



Our Town Hall

Link Bridge Extension Narrative on Ramboll Sketches

Date: 6th November 2019

Rev A: 13.11.2019

Status: S2 – For information

Notes by: Gary Willis

Ref: OTH-RAM-TH-XX-RPT-S-0006

Introduction

Ramboll have worked closely with Purcell during RIBA Stage 4 to provide a solution to the reconfigured former kitchen link that provides much needed additional welfare facilities within the OTH Project and should achieve Listed Building Consent.

The following Ramboll sketches should read in conjunction with the Purcell drawings, dated 30/08/19, which have been included as part of the application for Listed Building Consent.

- Former Kitchen Link Ramboll Proposed Floor Plan
- Former Kitchen Link Ramboll Proposed Roof Plan
- Former Kitchen Link Ramboll Proposed Sections

Background

The existing kitchen link is a late 60's/early 70's extension, formed to either side of an original Waterhouse stone arch bridge, which all clear-spans the northern courtyard. The extensions to the stone bridge were constructed in at least two phases; with initial bays formed to both eastern and western sides of the original bridge in the late 60's, and then a further bay added just to the west in the early 70's. This later phase of construction included provision of a lift between kitchen and ground floor levels, and also provided a further link into the Great Hall.

Original City Architect drawings for the most westerly extension provide good detail on the 70's construction, and some detail on the 60's construction then already in place. This provides a level of detail on the existing structural arrangement of these extensions, which has been verified where possible by visual inspection. As the nature of the current proposals to reconfigure this link had not been established when the Intrusive Surveys were scheduled at the end of 2017, no intrusive investigations have been completed to date to inform the current team proposals.

The nature of the existing arrangement and structure is shown on the following key archive drawings (refer to Aconex for further archive drawings):

- 1970's Level 2 Kitchen Plan (OTH-MCC-TH-2-DWG-A-0067)
- 1970's Level 2 Kitchen Section A-A (OTH-MCC-TH-2-DWG-A-0068)

From these archive drawings it is understood that the east side extension floor structure consists of a concrete encased steel beams, with a precast concrete floor infill (beam and block). A load-bearing east elevation single skin masonry wall supports what is assumed to be a timber joist flat roof, spanning between the elevation and the face of the original stone link.

The first phase of the west side extension floor structure consists of concrete encased steel beams, with a precast concrete floor infill (beam and block). The roof is wood-wool slabs supported on timber joists, which span between steel roof beams supported on the original stone link and potentially the original masonry elevation of the 60's construction, which was itself supported off a concrete encased steel floor beam spanning between the Great Hall and the Princess Street Wing.

The floor of the 70's extension furthest west is precast hollow units, spanning between concrete encased steel beams supported off the concrete encased steel edge beam of the 60's construction, and a further concrete encased steel beam again spanning between the Great Hall and the Princess Street Wing.

When extended further west in the 70's, the original masonry elevation (11" cavity wall?) was removed and the steel beams of the 60's roof construction were re-supported on a new castellated (Castella) beam spanning between the Great Hall and the Princess Street Wing.

The timber joist flat roof of the 70's extension now spans between this castellated beam and the new load-bearing cavity wall forming the current western elevation.

It appears that much of the original stone arched bridge remains in place, with only the infill tracery of the original arched openings along the sides of the bridge removed to allow circulation into the kitchen spaces.

The later extension structures, installed to either side of the original stone bridge, appear to have been specifically detailed to provide clear separation from the historic fabric of the Great Hall and Princess Street elevations wherever possible. The main concrete encased steel beams that span the courtyard being typically pocketed in to the historic fabric, with trimming beams included to support the north and south walls of the accommodation, with clear separation provided between new and old (i.e. a gap is visible between new and old, which only the main support beams cross)

Key Aspects of the Architectural Concept

Numerous options for this link were developed and discussed with both the Client and the Local Conservation Officer. To enable the re-use of the existing primary structure that spans the courtyard the initial objective was to keep the new construction lightweight, and similar in weight (or ideally less) to that of the existing construction present. This would avoid the need to strengthen the existing primary structure.

