

Multiplex Construction Europe Ltd  
Centre Point Project Office  
103 New Oxford Street  
London  
WC1A 1DD

13<sup>th</sup> April 2016

AKN/15027

[francesca.bianchi@multiplex.global](mailto:francesca.bianchi@multiplex.global)

**For the attention of Francesca Bianchi**

Dear Madam,

**CENTREPOINT – HERITAGE MOSAICS**

The aim of PAYE was to accurately match the exiting historic Mosaic tiles in terms of their colour, shape & size, utilising as closer match to existing materials and possible. Below notes the processes used and our conclusions.

**1. PILOTI COLUMN MOSAICS – TYPE 1**

With respect to the type 1 mosaic sampling at the above project, after a year of sampling different background colours and glazing we have provided a range of 8no. Tesserae samples A1,A2, B1-3 & C1-3 which accurately represent the spectrum found on the original mosaic columns.



Photo 1. Type 1 - Repair sample

The guidelines for the repair areas will be to remove and replace each defective Tessera piece on a 'like for like' basis, matching the colour of the existing units against the range of sample Tesserae provided. The large full scale replacement areas will be removed and replaced with the entire range of new Tesserae to the consistency and ratio of the sample patch provided.

Each individual Tessera tile is manufactured by hand, slight variances in their production can be expected.



By Appointment to  
Her Majesty The Queen  
Building Facade Restoration  
and Conservation



Photo 2. Type 1 - Repair sample

We would not recommend any further removal of Tessera samples from the range A1, A2, B1-3 & C1-3 provided, the range has been carefully selected to accurately represent the distinction in colour and glaze found on the original tiles. Any further changes made would have a detrimental effect on the appearance of the finished works.

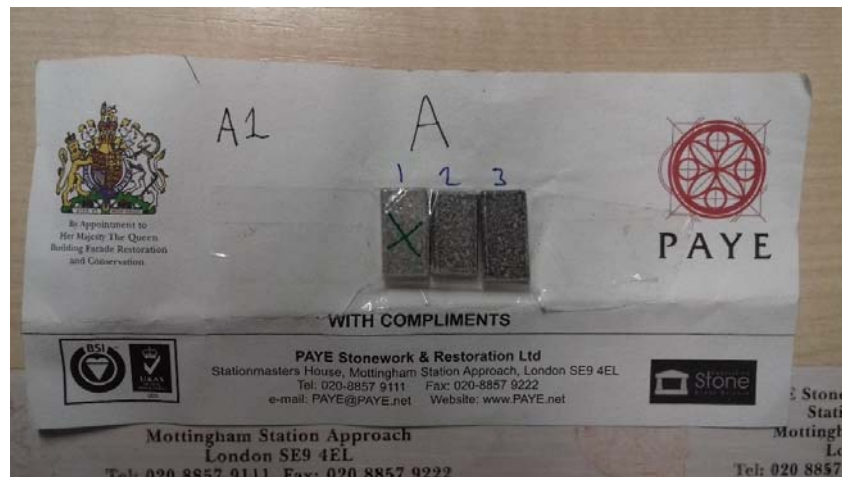
**MOSAIC PICTURE:**

Approved patch sample (A1 tiles were rejected (x))



