

## King's Cross Package 6

### Western Range Building Masonry Proposal

					Acceptance on behalf of Network		
Rev	Prepared by	Date	Approved by Nick Glaze	Date	Required Y	Accepted by	Date
00	Katherine Watts	<del>04/07/09</del> 26-8-09	<i>N. Glaze</i>	26-8-09			

#### Comments and observations

The following specifications have been referenced in this document:

JMP Architectural Specification F10 Brick / Block walling ENG-SPE-G5-OAP-KX6-CBSA-1021

JMP Architectural Specification Z21 Mortars ENG-SPE-G5-OAP-KX6-CBSA-1144

This document has been prepared in order to discharge condition 19 of Listed Building Consent 2006/3394/L.

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## 2.0 Description of the Original Masonry

### 2.1.1 West Elevation

The handmade original brick is a midi size and the original clay colour varies from a strong lemon yellow through to a deep ochre, some have a pinkish hue. The brick finish is a plain fire face with fine moulding marks and the arises of the brick are straight and fine. The brick also has a low percentage of breeze within the clay and some isolated iron spots. The seams of clay used to make the bricks are likely to be very local to King's Cross and these seams, with the characteristics detailed above, are no longer worked. Along the main façade the brickwork has weathered badly in some areas and on true westerly faces the sun has bleached the brick and baked the soot into the face of the stock.

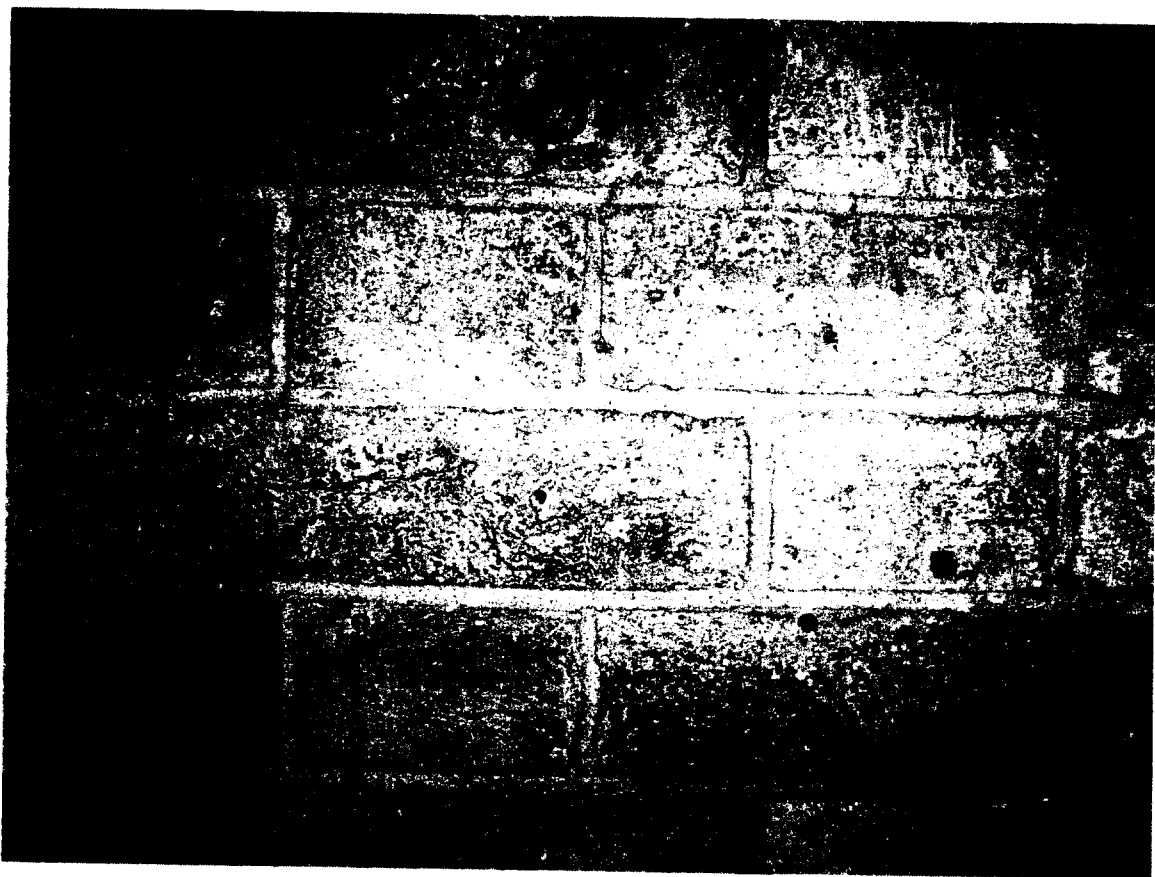
A survey was carried out to establish the brick sizes, joint sizes / coursing height and brick bond. See Appendix B Brick Survey.