However, the nature of traditional materials to provide the aesthetic thought suitable to achieve Listed Building Consent in this significant historic space, tends not to be lightweight.

The proposed architectural concept includes:

- Retain the existing extension floor structures but extend this to the east as required (as the proposed floor area is slightly larger than the existing).
- Remove all the existing extension superstructure but retain the existing roof steelwork.
- Provide new external elevations with a non-loadbearing lightweight cold-formed partitioning inner leaf (SFS) to support an inner plasterboard lining, and a bespoke terracotta cladding system.
- The terracotta will have a range of thicknesses to achieve the relief and detailing required but has been assumed to be 200mm thick solid terracotta (on average). The terracotta units will all be "specials", individually shaped to provide the detailing required

(reveals, cills, heads, voussoir & spandrel units, parapet & coping units, and units to follow the detailing of historic fabric to either end of the elevations). The terracotta will be designed and detailed by the supplier.

- The terracotta will be supported/restrained as a traditional masonry outer leaf (with proprietary stainless-steel masonry support angles at the base, cavity wall restraint ties back to the SFS system). Movement joints will be required as typically required for a masonry leaf of an external wall.
- The retained existing roof steelwork will be supplemented with additional steelwork beams and columns where required, to support; the roofs, comprising timber boarded joists, finished in lead and detailed with rolled joints and an internal stepped gutter, and in areas support the terracotta parapet panels vertically.
- Steelwork (galvanised) is to extend up above roof level to restrain the terracotta parapet panels along the top laterally. The parapet steelwork is to be concealed by the lead cladding to the rear face of the parapet up-stand.
- Timber ceiling joist, support from the roof steelwork, will support a “shaped” plasterboard ceiling, profiled to expose the tracery of the original stone link.

Ramboll emails/sketches, dated 22nd July, 9th August and 19th August 2019 best summarise the development of the structural design to accommodate the architectural concept detailed above. These have been included at the end of this note.

Due to weight of the proposed superstructure being more than the existing structure, and the proposed footprint being larger than the existing, the existing floor structure must be strengthened and extended as detailed below.

Key aspects of the current structural concept include:

To the west:

- The western 70's bay is to be removed, including the existing goods lift shaft & lift pit currently providing access up to the Level 01 kitchen and into the Great Hall.
- The large (900mm deep) steel floor beam to be removed from the western bay is to be considered for reuse within the proposed construction (to enable the proposed new steel beam to be omitted). If to be reused, the existing beam shall be carefully removed (see below).
- Remove all the later superstructure, except for the existing exposed roof edge beam and intermediate roof beams spanning back to the original bridge stonework, which are to be retained. The floor structures are all to be retained.
- Strengthen the existing floor beam (now an edge beam) via a steel beam placed on top. This can be achieved via a new 610x305x179 UB located immediately above the existing floor edge beam and locally secured to it, or via reusing the large existing steel beam removed from the 70's western bay. Connection between the beams is via 4No. 120SHS stub connections, site welded to the top of the existing beam and bolted to the underside of the upper beam. This is achieved by local removal of the concrete encasement.
- Where the concrete encasement is removed to allow for the stub connections, the actual size of the existing floor beam is to be confirmed, and nature of the connection of the incoming existing floor beams established. These floor beam connections may need to be locally strengthened (via site welding).