**MOSAIC TILE CLASSIFICATION:** A2, A3, B1, B2, B3, C1, C2 & C3.

**MOSAIC CLASSIFICATION PICTURE:**

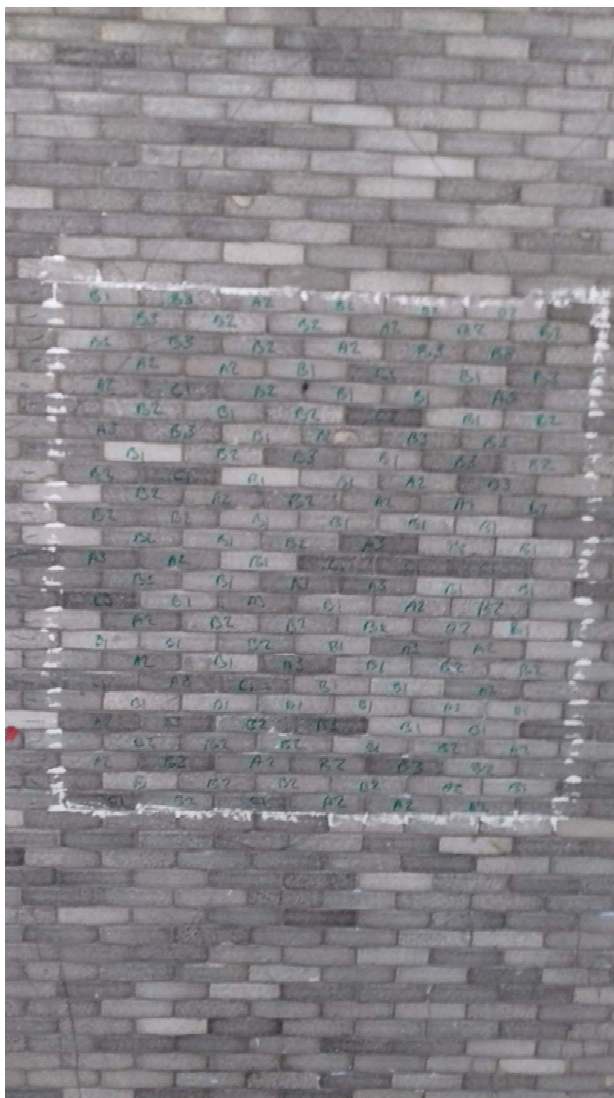




## MOSAIC RATIO (%):

Mosaic ratios have been calculated by site survey using the full range of the 8no. approved samples A2,A3,B1,B2,B3,C1,C2 & C3.

In order to ensure the closest match to the original heritage building fabric, the existing columns were assessed for their individual colour ratio, these included: CPL east elevation columns, CPT West Elevation columns, CPT Internal South East and West columns and CPT Internal mezzanine Columns.



**Fig 1: Shows the colour analysis of two different columns.**

These ratios were then averaged together to form the new ratio of replacement tiles to be placed of fixed nets. Area size surveyed is 330 x 330mm to match the dimensions of the replacement net.

**MOSAIC RATIO (%)**: Mosaic tile areas 330x330mm (< or greater than)

- ☐ **A2**: 16.5%
- ☐ **A3**: 7.4%
- ☐ **B1**: 28.9%
- ☐ **B2**: 26.4%
- ☐ **B3**: 11%
- ☐ **C1**: 5.9%
- ☐ **C2**: 0.8%
- ☐ **C3**: 3%

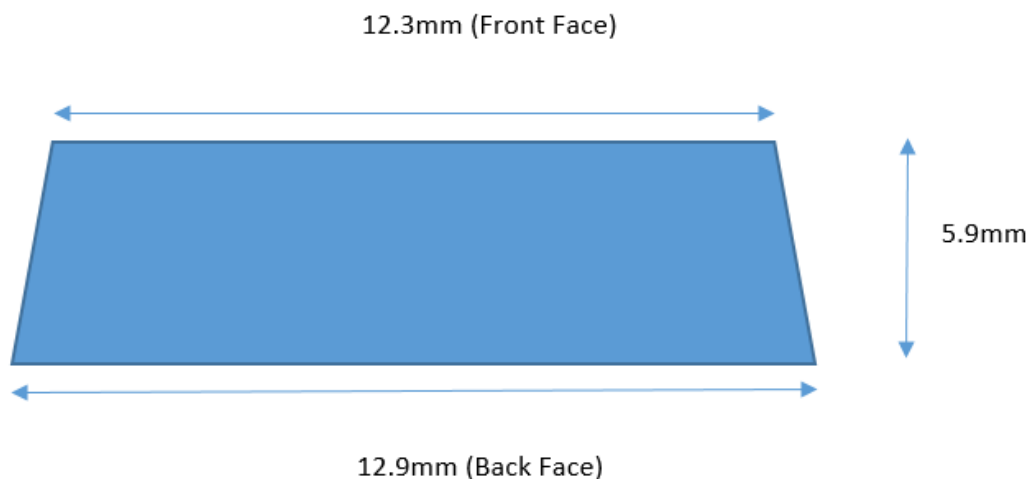
**MOSAIC TILE SHAPE**: Rectangular Cuboid / Prism

**MOSAIC TILE DIMENSIONS (LxWxH) - (mm).**

- **FRONT FACE**: 49 x 5 x 12mm
- **BACK FACE**: 50 x 5 x 12mm

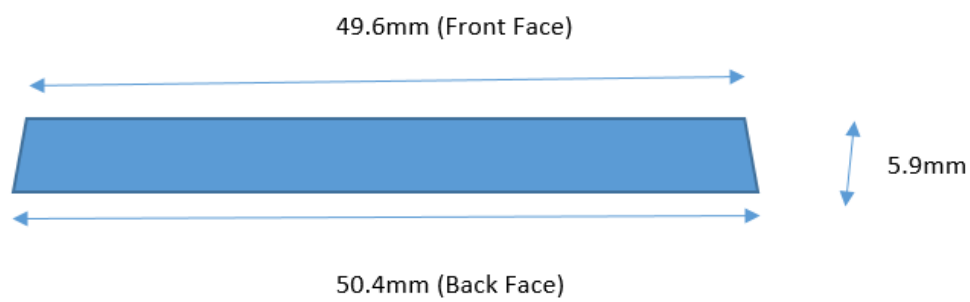
**MOSAIC DRAWINGS:**

- 1) Section through the tile (Width way).





