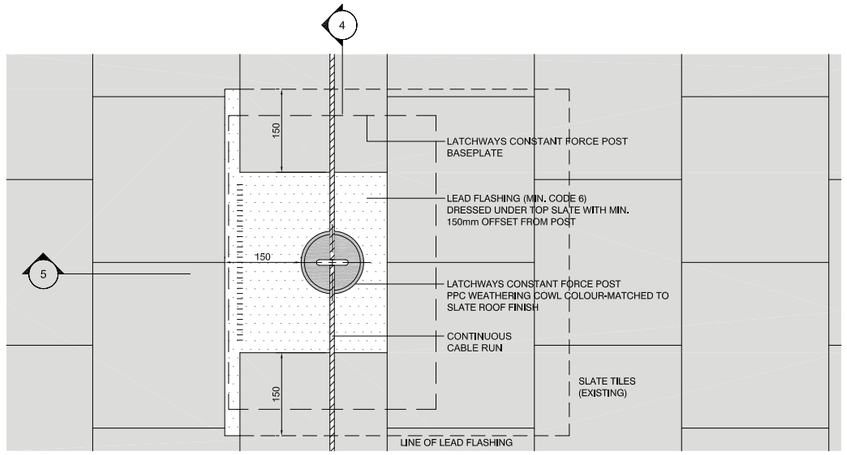
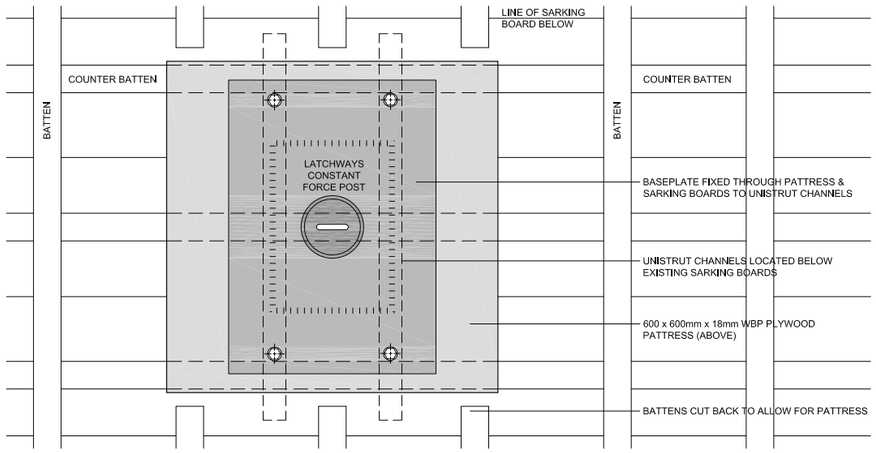
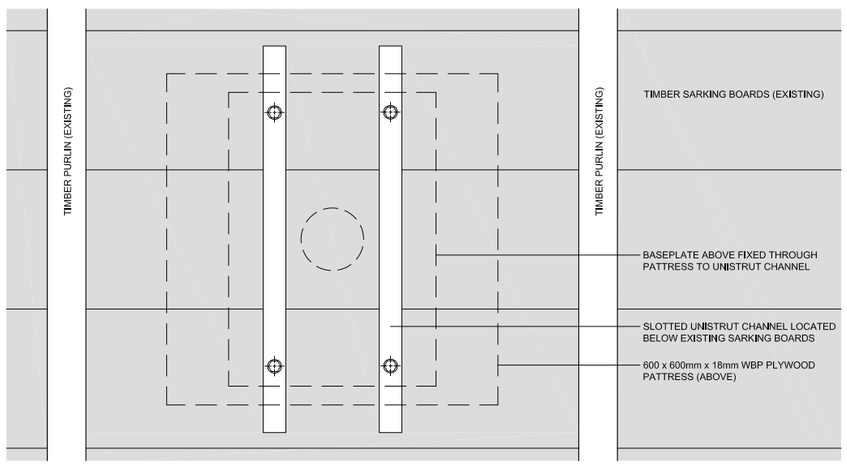


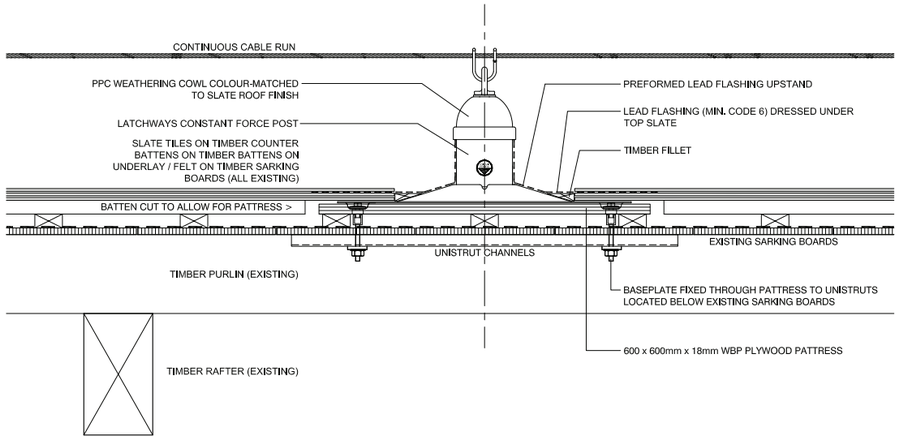
1 PLAN: INSTALLED CONSTANT FORCE POST
1:5



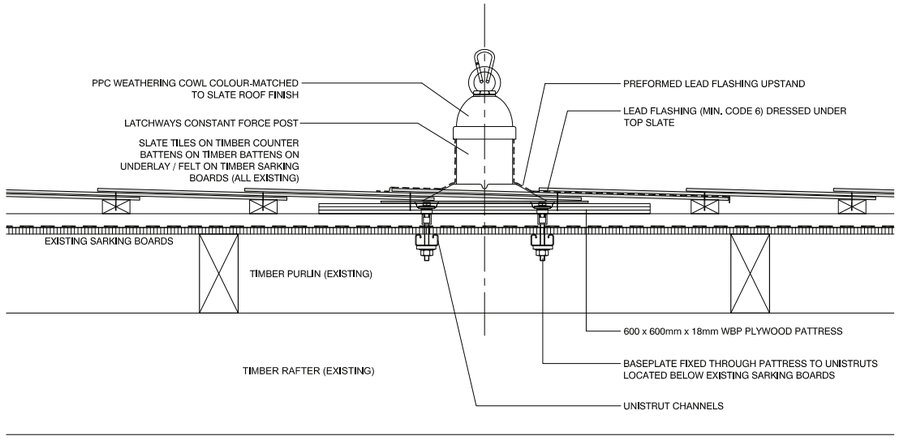
2 PLAN: CONSTANT FORCE POST ON PATTRESS
1:5