The existing brick adjacent to the Bomb Gap is a deep yellow-ochre London Stock brick, size 9 x 4 ¼ x 2 ⅝ " (228x108x67mm). There is a small variation in size on the Central Block where the bricks average 8 ½ " (215mm) in length.

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### 2.1.2 East Elevation

The original bricks on the platform elevation, are the same as those used on the West Elevation, although the soiling and the lighting conditions within the Main Trainshed are very different. Adjacent to the Bomb Gap there is a large amount of replacement brick where the Trainshed was rebuilt following the bomb blast in the Second World War. However, it was considered more appropriate to match to the original brick for the Bomb Gap works.

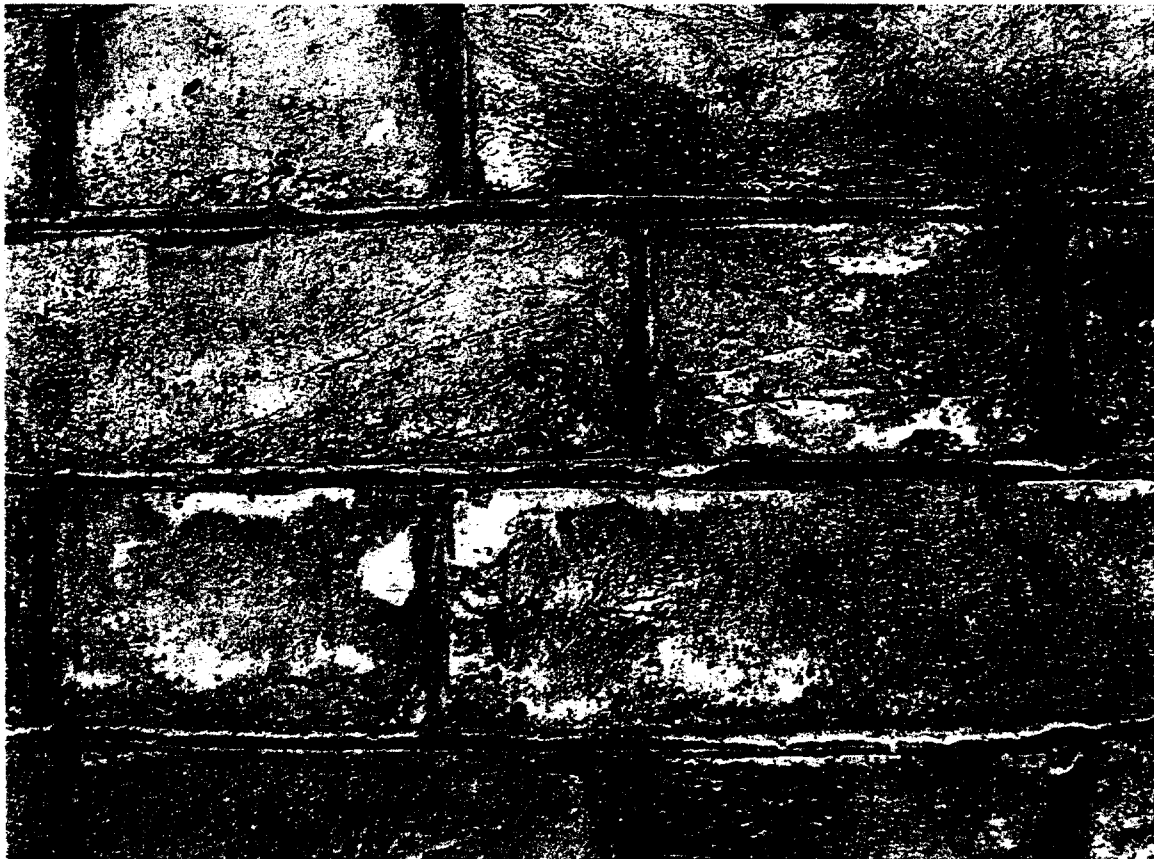


*Photograph of the original uncleaned brick of the platform elevation*

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### 2.1.3 Mortar Generally

The mortar bed is a relatively strong lime mortar, off white in colour with a fine sand aggregate. The weathered / dirty face of the mortar has a brownish hue. The original pointing is largely intact on the West elevation with a few localised repairs. The pointing is 'a poor man's tuck pointing' and is struck with two lines, top and bottom of the horizontal joint (see photograph).



