. The Sectional Committee has considered it desirable to issue a standard for the methods of tests for autoclaved cellular concrete products for the guidance of manufacturers and users.

0.3 In the formulation of this standard due weightage has been given to international co-ordination among the standards and practices prevailing in different countries in addition to relating it to the practices in the field in this country.

0.4 For convenience of reference, 'Indian Standard methods of tests for autoclaved cellular concrete products' has been grouped into the following nine parts:

Part I Determination of unit weight or bulk density and moisture content

Part II Determination of drying shrinkage

Part III Determination of thermal conductivity

Part IV Corrosion protection of steel reinforcement in autoclaved cellular concrete

Part V Determination of compressive strength

Part VI Strength, deformation and cracking of flexural members subject to bending-short duration loading test

Part VII Strength, deformation and cracking of flexural members subject to bending-sustained loading test

Part VIII Loading tests for flexural members in diagonal tension

Part IX Jointing of autoclaved cellular concrete elements

0.5 In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS : 2-1960*.

1. SCOPE

1.1 This standard (Part VIII) covers the method for the determination and study of the strength deformations and cracking of flexural members such as floor and roof slabs of cellular concrete subjected to diagonal shear loading.

2. TEST SPECIMEN

2.1 Size of the Specimen — The test specimen shall be the full size member as to be actually used in construction satisfying the requirements of the relevant Indian Standard (or the requirements specified by the manufacturer) in respect of shape and dimensions.

2.2 Condition of the Test Specimen

2.2.1 *Moisture Content* — The moisture content of the concrete during the test should be indicated and should be not less than 10 percent by weight, when determined in accordance with IS : 6441 (Part I)-1972†.

2.2.2 *Temperature of Specimen* — The temperature of the concrete shall not be materially different from the ambient temperature in which it is being tested and in any case not less than 0°C.

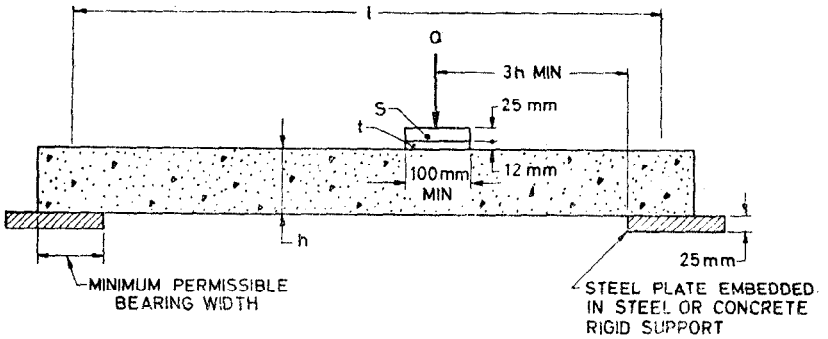
3. TEST ARRANGEMENTS

3.1 The member to be tested shall be simply supported at the ends. The supports shall consist of 25 mm thick horizontal mild steel plates bedded on rigid supports of steel or concrete. The ends of the member shall be fully in contact with the steel plate over the whole width of the member. The bearing width and the span used for the test shall be the same as

*Rules for rounding off numerical values (*revised*).

†Methods of test for autoclaved cellular concrete products: Part I Determination of unit weight or bulk density and moisture content.

those indicated by the manufacturer and to be actually used in construction practice (*see* Fig. 1).



l = effective span of unit;

s = steel plate of thickness not less than 25 mm and length equal to width of the unit;

t = porous fibre board, thickness not less than 12 mm and length equal to width of the unit;

Q = applied load; and

h = thickness of element.

FIG. 1 METHOD FOR LOADING TEST FOR CELLULAR CONCRETE FLEXURAL UNITS IN DIAGONAL TENSION

4. LOADING

4.1 A single load shall be applied in the proximity of a support through steel platen not less than 25 mm thick, the load extending over the entire width of the member. The steel platen shall be embedded on soft fibreboard packing, not less than 12 mm thick and of the same plan dimensions as the steel platen. The packing shall be placed between steel loading platen and the top of the member. The width of the steel platen shall not be less than 100 mm and shall be increased, where necessary, in multiples of 50 mm, so that the contact pressure under the applied load is not more than 20 percent of the compressive strength of the concrete. The distance between the axial point of application of the load and the inner edge of the end steel support plate shall be not less than 3 times the depth of the member (*see* Fig. 1).

4.1.1 The span shall be taken as the distance between the centres of the bearings (*see* Fig. 1).

4.2 The weight of the loading equipment shall be taken into account in calculating the applied load.

5. MEASUREMENTS

5.1 The loads shall be measured to an accuracy of not less than $\pm 1{\cdot}5$ percent of the applied load.

5.2 The deflection of the member shall be measured at midspan and the least count of the dial gauge shall be at least 0·01 mm.

5.3 Crack widths shall be measured to an accuracy of $\pm 0{\cdot}05$ mm.

5.4 The movement of the end of the main tension reinforcement in relation to the concrete shall be measured.

6. TEST PROCEDURE

6.1 Zero for the deflection measurements shall be taken immediately after the member had been placed in position.

6.2 The loading apparatus shall then be fixed, and the load applied gradually at a rate of about 1/4 of the design live load per minute. Measurements shall be taken at suitable intervals. The load at which a diagonal tension crack has appeared shall be maintained for 2 hours. Loading shall then be increased until failure occurs.

7. REPORT

7.1 The test report shall state:

a) moisture content of the specimen;

b) temperature of the specimen; and

c) measured loads, deflections, strains, crack width and movement of the end of main reinforcement for various intervals as in **6**.

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