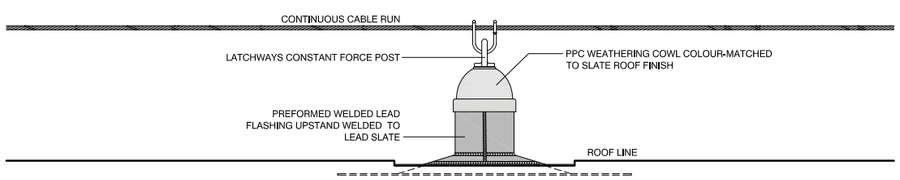
3 VIEW FROM BELOW SARKING BOARDS
1:5



4 SECTION: CONSTANT FORCE POST (LONGITUDINAL)
1:5



5 SECTION: CONSTANT FORCE POST (LONGITUDINAL) (ALONG RAKE OF ROOF)
1:5



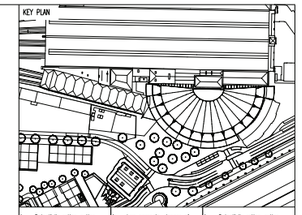
6 ELEVATION: INSTALLED CONSTANT FORCE POST
1:5

NOTE:

EXISTING SARKING BOARDS TO BE SURVEYED AND CHECKED. PLEASE CONFIRM/DISCUSS ANY CUTTING OF SARKING BOARDS PRIOR TO COMMENCEMENT OF WORKS.

ALL NEW TIMBER TO BE TANALISED

KEY PLAN



Construction Risks	Maintenance/cleaning Risks	Demolition/adaptation Risks
1. Potentially rotten gutter support boards, danger of breaking through 2. Low parapets, danger of falling from height	1. Low parapets, danger of falling from height. Fall restraint system to be used for West and South side	1. Potentially rotten gutter support boards, danger of breaking through 2. Low parapet to West side, danger of falling from height

In addition to the hazard/risks normally associated with the types of work detailed on this drawing take note of the above.
It is assumed that all works on this drawing will be carried out by a competent contractor working, where appropriate, to an appropriate method statement.

SAFETY HEALTH AND ENVIRONMENTAL INFORMATION BOX

NOTES
1. The general contractor is responsible for the verification of all dimensions on site and the architect is to be informed of any discrepancy. Do not scale from this drawing. Use figured dimensions only.
2. The signed control copy of this drawing is held at the offices of Pascall+Watson Limited.

GENERAL NOTE:
EXISTING STRUCTURE AND ELEMENTS ARE ONLY INDICATIVELY SHOWN, FOR FURTHER INFORMATION SITE MEASUREMENT AND INVESTIGATIONS ARE REQUIRED.
THE RELEVANT SUB-CONTRACTOR IS TO UNDERTAKE SURVEYS OF EACH EXISTING ROOF PRIOR TO THE COMMENCEMENT OF WORKS
LEAD DETAILING TO BE IN ACCORDANCE WITH THE LSA RECOMMENDATIONS.

REV	DRAWN BY	D_DATE	CHECKED BY	C_DATE	APPROVED BY	A_DATE
00	DMB	08.12.10	BJ	08.12.10	BB	08.12.10

ISSUED FOR CONSTRUCTION
COMMENT

DRAWN BY	CHECKED BY	APPROVED BY	DATE
DMB	BJ	BB	02.08.2010

SCALES @ A1	ISSUING OFFICE	PROJECT NUMBER
1:5	PWA	3335

CLIENT APPROVAL
A – APPROVED
B – APPROVED WITH COMMENTS
C – DO NOT USE – AMMEND WITH COMMENTS AND RE-SUBMIT

STATUS: S10 — PURPOSE OF ISSUE: FOR CONSTRUCTION

Taylor Woodrow Construction Ltd
TWC - Head Office
41, Clarendon Road
Watford
Hertfordshire
WD17 1TR
Tel: +44 (0)1923 478400

PROJECT: KING'S CROSS STATION REDEVELOPMENT PROGRAMME PACKAGE 6

TITLE: WRB ROOF, TYPICAL FALL RESTRAINT DETAIL LATCHWAYS CONSTANT FORCE POST SHEET 1 OF 2

CLIENT: Network Rail

Architect
Pascall+Watson architects
5 Carlson Court 116 Putney Bridge Road London SW15 2NQ
telephone +44 020 8874 1311
facsimile +44 020 8874 2584
www.pascalls.co.uk

This drawing is issued on behalf of Pascall+Watson architects limited.

DRAWING NUMBER: ENG-DWG-PAW-WRB-CAD-7870 — REV: 00

keydan • A1-PAW

Annex F 1.3 Guardrail Mansafe System

1. Photographs
2. Roof plan showing locations of consented guardrails
3. Eastern Range: Consented parapet balustrade detail

