

NBO.3
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Report of the Experts Committee
on
**ECONOMY IN THE USE OF CEMENT
IN BUILDING CONSTRUCTION**



NATIONAL BUILDINGS ORGANISATION

Price Re. 3.51 n.p. or 6d.

The Ministry of Works, Housing and Supply, Government of India appointed a Committee in July, 1956, consisting of the following members to examine the question of economy in the use of Cement:—

Sardar Sarup Singh, Director, National Building Organisation (Chairman).

Shri J. M. Rijhwani, Chief Engineer, Central P.W.D.

Shri H. R. Hay, Building Materials Adviser, Government of India. (Member until Nov. '56).

Shri S. K. Joglekar, Chief Architect, Central P.W.D.

Shri C. B. Patel, Housing Adviser, Government of India.

Co-opted members:—

Shri L. P. Bhargava, Member, Central Water and Power Commission.

Shri B. C. Ganguli, Joint Director, Civil Engineering Rly. Board.

Col. H. C. Vij, Deputy Director (Designs), E-in-C's Branch, Army Headquarters.

Shri M. S. Bhatia, Superintending Surveyor of Works, Central P.W.D. (deputised for the Chief Engineer).

Shri K. Rama Varman, Joint Director (Designs); and

Shri G. L. Bhandari, Officer on Special Duty, from the National Buildings Organisation assisted the Committee.

Manager of Publications

Serial No. N. B. O. $\frac{3}{5000}$

July, 1957

ERRATA

Page 1.

Insert as paragraph No. 2 for the Introduction:

"A Committee was constituted by the Ministry of Works, Housing and Supply, Government of India, in July, 1956, to examine the question of economy in the use of Cement in building construction. The names of members of the Committee are given on the pre-page".

Page 2.

Foot note, 3rd line:

Read 'low', For 'lose'.

Page 6.

2nd para, 6th line:

Read 'Y inches per hundred inches'. For 'Y inches hundred inches'.

Page 11. Table VI

Serial No. 6, Item 2:

Read 'cavity wall', For 'cavite wall'.

Serial No. 4(v), Item 6: Read 'A'.

Serial No. 4 (vi and viii), Item 6:

Read 'B or C' For 'A,B & C.D'.

Foot note No. 2, 2nd line:

Read '28' For '20'.

Page 12.

Title for 5th para:

Read 'Use of Cement in other parts of structures'. For 'Use of Cement in other structures'.

APPENDIX I

CEMENT PRODUCTION IN INDIA

The total output of cement in India is grossly insufficient: That production of Cement in India has not kept pace with the demand is shown by the following figures:

	1950-51	1955-56
	Tons	Tons
(i) Demand	—	9,000,000
(ii) Annual installed capacity	3,280,000	4,930,000
(iii) Actual production	2,692,000	4,280,000

The target figures of installed capacity and production for the year 1960-61 as fixed by the Planning Commission for the Second Five Year Plan are 16 million tons and 13 million tons respectively. The present estimated demand of 9 to 10 million tons is expected to go up to 14 million tons in 1960-61. Acute cement shortage therefore, exists and India's production has to be supplemented by higher priced imports. Even after the target production is realized cement shortage is likely to continue, as it would provide hardly 54 lbs. of cement per head of population.

Comparative figures for 1954 relating to some other advanced countries

	Production lbs/capita
Australia	430
Austria	521
Brazil	94
Belgium	1,113
Canada	529
Denmark	622
France	499
Western Germany	736
U.S.S.R.	200
U. K.	536
U.S.A.	630
Turkey	66
India (Target 1960)	54

APPENDIX II

The following recommendations for reduction factors for different slenderness ratios for masonry walls have been taken from the British Standard Code of Practice C.P. 111(1948). These factors and the associated definitions may be adopted till such time as the Indian Standard Code of Practice for load bearing walls is accepted and published.

Slenderness ratio	Reduction factors
1	1.0
2	0.96
4	0.88
6	0.80
8	0.70
10	0.60
12	0.50 (Limit for lime mortars.)
14	0.40
16	0.35
18	0.30 (Limit for cement mortars.)

The slenderness ratio is obtained by dividing the effective height of the wall or column by its thickness. The effective height is determined as follows:

(i) For columns provided with complete support at bottom and lateral support parallel to the line of one of the horizontal surface dimensions at the top; the effective height relative to the directions of the top support shall be the height between the support.

The effective height at right angles to this shall be twice the height of the column above the lower support.

In the absence of top support the effective height relative to both directions shall be twice its height from the lower support.

(ii) For walls where laterally support at top and bottom, the effective height shall be $\frac{3}{4}$ th of the height between such lateral support.

In the absence of top lateral support, the effective height shall be $1\frac{1}{2}$ times the height of the walling above bottom lateral support.

The height between lateral support is termed storey height in many building regulations.

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