



Experimental study on shear performance of non-fired and non-sintering modified waste ash brick masonry

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Abstract

The destructive process of modified waste ash brick masonry were observed and analyzed by shear tests of 27 specimens in three groups which were made of dry modified waste ash brick and the three-grade mortar mixed with fly ash. The grade of mortar is M5.0, M7.5 and M10. The results show that the mortar strength and the binding power of mortar and bricks are the major factors which influence the shear strength of masonry. The calculation formulas of shear strength of modified waste ash brick masonry were suggested by the test data analysis and process.

Key words: *Modified waste ash brick, Masonry, Shear strength*

1. Introduction

Non-fired and non-sintering modified waste ash brick (modified waste ash brick) is made by main components of fly ash and modified waste ash, mixed with cement, slag, lime and gypsum. The modified waste ash is the modified fly ash after treating printing and dyeing waste water. After stirring, the mixture is pressured in shape with the semi-dry method and naturally cured (Niu, 2006). The tests indicate that the compressive strength of modified waste ash brick can meet the challenge of application structural wall, and the brick is harmfulness to environment. The brick will be able to apply to building engineering if the basic mechanical properties of the brick masonry have meet the challenge of building engineering. In this way, a way out of the modified fly ash after treating

printing and dyeing waste water is found, the constraints of fly ash in treating wastewater is removed, the application of fly ash is promoted in waste water treating, and the comprehensive Utilization of Fly Ash is improved. The reference on engineering application of modified waste ash brick masonry is provided by shear performance of modified waste ash brick masonry.

2. Experimental research

2.1. Specimen manufacture and loading scheme

The shear strength of masonry is the basis performance index of the masonry in earthquake-resistance checking computations. It includes two types, one is along straight joint cross section, and the other