Camden ref: 2008/3478/L

Fig. F.1 Western Range Key Clamp handrail

Fig. F.2 Eastern Range parapet handrail

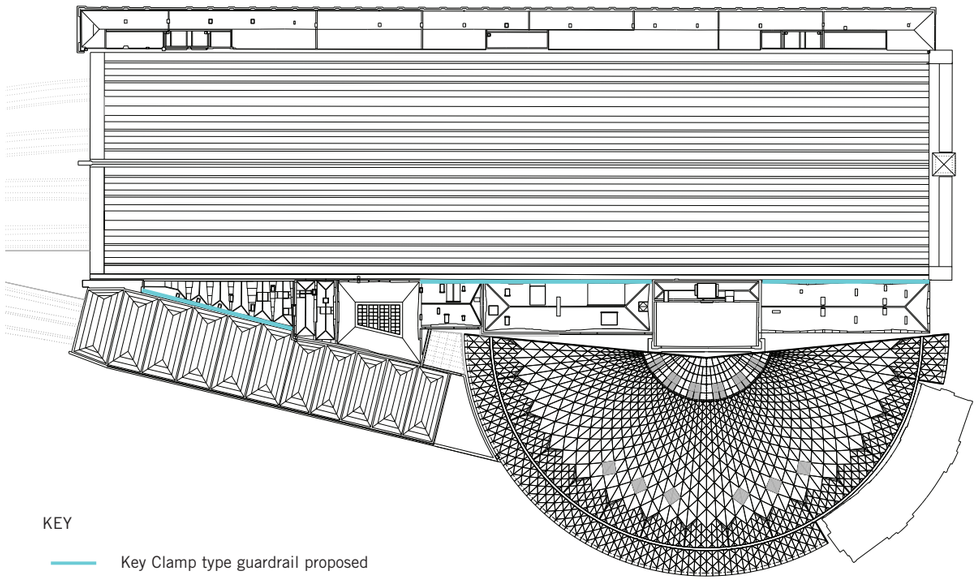
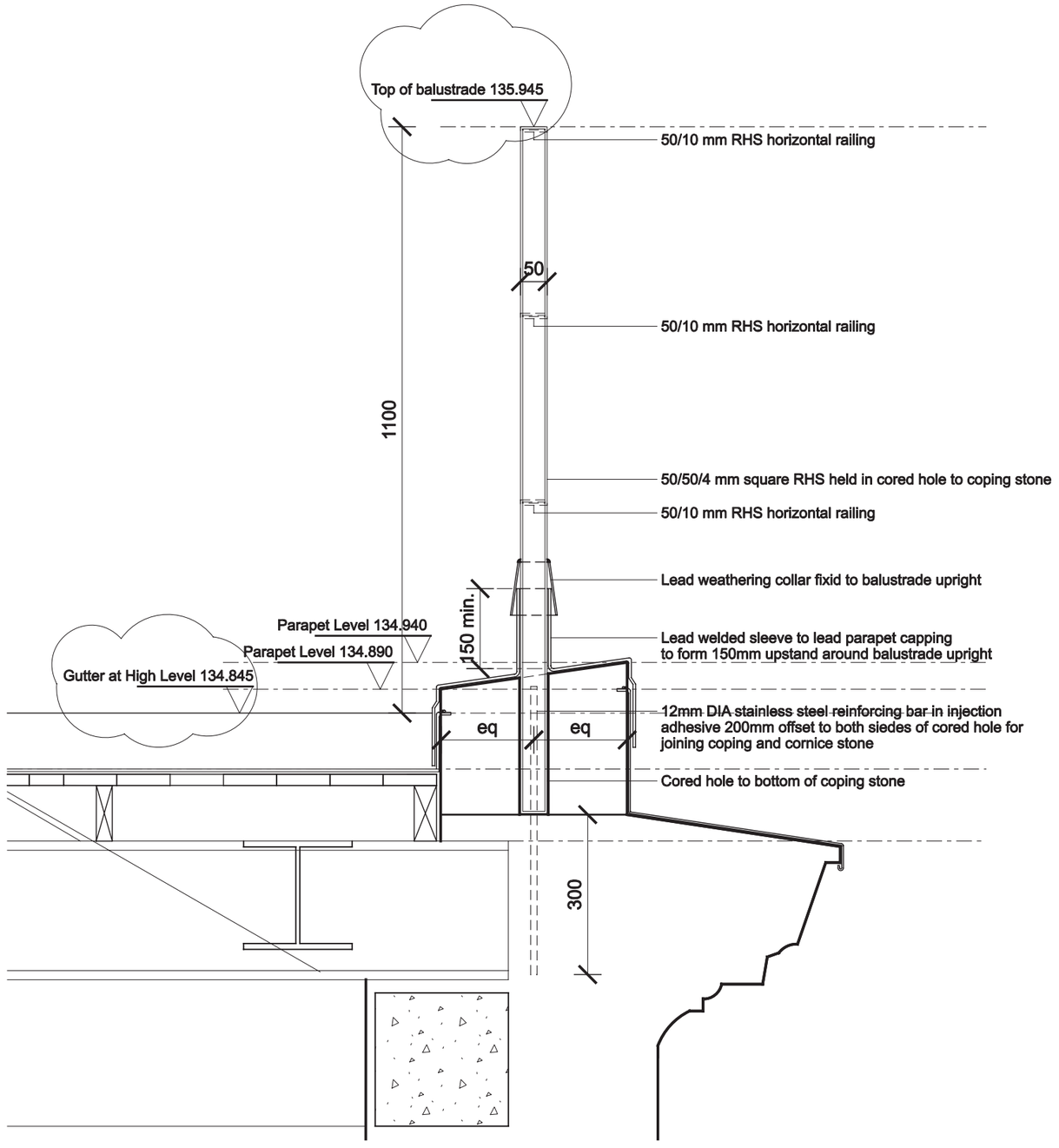


Fig F.3 Roof plan showing proposed locations of parapet handrails



JMP-SK-1225-080612-AD1-Rev.01
Typical Section - 1:10 @ A3
Balustrade detail to East Facade

North and South Facade similar
- to be adapted where required

Annex F 1.4 Mechanical Plant

1. Annotated photograph

Camden ref: 2008/3478/L

Fig. F.4 Central Block plant deck showing the maximum height of new plant

Annex F 2.1/3.1 Brickwork Repair

1. Repair method

2. Western and Eastern Ranges: Consented Masonry

3. Consented brick and mortar data sheets

Camden ref: 2007/4271/L
2009/4637/L

Fig. F.5 Good quality brickwork repair on the Western Range

Method

Repair works using lime mortar are only to be carried out when the air temperature is not likely to fall below 5 degrees Celsius or as recommended by the manufacturer.

1. Cutting out bricks:
   - Cut out defective bricks back to the full depth of the brickwork on the bed, allowing for all temporary support of bricks as necessary.
   - Leave the arrises of the surrounding bricks undamaged by commencing cutting out at the centre of the brick and working outwards. No power tools shall be allowed unless specifically accepted by Historic England and the London Borough of Camden.