*Photograph of an uncleaned area of the West elevation showing original pointing and brickwork*

The pointing on the East elevation is flush with the brickwork although this face has been heavily cleaned so original detailing may be lost.

The mortar was analysed for its chemical composition and it was examined visually. Close visual inspection reveals large (3mm approx) pieces of lime / chalk and this explains the high lime content of the chemical analysis. Under chemical analysis these pieces of chalk, which function as part of the

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## 1.0 Introduction

The following report describes the process undertaken by Taylor Woodrow to find a brick and mortar sample to match the existing. The materials proposed will then be used in the construction of the bomb gap façade and for general masonry repairs.

Below is a summary of the existing masonry and agreed match for the bomb gap façade and repairs:

Brick Type and Location	Recommendation
Yellow Stock for West Elevation of Bomb Gap and adjacent area to be rebuilt	Smeed Dean Belgrave Yellow Stock by Wienberger. Sized to match existing 228x108x67mm.
Mortar for above area	Lime Green Natural Mortar with sand of which 33% is Mercaston sand for repairs, fine texture sand.
Joints	8mm joints, pointing struck to match original
Bonding	Flemish bond
Yellow stock for Platform East Elevation Bomb Gap area	Smeed Dean Belgrave Yellow Stock by Wienberger. Sized to match existing 228x108x67mm.
Stone for sills	Petrographic analysis and recommendations received. Stone matching currently under way. Report recommends a selected Woodkirk.
Render for cornices	Analysis received. Render matching currently under way. Report indicates 1:1.8 and 1:2.2 Portland cement: sand.

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A survey was carried out to establish the brick sizes, joint sizes / coursing height and brick bond. See Appendix B Brick Survey.

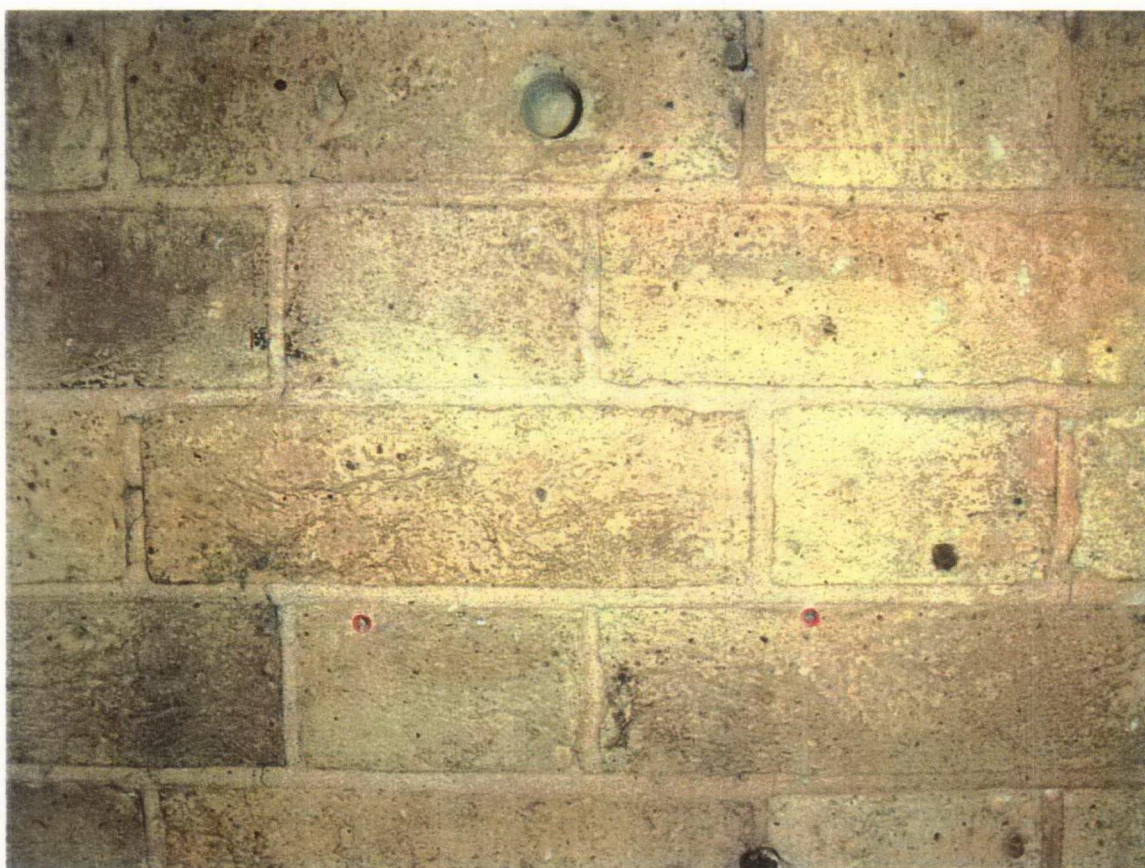
The existing brick adjacent to the Bomb Gap is a deep yellow-ochre London Stock brick, size  $9 \times 4 \frac{1}{4} \times 2 \frac{5}{8}$  " (228x108x67mm). There is a small variation in size on the Central Block where the bricks average  $8 \frac{1}{2}$  " (215mm) in length.