- The upper strengthening beam stops at the face of the historic fabric to either end and does not pocket into the historic fabric (only the retained existing floor beam remains pocketed into the walls).
- 4no 120 SHS posts link between the top of the strengthening beam and the underside of the retained roof beam above to structurally link these beams together. These posts are to be located within the zone of the SFS partitioning which forms the inner leaf of the external wall and spans vertically between floor and roof beams.
- The SFS partition laterally restrains the bespoke solid terracotta cladding.
- The bespoke solid terracotta cladding is supported at its base off a proprietary stainless-steel masonry support system, secured to the retained steel floor beam. This includes a suspended masonry support system to carry the terracotta voussoir units, that form an arched soffit below the level of the floor beam.
- New galvanised steel parapet posts are to be secured to the existing steel intermediate roof beams and support a horizontal 100x100 steel angle to laterally restrain the terracotta parapet panels. The terracotta parapet panels are vertically supported off brickwork built up off the retained existing roof steelwork.
- Pairs of 200mm deep steel PFC's are located to either side of the proposed gutter, secured to the existing roof beams below via 100 SHS stubs site welded to the existing beams. At the gable ends these 100 SHS stub extend up, to laterally restrain the terracotta parapet panels to these gables.
- The roof shape is to be formed in 250mm deep timber rafters @ 600mm centres, spanning between; the face of the stone bridge, the masonry extended up from the existing roof beam, and the PFC gutter members.
- Timber ceiling joists spanning between the existing roof beams and PFC gutter PFC's support the ceiling profile proposed.

To the east:

- Remove all the later superstructure construction down to the original floor level.
- To form the extended floor area, provide new 533x210x312 UB edge beam, inclined on plan, and connected to the retained exiting steelwork to either end. Allow for local removal of the concrete encasement, the steelwork inspected to confirm size and arrangement, and a new connection to be formed via site-drilling/welding).
- Provide a small area of additional in-situ concrete floor, spanning between the new and existing steel edge beams. A metal deck permanent shutter has been assumed.
- Support the bespoke terracotta cladding off a stainless-steel masonry support system, secured to the inclined new steel edge beam, including a suspended system to support the terracotta voussoir units forming an arched soffit. To remove torsion, the new included beam is to be tied back to the existing edge beam at 3No. locations.
- Provide 5no. 120SHS steel cranked posts, secured to the steel floor beams, which both support new roof beams, and extend up to laterally restrain the terracotta parapet panels via a 100 x 100 horizontal angle (as the detail to the west).
- Provide 2no. new 254 UB steel inner roof beams, and 2no. 254 UB steel gable roof beams, all spanning between the new posts and pockets formed in the original stonework of the bridge structure.
- Provide 3no. new 254UB steel eaves beams, spanning between the posts to laterally restrain the top of the SFS partitioning and vertically support the terracotta parapet panels.

- Pairs of 200mm deep steel PFC's are located to either side of the proposed gutter, secured to the new inner and gable roof beams below via 100 SHS stubs. At the gable ends these 100 SHS stub extend up, to laterally restrain the terracotta parapet panels to these gables.
- The roof shape is to be formed in 250mm deep timber rafters @ 600mm centres, spanning between; the face of the stone bridge, the masonry extended up from the existing roof beam, and the PFC gutter members.
- Timber ceiling joists spanning between the existing roof beams and PFC gutter PFC's support the ceiling profile proposed.
- Provide new timber rafters, spanning between the retained existing intermediate roof beams, to support a traditionally detailed lead roof with internal gutter

Key structural aspects relevant to the application for Listed Building Consent:

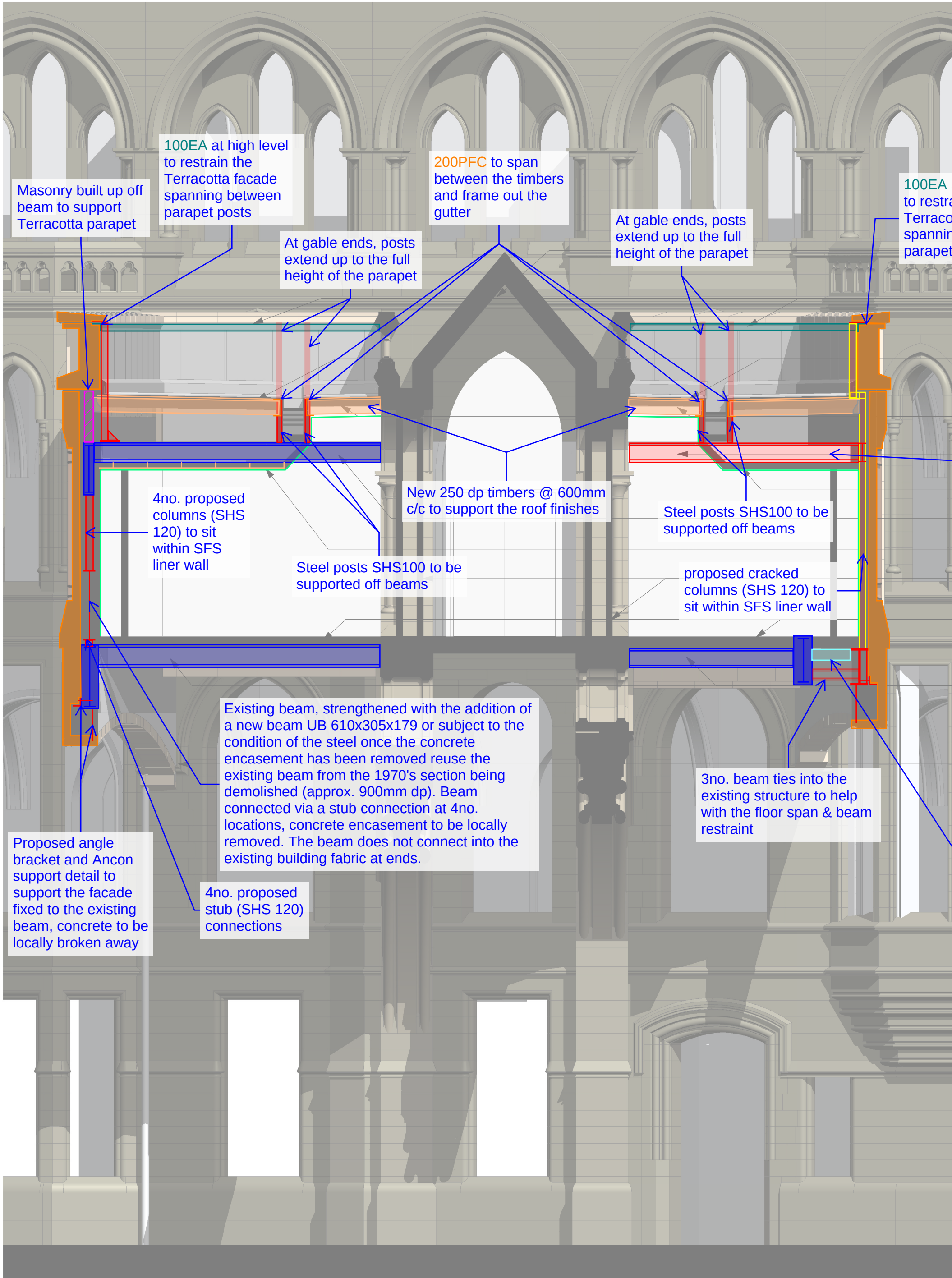
- New primary connections to the historic fabric are to be avoided wherever possible, with all new steelwork connecting to later steelwork (avoiding the need to form new connections to, or pockets within, the existing stone elevations). The pockets for the new east roof beams has been discussed and agreed with Purcell.
- The strengthening of the retained existing floor beam is to be stopped short of the existing stone elevation (avoiding additional pockets into the wall).
- The existing separation between new and historic fabric is to be maintained.

The materials to be used are of a quality commensurate with the historic setting, and are traditionally detailed

Demolition of Existing Former Kitchen Structures

Within the current temporary scaffold design, Lendlease have considered the safe removal of the redundant elements of former kitchen structure. This will include back-propping and access provision to allow the large bridging beams to be cut into smaller manageable sections via low vibration techniques, and safely removed from site. If the large beam is to be reused, its removal/repositioning must maintain the length required (due to the splay of the existing buildings, this beam will be significantly longer than required, hence will need to be reduced in length on site)

With most of the existing beam removed up to the face of the historic elevations, the most appropriate method to remove the bearing ends can be considered. Likely to have been installed in oversized pockets, then infilled with the concrete now present today, removal should be the reverse of installation; i.e. via careful removal of the concrete via small breaker, which is unlikely to be detrimental to an otherwise robust building from a vibration perspective. With the existing bearing removed, the pocket can be made good to match the surrounding/original masonry detailing as scheduled by Purcell.