2. Bed joints of replacement brickwork shall align exactly with adjacent existing joints. New perpend joints shall match the existing perpend rhythm.

3. The new facing bricks shall match the existing bricks in size, shape, texture, density and colour. Refer to materials specified here.

4. Joint size and appearance shall match existing.

5. Repointing:
   - Cut out cracked mortar joints.
   - Cut back mortar joints where mortar has disintegrated.
   - Infill to mortar joints shall comprise agreed materials, and be of an agreed texture and colour. Refer to materials specified here.

6. Cut out joints should be thoroughly (not excessively) cleaned and wetted before placement of new mortar. The mortar for filling the joints should be compacted into the joint to ensure maximum penetration and bond to the original bed.

7. Replaced bricks should be fully bedded in mortar to ensure thorough rebonding into the wall.

8. Where the repair area is extensive, new matching brickwork should be tied in with header bricks or stainless steel ties or anchors to provide mechanical bonding. Ties should be inserted on a staggered grid of 450mm.

9. Where the mortar joints have disintegrated to a large depth, the mortar should be deep tamped with replacement mortar and if required hand grouted to fill the joint to the depth needed. In areas where a thick layer of mortar is required then it should be placed in layers. Each underlying layer should be initially set, not fully dried out, prior to placing the next layer.

10. Mortar patch repairs to bricks should only be used for minor repairs to isolated bricks. The damaged area of the brick should be cut back to a sound face at a depth of at least 20mm. Repair mortar may contain naturally coloured sands and other crushed masonry aggregates, pozzolans and lime binders to match the brick colour. Joints should be cut out and pointed separately.

11. Care must be taken not to smudge or spread the mortar on the face of the brickwork.

12. Repair works are to be protected in hot weather from overly rapid drying by mist spraying or by covering with damp hessian.

Summary of Brick Repair for Western Range

Brick Type and Location	Product / Notes
Mortar for all areas	Lime Green Natural Mortar with sand of which 33% is Mercaston sand for repairs, fine textured sand
Yellow stock for repairs to west and east elevation	Smeed Dean Belgrave Yellow Stock by Wienerberger, sized to match existing 228x108x67mm
Joints	Recessed 2mm from face of brick
Bonding	Flemish bond
Dark Red brick for above the main train shed roof	Dunton Brothers Ltd Hand Made Dark Multi Stock, size 228x110x65mm Discontinued
Joints	Recessed 2mm from face of brick
Bonding	Flemish bond
Pale cream brick for the Northern Gateline interior	Ibstock Smooth Pearl White, size 215x102x65mm Discontinued
Joints	Flush
Bonding	English bond
Render for cornices	Lime Green Roman Stucco

Summary of Brick Repair for Eastern Range

Brick Type and Location	Product / Notes
Red stock for repairs to north and east elevation ground level	Lambs Imperial Hand Made Medium Dark Multi Clamp Stocks- dark colour range
Yellow Stock for first and second floors	(Bulmer bricks salvaged yellow stocks)
Cream yellow platform elevation	Ibstock Leicester Multi-cream stocks
Blue bricks for platform elevation plinths	Ibstock Staffordshire Blue-brindle Smooth
Mortar for all areas	Lime Technology Limited Moderately Hydraulic Lime Mortar (1:2.25) HLM0020N

Staffordshire Blue Brindle Smooth

IBSTOCK

Product Information	
Ibstock Code:	2220
Type:	Wirecut
Facing Description:	Smooth
Dry Brick Weight (kg):	2.4kg
Pack Quantity:	380
Packaging (standard):	Banded (plastic)
Technical Specification (to BS EN 771-1)	
Brick Dimensions (L x W x H mm):	215x102x65
Size Tolerances Mean & Range:	T2 R1
Configuration:	Vertically Perforated
Voids (%):	23-28
Compressive Strength (N/mm²):	75
Active Soluble Salts:	S2
Water Absorption (% weight):	7
Durability:	F2
Gross Dry Density (Sound Insulation) (Kg/m³):	1650
Equivalent Thermal Conductivity "K" value 5% Exposed:	Refer to Ibstock
Initial Rate of Absorption (Suction Rate) (Kg/m²/min):	Refer to Ibstock
EAN:	5036335012734

Leicester Multi Cream Stock

IBSTOCK

Product Information

Ibstock Code:	0189
Type:	Stock
Facing Description:	Sandfaced
Dry Brick Weight (kg):	1.9kg
Pack Quantity:	430
Packaging (standard):	Banded (plastic) & Shrinkwrap Caps

Technical Specification (to BS EN 771-1)

Brick Dimensions (L x W x H mm):	215x102x65
Size Tolerances Mean & Range:	T2 R1
Configuration:	Single Frog
Voids (%):	8-13
Compressive Strength (N/mm²):	15
Active Soluble Salts:	S2
Water Absorption (% weight):	25
Durability:	F2
Gross Dry Density (Sound Insulation) (Kg/m³):	1310
Equivalent Thermal Conductivity "K" value 5% Exposed:	Refer to Ibstock
Initial Rate of Absorption (Suction Rate) (Kg/m²/min):	Refer to Ibstock
EAN:	5036335001738

Handmade Dark Multi Clamp Stocks

These Clamp Fired, Handmade bricks have a rustic appearance that has been used for centuries, predominately in rural areas of Britain. This panel contains an equal ratio of Light, Medium and Dark Facings.