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### 2.1.2 East Elevation

The original bricks on the platform elevation, are the same as those used on the West Elevation, although the soiling and the lighting conditions within the Main Trainshed are very different. Adjacent to the Bomb Gap there is a large amount of replacement brick where the Trainshed was rebuilt following the bomb blast in the Second World War. However, it was considered more appropriate to match to the original brick for the Bomb Gap works.



*Photograph of the original uncleaned brick of the platform elevation*



### 2.1.3 Mortar Generally

The mortar bed is a relatively strong lime mortar, off white in colour with a fine sand aggregate. The weathered / dirty face of the mortar has a brownish hue. The original pointing is largely intact on the West elevation with a few localised repairs. The pointing is 'a poor man's tuck pointing' and is struck with two lines, top and bottom of the horizontal joint (see photograph).



*Photograph of an uncleaned area of the West elevation showing original pointing and brickwork*

The pointing on the East elevation is flush with the brickwork although this face has been heavily cleaned so original detailing may be lost.

The mortar was analysed for its chemical composition and it was examined visually. Close visual inspection reveals large (3mm approx) pieces of lime / chalk and this explains the high lime content of the chemical analysis. Under chemical analysis these pieces of chalk, which function as part of the



aggregate, are indistinguishable from the lime which functions as the bonding material and the result of the test is skewed as a result. See Appendix C Mortar Analysis.

The pointing was examined in a number of areas at ground level and cross checked with areas at high levels adjacent to window openings to establish the age, type and consistency of the pointing.

### 3.0 Process

Cleaning trials were carried out in a number of areas adjacent to the Bomb Gap to enable the new brickwork to be matched to the existing cleaned face of the original hand made yellow stock. The level of cleaning was agreed with EH/LBoC. Following a review of the cleaned areas, EH and LBoC requested that a number of bricks were cut out in order to view the reverse face of the existing brick as the cleaning trials had identified that the existing brick was an unusually varied yellow multi. Bricks have been matched to the cleaned samples and cross checked against the reverse face / broken face of the cut out bricks.

A thorough investigation was carried out and meetings were held on site with the following companies:

- brick merchants: Swift Brickwork Contractors Ltd, BEA Clay Products, EH Smith, Ibstock Brick Ltd, Travis Perkins and RJ Sheen and Company Ltd)
- A representative of the Brick Development Association
- Reclaimed bricks reviewed were supplied by Architectural Salvage Source

The recommendations of the above organisations are reflected in Appendix A Brick Spreadsheet.

Presentations were made to the Conservation Officer and English Heritage at key points during the process to seek their approval (see below).

### 4.0 Limitations of Survey

All samples have been taken and matching has been done at ground level due to lack of access to higher levels. It was agreed that cleaning trials at high level adjoining the Bomb Gap would be ineffective for colour matching due to high levels of soot.