Link Bridge Section AA
1 : 50

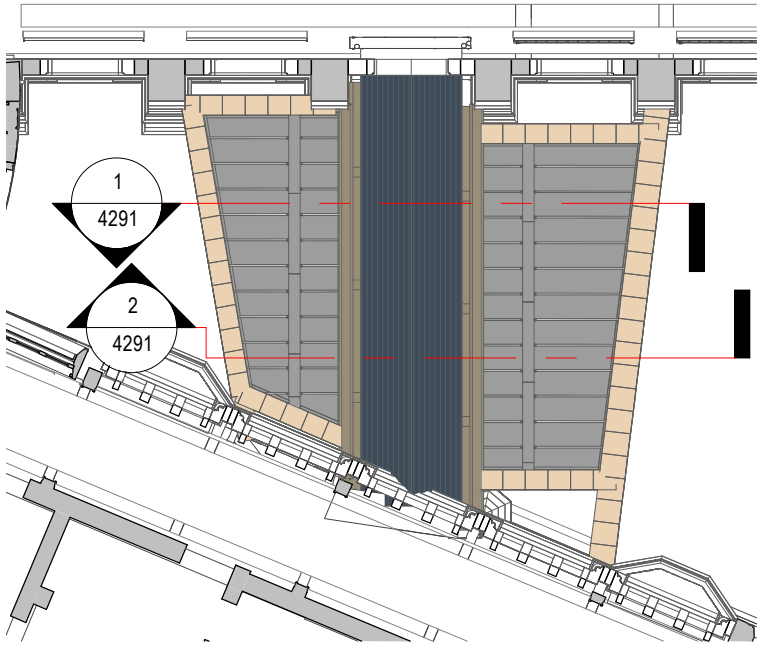


Link Bridge Section BB
1 : 50

Scale Bars to be used as guidance only - refer to sheet size below									
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1:200	mm	1000	2000	3000	4000	5000	6000	7000	8000
1:500	m	10	20	30	40	50	60	70	80
1:1250	m	10	20	30	40	50	60	70	80

Notes:
Drawings are based on survey data and may not accurately represent what is physically present.
Do not scale from this drawing. All dimensions are to be verified on site before proceeding with the work.
All dimensions are in millimeters unless noted otherwise.
Purcell shall be notified in writing of any discrepancies.