Click to see finished buildings

Product Information

Handmade Dark Multi Clamp Stocks

Sizes (other sizes available on request):
Imperial:
9" x 4 1/4" x 2 5/8"
(228 x 110 x 68mm)

Compressive Strength:
18.5 N/mm2
(see terms and conditions)

Water Absorption:
19.7%
(see terms and conditions)

Standard and non-standard specials available in this brick

SPECIFY THIS BRICK FOR YOUR PROJECT
REQUEST A QUOTATION ON-LINE
REQUEST A SAMPLE
REQUEST A CALL FROM A REPRESENTATIVE
WHERE ARE THESE MADE OR STOCKED

Representative Projects

Handmade Dark Multi Clamp Stocks

limetechnology

Mix Design Certificate

Contractor:

Contract: Kings Cross East Side (York Way)

Mortar Mix Description: Moderately Hydraulic Lime Mortar (1:2¼) HLM0020N

MATERIAL	TYPE	SUPPLIER	DRY BATCH WEIGHT kg/tonne (Volume)
Hydraulic Lime Binder	Moderately Hydraulic	Limetec	166 kg (1)
Aggregate	Roxwell	La Farge	293 kg (0.75)
Aggregate	Elsenham	Bretts	278 kg (0.75)
Aggregate	Brightlingsea	Bretts	263 kg (0.75)

Where changes in the performance of individual or collective constituent material occur, Lime Technology Limited reserves the right to vary these proportions as a function of maintaining compliance to BS EN 998. Part 2 requirements.

Signed: Mr Andy Cowland

Date: 01/10/07

www.limetechnology.co.uk

limetec
bringing lime mortar into the 21st century

Unit 126 Milton Park, Abingdon, Oxfordshire OX14 4SA
Telephone:0845 603 1143 Fax: 0845 634 1560 Email: info@limetechnology.co.uk Website: limetechnology.co.uk

Wienerberger

PRODUCT TECHNICAL INFORMATION SHEET

PRODUCT NAME	:	SMEED DEAN BELGRAVE YELLOW STOCK
REF. CODE	:	24230100
DESCRIPTION	:	YELLOW
MANUFACTURE	:	SOFT MUD, MOULDED STOCK
APPEARANCE	:	SANDED STOCK
CONFIGURATION	:	FROGGED - MAX 20%
WORK SIZE *	:	215 x 102.5 x 65

GUARANTEED PROPERTIES		EN771-1: 2003
COMPRESSIVE STRENGTH	:	MIN. 15N/mm^2
WATER ABSORPTION	:	MAX. 22%
DURABILITY DESIGNATION	:	F2
ACTIVE SOLUBLE SALTS	:	S2
SIZE TOLERANCE * (/ RANGE)	:	T1- R1
GROSS DENSITY (Tolerance)	:	1380Kg/m^3 (D1)
NET DENSITY (Tolerance)	:	1660Kg/m^3 (D1)
THERMAL CONDUCTIVITY (λ_{10},dry)	:	P=90% 0.51W/m.K
INITIAL RATE OF WATER ABS.	:	2.8Kg/m^2.minute
BOND STRENGTH (General Mortar)	:	0.15N/mm^2 (fixed value)
REACTION TO FIRE	:	Class A1
WATER VAPOUR PERMEABILITY (μ)	:	5/10 (tabulated)
PACK QUANTITY - SIZE	:	500 no - 1100 x 640 x 1120 H
TYPICAL PACK WEIGHT	:	1073 Kg
PACKAGING	:	Shrink Wrapping [YES] Pallet [NO]
BATCH IDENTIFICATION	:	Shrink Wrapping [YES] Product [NO]
ADDITIONAL FEATURES	:	Quality (Kitemark) Certified [YES]
	:	Packaging – CE Marked [NO]

ISSUE : MARCH 2007

TERCA

Product Details

Dark Multi - Hand Made

For more information Email us a question > Order a sample >

TECHNICAL INFORMATION

Dimensional Tolerance:	T1
Dimensional Range:	R1
Durability against freeze/thaw:	F1
Active Soluble Salts Content Category:	S2
Gross Dry Density:	1500 kg/m3
Compressive Strength:	7 N/mm2
Water Absorption Shown:	15 %
Thermal Conductivity:	0.45 W/m.K-50% 0.51 W/m.K-90%
Dimensions:	215mm x 102.5mm x 65mm

GALLERY

Click image for full-screen view

Product Data

Pre mixed Natural Lime Mortar

20/04/2009

Pre mixed natural hydraulic lime and sand. A general purpose mortar for building or pointing stone, brick and block: available in different strengths, sand gradings and colours.

Composition

Lime green Natural mortar is a combination of different sands mixed with St Astier pure and natural hydraulic lime with further additions including pigments where required.
Four different sand gradings are available;
TF (0-1mm) **F** (0-2mm) **M** (0-3mm) and **G** (0-5mm).
Lime green has wide range of colour options; a colour chart available on request.

Packing and availability

Available in 25 kg paper bags and sealed one tonne bulk bags for use with the mini silo system. Off white M grade in all three mortar strengths is kept in stock, others are made to order.

Bulk density and consumption

Average bulk density:
Dry: 1550kg/m³: +/-100
Wet: 1550 kg/m³ +/-50.
Repointing: 20kg/m² stonework; 7kg/m² brickwork.
Per 1m³ of wet mortar: building 1200-1800 bricks. All figures approx.

Guidance on mortar choice

Mortar application	Natural Lime Mortar type
Internal use, external walls, soft bricks	Soft mortar *Based on St Astier **NHL2** lime*
General solid masonry Dense masonry, parapets and lintels	Medium mortar *Based on St Astier **NH3.5** lime*
Above roofline, below DPC incl. Copings and cappings Earth retaining walls	Strong mortar *Based on St Astier **NHL5** lime*
The correct specification for any mortar should consider the structural requirements, nature and condition of the background, site exposure, time of the year and type of finish required. Less porous masonry units and harsh climates require greater mortar strength.	

Mixing

Add the whole bag of pre mixed mortar into drum or forced action mixer, avoid creating excessive dust. Add only 4 to 5.5 litres of clean water per bag. Pour the water in slowly as the product mixes, using just enough to achieve the correct workability. Mix for 3 to 10min. Lime green mortars may be reworked up to 24hrs. Please contact us for further information.

Application

Before pointing and building clean and remove all dust and loose material from joints and masonry, and adequately dampen dry or high suction surfaces. Pointing and building mortars should be finished the same day or the following day in cooler periods. Lime mortars will require longer curing times than cement, but the methods and principles of application are similar. When pointing or laying hard impervious masonry and / or during damp cool weather lime mortars may take a few weeks before being fully able to resist frosts. Do not use in temperatures less than 5 ºC or over 30ºC.

