5
CONSTRUCTION PROCEDURE AND STRUCTURAL BEHAVIOUR OF RUBBERCRETE INTERLOCKING MASONRY BRICKS

INTRODUCTION

Rubbercrete interlocking bricks exhibit lower thermal conductivity in comparison to the conventional concrete block. However, the inclusion of crumb rubber to produce rubbercrete interlocking bricks leads to a reduction in the compressive strength. Nevertheless, the strength of the rubbercrete block can be minimized by the inclusion of an appropriate amount of crumb rubber and fly ash in the mix proportions. Therefore, the structural behaviour of masonry prisms and walls built with rubbercrete interlocking bricks have been experimentally investigated for a better understanding of its structural behaviour during loading.

GROUTING

The prisms and walls were divided into two categories, grouted and hollow. Each category consists of three sets of three units, three sets of five units, three sets of seven units of brick for prisms and three sets of walls – in total were nine sets of prisms and three sets of walls in each category.

The mix design for grouting has been developed in accordance with the requirements of ASTM C 476 Standard Specification for Grout for Masonry. Grout is placed by its own weight and necessary to have high flowability. The fine grout type has been chosen

consists of fine aggregates, cement and water due to the small diameter of the hollow area in the rubbercrete interlocking bricks. The ratio of cement to fine aggregates for grouting mixture is 1:2.5 with water cement ratio 0.8. A slump of 210 mm and compressive strength of 19 MPa have been achieved. The grout meets the slump and minimum compressive strength requirement as specified in ASTM C 476, which is 200 mm to 280 mm for slump and 14 MPa compressive strength at 28 days. The grouting proportion is shown in Tables 5.1 and 5.2. Slump test has been conducted as shown in Figure 5.1. Compressive strength test of grout also conducted on a 50 mm cube at the age of 28 days as shown in Figure 5.2.

Table 5.1 Materials bulk densities from ASTM C476

Materials	Bulk densities (kg/m^3)
Portland cement	1505
Sand	1280

Table 5.2 Grouting proportion from ASTM C476

Type	Part by volume of Portland cement	Fine aggregates	Coarse aggregates
Fine grout	1	2.25-3 times the sum of the volume of the cementitious materials	-
Coarse grout	1	2.25-3 times the sum of the volume of the cementitious materials	1-2 times the sum of the volume of the cementitious materials

CONSTRUCTION AND TESTING OF RUBBERCRETE INTERLOCKING MASONRY PRISMS

Prisms are used to perform basic strength test and predict the behaviour of wall in masonry structures. The prisms have been