2) Section through the tile (Length way)



**MOSAIC/PER AREA (Existing):**

- Average Vertical measure over 10no. Existing mosaic tiles  
– **133mm.**





- Average Horizontal measure over 3no. Existing mosaic tiles  
– 149mm.



## 2. SHEAR WALL MOSIACS- TYPE 2

Regarding the type 2 mosaic sampling at the above project, after a year of sampling different background colours and glazing we have provided an insitu Tesserae sample which accurately represent the spectrum found on the original mosaic columns (see photo below).

**MOSAIC TILE TYPE:** TYPE 2

**MOSAIC TILE SHAPE:** Rectangular Cuboid / Prism

**MOSAIC TILE DIMENSIONS (LxWxH) - (mm).**

- **FRONT FACE:** 49 x 5 x 12mm
- **BACK FACE:** Minimum dimension required by Manufacturers to remove mosaic from the mould.

**MOSAIC TILE CLASSIFICATION:** Insitu Sample approved.

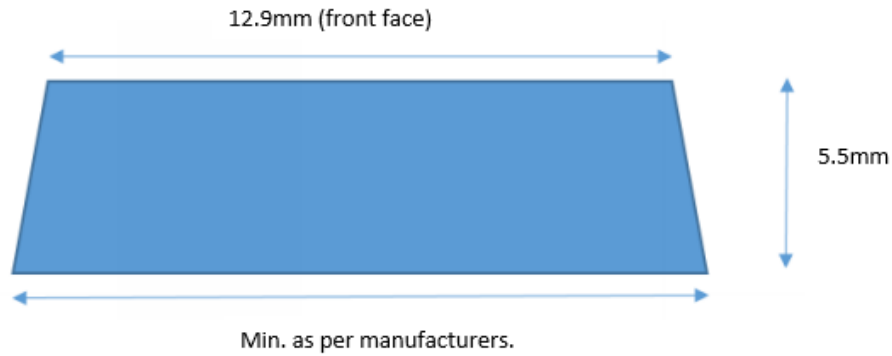
**MOSAIC PICTURE:**

Approved samples insitu.



## MOSAIC DRAWINGS:

### 1) Section through the tile (Width way).



### 2) Section through the tile (length way)



## MOSAIC/ PER AREA (Existing):

- Average Vertical measure over 6no. Existing mosaic tiles – **79mm.**
- Average Horizontal measure over 3no. Existing mosaic tiles – **148mm**



## Mosaic Manufacturing Process.

The mosaics (tesserae) provided are made from high quality filtered clay chosen for its long term performance/ durability, the individual pieces (tessera) have been press formed using precision cut gypsum moulds, designed and manufactured to take into account the recommended three dimensional shape of the tile and the material shrinkage +/- 7%. The tesserae are gradually dehydrated in a pressurised chamber providing a controlled atmosphere whilst varying the temperature and humidity to suit. The Tesserae are fired in a gas Kiln in two sixteen hour cycles to a maximum temperature 1050 °C.

The different glazing colours, tonality and gloss, are created by a lengthy process of sampling, whereby various liquid minerals are mixed (to mass) with pigments to achieve the colour match with the original tiles, the technicians must ensure that the glaze has a similar thermal expansion coefficient as that of the clay base material, otherwise cracking and separation will occur in the firing process. The Glaze is a hand applied process, the craftsman applies a base coat, top coat, flux coat and Gloss coat. The 'flux' (liquid glass) is a varying concentration of different diameter hand applied dots, provided in a mixture of colours to best match the existing tile. The glazed tesserae are fired in a gas Kiln over a twenty four hour process. The true colour of the mosaic is not seen until after the firing process, when the different constituents of the glaze have 'fused' together with the base material.

Due to modern industry regulation, Health & Safety restrictions have been imposed preventing the use of certain glazing products that were widely applied half a century ago, as such it is impossible for current manufacturing to achieve an exact match to the mosaics of that era.

For survey information please refer to the PAYE repair schedules and drawings. For information regarding the methodologies of removal and replacement please refer to the PAYE method statement.

Yours faithfully,

Andrew Knox  
Contracts Manager

[andrewknox@paye.net](mailto:andrewknox@paye.net)



FS58104

**PAYE Stonework & Restoration Ltd**  
Stationmasters House, Mottingham Station Approach, London SE9 4EL  
Tel: 020-8857 9111 Fax: 020-8857 9222  
[www.PAYE.net](http://www.PAYE.net) [www.PAYEconservation.net](http://www.PAYEconservation.net)  
Reg. No. 2743908 VAT No. 608 0053 77