Curing

Hydraulic lime mortars do not set as quickly as modern cement based materials; hydraulic lime starts to set once water is added and also hardens by reacting with carbon dioxide: this is a slow process. Strength and long term durability are achieved over a months, not days. Success relies on proper curing of the mortar, protecting it against the effects of drying winds, strong sunlight, rain and frost.
In warm weather gently mist spray with water after application and cover if required with damp hessian sheets. In cool periods cover with protective sheeting, to avoid frost damage.

Further information available upon request.

lime|green

Lime Green Products Ltd. Coates Kiln, Stretton Road, Much Wenlock TF13 6DG.
Tel: 01952 728611 enquire@lime-green.co.uk www.lime-green.co.uk

Annex F 2.2/3.2 Stonework Repair

1. Repair method

2. Western and Eastern Range: Consented Stone

3. Consented stone data sheets

Method

Repair works using lime mortar are only to be carried out when the air temperature is not likely to fall below 5 degrees Celsius or as recommended by the manufacturer.

1. Cutting out stones:
   - Damaged stone should be cut out in a rectilinear surface shape of appropriate depth to expose sound stone removing any damaged or decayed material. The area cut out must be a minimum depth of 50mm and a maximum depth of 100mm. Where damaged areas of stone are deeper than 100mm consideration should be given to full stone replacement.
   - The new piece of stone (indent) should fit the prepared cavity exactly with no joint between the edges of the repair within the block.
   - The indents may be secured with resin bonded stainless steel dowels. Resin should be used only to secure dowels; the indents should be bedded and jointed using fine-grained lime mortar.
   - Cut out selected stones and leave the arrises of the surrounding stones completely undamaged. The suggested method to achieve this is commencing cutting out at the centre of the stone and working outwards. No power tools shall be allowed unless specifically accepted by Historic England and the London Borough of Camden.

2. Iron cramps:
   - Where encountered during the repair work, carefully remove all existing iron cramps or dowels found in existing work where repairs are being undertaken. Replace such cramps with stainless steel.

3. Replacement stonework shall be to match existing stone. Stone shall be thoroughly seasoned and free from cracks, vents, fissures or other defects that may adversely affect appearance, strength, weathering qualities or durability.

4. Bed joints of replacement stonework shall align exactly with adjacent existing joints.

5. Mortar is to match the original mix not necessarily the existing one.

6. Joint size and appearance shall match existing.

7. The finished face of the repair should exactly match the original masonry outline and the jointing material should not be visible at the interface of the stone with the indent. The piecing in indent should not cross over existing joints.

8. No saw marks shall be visible on the finished surface of new works. Surface finish of new works shall match the existing stone.

9. Repair works are to be protected in hot weather from overly rapid drying by mist spraying or by covering with damp hessian.

Summary of Stone Repair for Western Range

Stone Type and Location	Product / Notes
Sandstone plinth coping at ground level	Dunhouse Blaxter
Sandstone window sills above Main Train Shed roof	Dunhouse Blaxter
Sandstone window sills for west elevation (except limestone Central block and Link Building sills)	Woodkirk Stripy
Sandstone cornice lids for west elevation	Woodkirk Stripy
Limestone Window sills for link building	Portland Jordans Basebed

Summary of Stone Repair for Eastern Range

Stone Type and Location	Product / Notes
Sandstone window sills	Buff Crosland Hill sandstone
Sandstone plinth coping at ground level	Dunhouse Blaxter
Rusticated ashlar gritstone for north elevation at ground level	Naylor Hill gritstone

BLAXTER

Fine grained blue/grey sandstone

The Stone:

Quarried near Otterburn in Northumberland, this fine-grained honey coloured stone has been quarried since the 1890's and has been used for many prestigious buildings. In Newcastle it was used to supply the City Hall, the Postal Sorting office and the Royal Grammar School among many other buildings. It was also heavily used in Edinburgh to supply buildings such as the National Library of Scotland, Scottish and Newcastle Breweries head office on Holyrood Road, and the Standard Life Assurance Building on George Street.

More recently Blaxter has proved popular for the restoration of the fabric of Edinburgh and was notably used for the refurbishment of Jenners Store on Princess Street and the new build development of the Holyrood Hotel. Recent projects in Newcastle include the supply of much of the stone used in the redevelopment of the Quayside, in Durham we have supplied the Library and Castle adjacent to the Palace Green and in Sunderland the Reg Vardy Head office building. Blaxter is a large quarry with good reserves.

Applications:

Ashlar walling	✔
Thin Cladding, Generix Lite system	40mm min
Dressed / Carved stone	✔
Rock faced walling	✔
Rubble walling	
Rockery stone	
External flooring / Paving	
External steps / Platts	
Internal flooring (requires sealant)	✔

Declaration of Performance to BS EN 771-6-2011 Natural Stone Masonry Units:

Resistance to fire	Class A1
Shear bond strength	Fixed Value
Apparent Density (Kg/m^3)	2143
Open Porosity (%)	18.63
Water absorption (g/m2.sec^2)	98.2
Comperessive Strength (Mpa)	36
Flexural Strength (Mpa)	3.8
Frost Resistance (Cycles)	84
Thermal Conductivity	NPD

TOP TIP:
This stone is excellent for paving/steps and areas of severe exposure.

Dunhouse
NATURAL STONE

EST 1854 JOHNSONS WELLFIELD

ORDERS & ENQUIRIES 01484 652311

'Yorkstone' is a sandstone, a sedimentary rock comprising mainly of quartz with a small proportion of other minerals such as feldspar and mica. It has provided a tried and tested building material across the UK for hundreds of years.

Despite the widespread use of the name 'Yorkstone', the genuine article can only be sourced from the county of Yorkshire. Crosland Hill Natural Hard Yorkstone is widely regarded as being the finest Yorkstone available.

Crosland Hill Yorkstone possesses an ideal balance across a range of technical requirements giving the

WoodkirkStone

FarrarNaturalStone

Test Summary Data
Woodkirk Sandstone

Test Properties	Result
Water Absorption	4%
Flexural Strength	10.66 MPa
Freeze/Thaw	Freeze thaw test indicates that failure because of frost action is unlikely
Unpolished Slip Resistance	82 (dry)
Compressive Strength	54 N/mm2
Apparent Density	2460 Kg/m3

- Please note that sandstone is a natural product and all results are indicative and subject to variation

Description	A Carboniferous Sandstone, fine grained. Very durable with good weathering properties
Colour	Grey/Buff when newly quarried, weathers into buff/brown
Country of origin	United Kingdom

www.woodkirkstone.co.uk

Naylor Hill Grit Stone ...

