SINGAPORE STANDARD

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(ICS 91.100.15)

SPECIFICATION FOR

Burnt clay and shale bricks

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FOREWORD

Clay brick is one of the common materials used in building construction. Clay brick has generally been regarded as a durable material and somewhat more expensive than other similar material such as cement blocks on surface area basis. As such, often only the prestigious buildings and private developments will specify and require the use of burnt clay bricks.

Housing and Development Board has been the early pioneers — the mass construction of high rise building. The building blocks used in HDB construction other than facing bricks is usually of cement.

The construction of high rise structures by private developers was intensified only in the recent 3 to 4 years. In the construction of these high rise structures, the essence is speed and quality. In the earlier years, the same speed and quality is usually desired but the pressure of demand is not as great. The pressure of demand is now very much higher. With increase in wages and other costs, new building techniques have to be introduced and therefore, it is imperative that building materials be produced to match these new techniques and improve building efficiency as a whole.

The standardization of a product is aimed at providing a better and consistent product and improving the efficient use of such product, hopefully achieving overall economy.

A product which will help the user, will create a greater demand and fetch a better price and will only be for the ultimate good of the manufacturers.

Clay bricks have been produced in Singapore for more than 50 years. There are now more than 14 brick manufacturers. It cannot be said that they are now producing according to a fixed standard. In the first edition of this standard, it is difficult to insist on stringent specification because the various manufacturers have equipment and processes tied up in their current production.

It is hoped that this standard will set the basis for manufacturers to adjust the equipment and processes in the future to conform to this standard.

It will therefore be necessary for this particular standard to be reviewed as and when required.

The Government has passed an Act to change units of measurement from the Imperial System to the Metric System. Hence the values in this standard are expressed in the metric system. However, the equivalent Imperial conversion is also given.

Up to now, there has been little systemmatic and conscious collection of technical data on the local clay bricks. One of the comprehensive studies was done by Dr. C.K. Murthy of the Department of Building Science, Faculty of Architecture, University of Singapore. It was noted in the study of bricks from 5 manufacturers that there was no uniformity in the dimensions. It is therefore recommended in this Standard that the normal designation given in the British Standard be taken as a basis.

The present building practice in Singapore now uses bricks as an infill material generally. Data on the strength of bricks by the industry as a whole has not been systematically collected. Therefore, it is recommended in this edition of the Standard that the grading of bricks be based on dimensions as well as strength. With the collection of further technical data, the basis of grading could be reviewed.

The allowable minimum compressive strengths are:- 1st grade 35MN/m^2 (5 076 ibf/in^2), 2nd grade 20MN/m^2 2 900 lbf/in^2) and 3rd grade 5.2MN/m^2 (754 lbf/in^2). When these bricks are used for load bearing purposes, their compressive strengths must satisfy the requirements of the Engineer.

This Standard should be considered as Complementary to any further Codes of Practice on Brickworks and Load Bearing Walls.

In preparing this specification, references were made to the following:-

1. BS 3921 : Pt. 2 : 1969 Bricks and blocks of fired brick-earth clay or shale.

2. AS A21-1946 and A140-1964 Burnt clay and shale building bricks.

3. Paper published in IES Journal, Vol. 10 No. 2, Sept. 1971 on "Suitability of Singapore bricks for high rise buildings in calculated load bearing brickwork" by Dr. C. K. Murthy, Lecturer, Department of Building Science, Faculty of Architecture, University of Singapore.

Acknowledgement is made for the use of information from the above references and the valuable contribution by Mr. Leong Siew Tim who drew up the preliminary draft.