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(54) An improved method of building construction.

(57) A building method utilising the pozzolanic characteristics of pulverised fuel ash by making blocks of such ash with cement and chalk or limestone curing the blocks and then bonding the cured blocks together with a mortar mix of the same materials in the same or different proportions from those used to make the blocks. A plaster having the same materials in the same or different proportions from those used to make the blocks may then be applied to the bonded blocks.

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AN IMPROVED METHOD OF BUILDING CONSTRUCTION

This invention relates to an improved method of building construction.

In traditional methods of building, the bricks, mortar and plaster finish have different chemical characteristics which often leads to cracking and structural failures due to the different coefficient of contraction when curing, particularly of the mortar and plaster.

In the improved method disclosed herein, the building block, mortar and plaster are all prepared from the same materials, the aggregate being graded in granular form for the block and pulverised for finer handling in the mortar and plaster.

A cementitious mixture having pozzolanic characteristics is used to manufacture the building blocks as disclosed in my patent specification no. 799545, the mixture comprising pulverised fuel ash (PFA) and Portland cement with chalk as the aggregate.

I have now discovered that it is possible to obviate the aforementioned problem of cracking and provide an extremely strong homogeneous structure in which is is almost impossible to separate the blocks from the mortar after curing by using the same mixture for the mortar and plaster as that used for making the blocks but in different proportions.

In accordance with this invention therefore I provide a method of building construction comprising bonding together cured building blocks made from a cementitious mixture of pulverised fuel ash and Portland cement with chalk or limestone as the aggregate by a mortar including the same materials as that from which the blocks are made but in different proportions and then, if required, applying a finishing plaster to the blocks, the plaster including the same materials as that of the blocks and either the same or a different mix from that of the mortar.

Preferably the mix of the mortar and plaster being 2 to 6 parts by weight chalk or limestone, 2 to 6 parts by weight PFA and 1 part by weight cement. In a preferred embodiment of the invention the blocks are made of a mixture comprising 5 parts by weight chalk or limestone, 5 parts by weight PFA and 1 part by weight Portland cement. To this mixture is added water in a suitable mixer and the slurry so formed is poured into moulds of the required shape in a block-making machine. The chalk or limestone is used in granular form of approximately pea size, i.e. retained by a 5mm screen and passed by a 10mm screen. Both the mortar and plaster chalk or limestone content is pulverised to a powdered consistency.

The mix of chalk or limestone and PFA is chosen so that the strength of the cured mortar does not overcome that of the cured block and the strength of the cured plaster is such as to provide a permanent bond with the block and mortar. By a correct choice of mix within the ranges stated above, the resultant structure is extremely strong due to its homogeneous nature, the bond between the block, mortar and plaster being such that on demolition it is almost impossible to separate the plaster from the blocks or the blocks from the mortar, unlike traditional structures using bricks and mortar where the bricks can often be salvaged due to their separation from the mortar. This homogeneous bond is thought to be the result of a chemical reaction between the blocks, mortar and plaster, all having the same constituents but in different proportions.

The PFA is a material collected by precipitators from the flue gases of modern coal fired electric power stations. This is a waste material and is in the form of a very fine dust composed of the incombustible matter originally present in the coal.

When forming a structure by a method in accordance with this invention, the blocks are first allowed to mature and the mortar and, if required, the plaster applied in a green state. Leaner or stronger mixes within the range stated above may be used to ensure that they do not overcome the strength of the block or vice-versa. When following this method of

construction the pattern of drying shrinkage between the constituent materials can be reduced to a minimum and cracking can be eliminated. Thus, by using the same cementitious mixture but in different proportions, a strong homogeneous structure can be built which complies with the technical requirement of B.S.S. in respect of compressive strength, drying shrinkage and moisture movement.

Claims

1. A method of building construction characterised by making building blocks from a cementitious mixture of pulverised fuel ash and Portland cement with chalk or limestone as the aggregate, curing the blocks so made and then bonding them together with mortar comprising the same materials as those from which the blocks were made.

2. A method as claimed in claim 1 characterised by applying a finishing coat of plaster to the bonded blocks, the plaster including the same materials as that of the blocks and being either of the same or a different mix from that of the mortar.

3. A method as claimed in claim 1 or claim 2 characterised by the mix of the mortar being within the ranges of two to six parts by weight of chalk or limestone, two to six parts by weight of pulverised fuel ash and one part by weight of cement.

4. A method as claimed in claim 2 characterised by the mix of the mortar and plaster each being within the ranges of two to six parts by weight of chalk or limestone, two to six parts by weight of pulverised fuel ash and one part by weight of cement.

5. A method as claimed in any one of the preceding claims characterised by pulverising the chalk or limestone to a powdered consistency which is retained by a 5mm screen but passed by a 10mm screen.

6. A building structure formed by any one of the methods claimed in claims 1 to 5.