Technical Specification

Density: 2440 Kg/M³
Slip Resistance (wet) 81
Compressive strength: 79 MPa
Flexural Strength 5 - O MPa
Porosity: 10.4%
Saturation Coefficient: 0.62
Acid Immersion Pass
Salt Crystallisation (weight loss) : 5.50%

Naylor Hill Sand Stone

portland stone – naturally

ALBION STONE
01737 771 772

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Portland Stone

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  - Bowers Basebed
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Portland Stone › Beds › Jordans Basebed

Jordans Basebed

Description

Shell Content

Contains some small grey shell fragments, but is almost a 'shell free' Basebed. The cleanest stone we have ever produced.

Shell Distribution

The shell fragments are evenly distributed across the stone.

Texture

Very tight texture making it ideal for fine carvings & mouldings as well as detailed masonry & cladding

Colour

Typical Portland colour, creamy/white.

Technical data

Petrography | Strength | Durability | Flooring | Summary

The stone was classified as well as sorted, moderately compacted, clast supported Oosparite Limestone. The clasts were predominantly composed of ooliths, but the mollusc shell fragments and quartz were also present. The matrix was composed of sparitic carbonate and some micritic carbonate. There was a moderate abundance of open voidage space. There was some evidence of sedimentary bedding by the preferred alignment of elongate clasts.

+ Quarry Report No. 80
+ Maximum Block Sizes
+ Average Block Sizes in Stock
+ Current Availability
+ Future Availability
+ CE Certificates and Declarations of Performance
+ Technical Data Sheets
+ Specification Clauses

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Annex F 2.3 Render Repair

1. Repair method
2. Western Range: Product Data Sheet
3. Western Range: Render Repair method statement

Method

Repair works using lime render are only to be carried out when the air temperature is not likely to fall below 5 degrees Celsius or as recommended by the manufacturer.

1. Cut out loose render, carefully to minimise debonding adjacent render.

2. Prepare substrate:

3. Brickwork
   - Rake out mortar joints to brickwork behind to form a key for the render.

4. Stone:
   - Clear stone substrate of loose material / superficial delamination.
   - If substrate is very smooth / there is insufficient key for the new render fix expanded metal lath to the stone surface, as method statement consented for the Western Range cornice included here.

5. Apply a minimum of two coats of render to manufacturer's instructions to the exact profile and finish of the original render adjacent.

6. Repair works are to be protected from overly rapid drying by mist spraying or by covering with damp hessian.

Product Data

Roman Cement Stucco

A premixed mortar based on natural (Roman) cement and sand.
17/05/2011

Lime green natural cement render is a blend of natural (roman) cement, sand and additives to improve working time. It is suitable for matching historic "Roman cements" including the repair and replacement of decorative mouldings, cast elements and plain render.

Composition
Sand/aggregate mixed with Prompt natural Roman cement, lime and retarder.

Mixes and textures available;
M 0-3mm Render undercoats and coarser finishing coats;
EF 0.5mm Finishing coats.

Availability
Made to order in 25 kg paper sacks.

Characteristics
Roman cements were used extensively on Georgian and Edwardian buildings for renders and cornice work. The rapid and controllable set combined with low shrinkage risk and excellent bond strength made it ideal for use in these complex structures.

Ideal for use in the conservation of old building, it is a completely natural lime based product.

- Completely natural Binder, nothing added or removed in manufacturing
- Fast setting typically 40min at 15°C
- Low shrinkage
- Excellent bond strength
- Resistant to acids and alkalis
- Compatible with all lime products
- Render mouldings – In-situ or run work

Application guidance
Application: onto clean and dry background, not water proofed. Repoint masonry as required with the correct mortar. Adequately dampen dry or high suction surfaces beforehand, for best adhesion apply a slurry of neat natural cement and water prior to application.
For best adhesion further undercoats or the finishing coat must be applied to the previous once it has lost its workability through suction from the support, but before setting starts. i.e. apply each coat while the previous is still damp working "fresh on fresh".
Typically leave no more than 2 hours between coats.

Mixing
Mix in drum mixers or by mixing whisk. Carefully add clean water, between 4.5-5 litres per 25kg bag or 18%-20% water to weight of mix. Mix for approximately 5min. Prompt mortar will rapidly set, typically within 30 – 50 mins, depending on temperature. Do not use in temperatures less than 5 ºC or over 30ºC.

Health and safety

Risk Phrases

R36/37/38 Irritating to eyes, respiratory system and skin

R66 Repeated exposure may cause skin dryness or cracking

R43 May cause sensitization by skin contact

Safety phrases

S22 Do not breathe dust

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

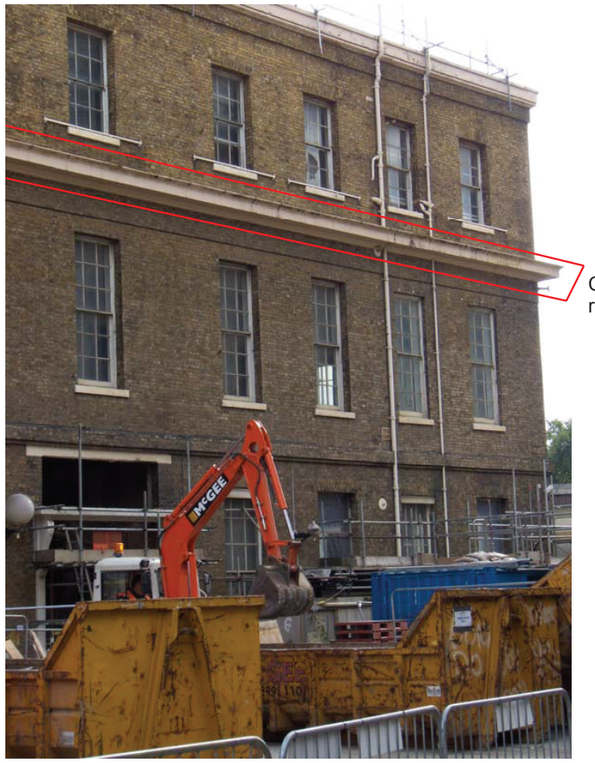
S24/25 Avoid contact with skin and eyes

S36 Wear suitable protective clothing

lime|green
Lime Green Products Ltd. Coates Kiln, Stretton Road, Much Wenlock TF13 6DG.
Tel: 01952 728611 enquire@lime-green.co.uk www.lime-green.co.uk

WESTERN RANGE BUILDING
Render Repair to soffit of Southern Wing Cornice

The cornice runs the length of the Southern Wing from gridline W2 to W10, at second floor level. There may also be a similar cornice on the Northern Wing although the configurations of render bands are not the same as the Southern Wing.



Cornice requiring render repairs described

Photograph 1: showing render cornice before scaffolding was erected

The cornice is similar in construction to other cornices on the Western Range Building (i.e stone shelf supporting rendered brickwork with a stone slab lid). The main difference is that the supporting shelf is undressed stone and render is used to even out the differences in the level of the soffit. (See photograph 2). The thickness of the render varies between 15mm and 50mm to form a flat soffit. The render is even thicker on the front edge where it forms a drip.

Photograph 2: showing the variation in the level of the stone soffit and the profile of the render moulding.

In many locations the render to the soffit has debonded from the stone. Whilst the stone is largely in good condition, the underside surface of the stone has become powdery and it is delaminating superficially. The stone will be defrassed to remove loose material but it is a relatively smooth surface on which to hang such a thick coating of soffit render. It is unlikely that the render will be able to form an adequate bond with the stone. The repair situation is worse than the original / new condition, partly due to the surface of the stone and partly as only patch repairs are necessary. In total, approximately 60% of the render needs to be replaced.

It is proposed that eml (expanded metal lath) is screwed into the front edge and around the soffit of the stone using 8mm diameter / 60mm long stainless steel screws at 300mm centres so that a key is formed for the render. The stone will be predrilled using non-percussive methods. The render will be able to form a secure bond with the surface of the weathered stone.

This relatively minor intervention into the stone will enable the render to bond to the surface so that the original profile of the cornice can be maintained. The integrity of the stone will not be compromised by screwing into it at this frequency.

Katherine Watts
For Taylor Woodrow
25/03/10

Annex F 2.4 Masonry Cleaning

1. Repair method

2. Western Range: Consented Masonry Cleaning trials summary

Camden refs: 2007/5209/L
2008/0849/L
2009/4471/L

Method

1. Removal of Loosely Adhered Deposits
   - Before commencing other methods of cleaning, remove loosely adhered deposits and growths, cobwebs, dirt, dust, or similar, using a stiff natural bristle brush.
   - Efflorescence shall be removed by careful brushing and collecting displaced particles immediately. Do not apply water to areas displaying contamination by salt.

2. Cleaning work shall be carried out by a capable operator who has received appropriate instruction regarding the DOFF cleaning system from Stonehealth Ltd.

3. Refer throughout to Stonehealth's method statement regarding use of the of the DOFF system.

4. Steam shall be used at the lowest pressure that will soften / loosen deposits without abrading or disrupting the surface. Where deposits are ingrained, agree trials for other methods of cleaning with the London Borough of Camden and Historic England.

5. For each surface, establish the optimum settings including nozzle type, water pressure and temperature levels, and distance from nozzle from the surface. Adjust regularly to achieve optimum cleaning performance for each surface.

6. Rinse debris / slurry thoroughly from each completed surface with clean water using suitable low pressure spray equipment. Do not allow slurry to dry out on the surface.

Masonry Cleaning Trials Summary

Method	Result	Consent
Nebulous water	Little effect	Consented
DOFF 90°C	Good effect	Consented
DOFF 120°C	Good effect	Consented
DOFF 150°C	Good effect	Consented
Jos / Torc (Unil 250)	Too clean / abraded	Not consented
Jos / Torc (Unil 500)	Too clean / abraded	Not consented
Jos / Torc (Dolomite and Calcite)	Too clean / abraded	Not consented

Annex F 2.5 Safety Railings

1. Photograph
2. Plan showing locations where safety railings are consented

Fig. F.6 Example of safety railing across a window on the Western Range

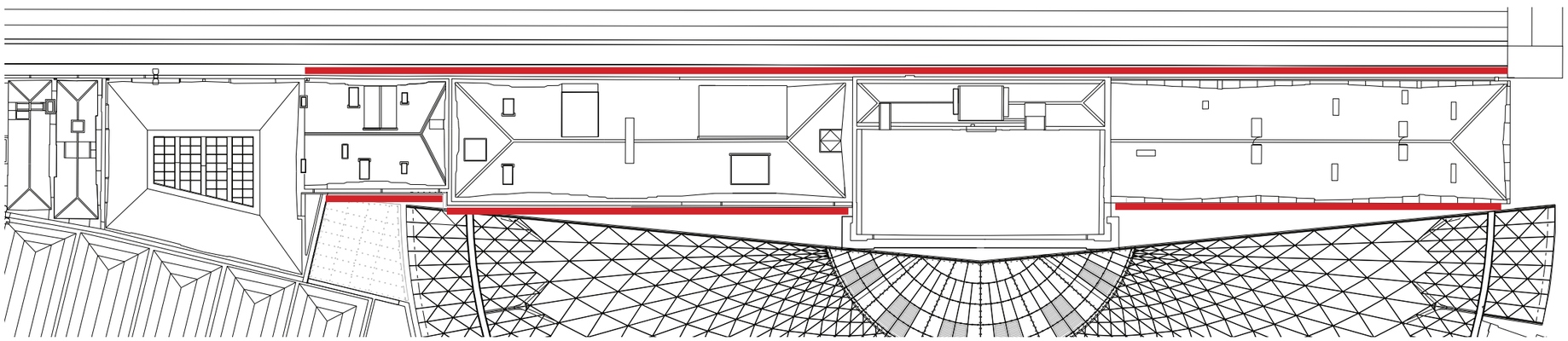


Fig. F.7 Western Range windows where safety railings are consented adjacent to gutter walkways