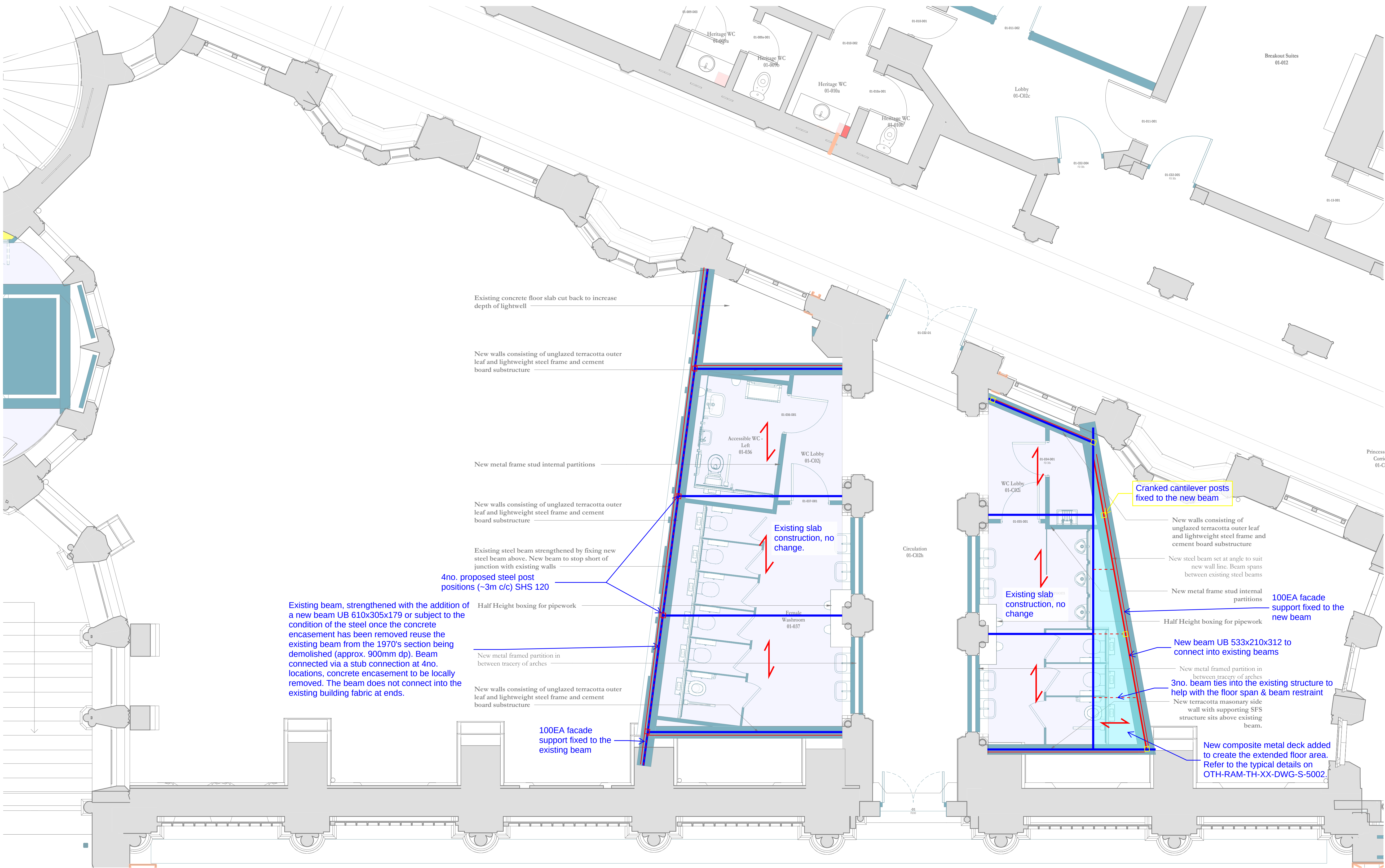
Key Plan



Section Key Plan
1 : 200

Notes:
All Ramboll text is in blue.
Existing steelwork beams are shown in blue.

RAMBOLL Kitchen Link Section 01/11/2019 Rev. P01	
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PROJECT STATUS	RIBA STAGE 4
CLIENT	MANCHESTER CITY COUNCIL
PROJECT	OUR TOWN HALL
DRAWING TITLE	Link Bridge Extension Sections
SIZE & SCALE	A1:As indicated
DRAWING STATUS	For Review and Comment
JOB NUMBER	236959
DRAWING NO.	OTH-PUR-TH-ZZ-DWG-A-4291 -
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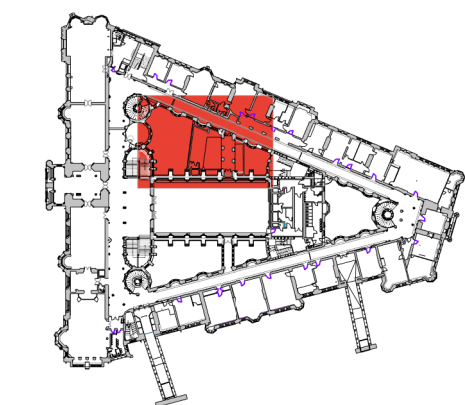
Link Bridge Extension Proposed Floor Plan
1 : 50

Scale Bars to be used as guidance only - refer to sheet size below

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1:500	M	10	20	30	40	50	60	70	80
1:1250	M	10	20	30	40	50	60	70	80

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Key Plan



Key Plan - Link Bridge Proposed
1 : 2000

Notes:
All Ramboll text is in blue.
Existing steelwork beams are shown in blue.

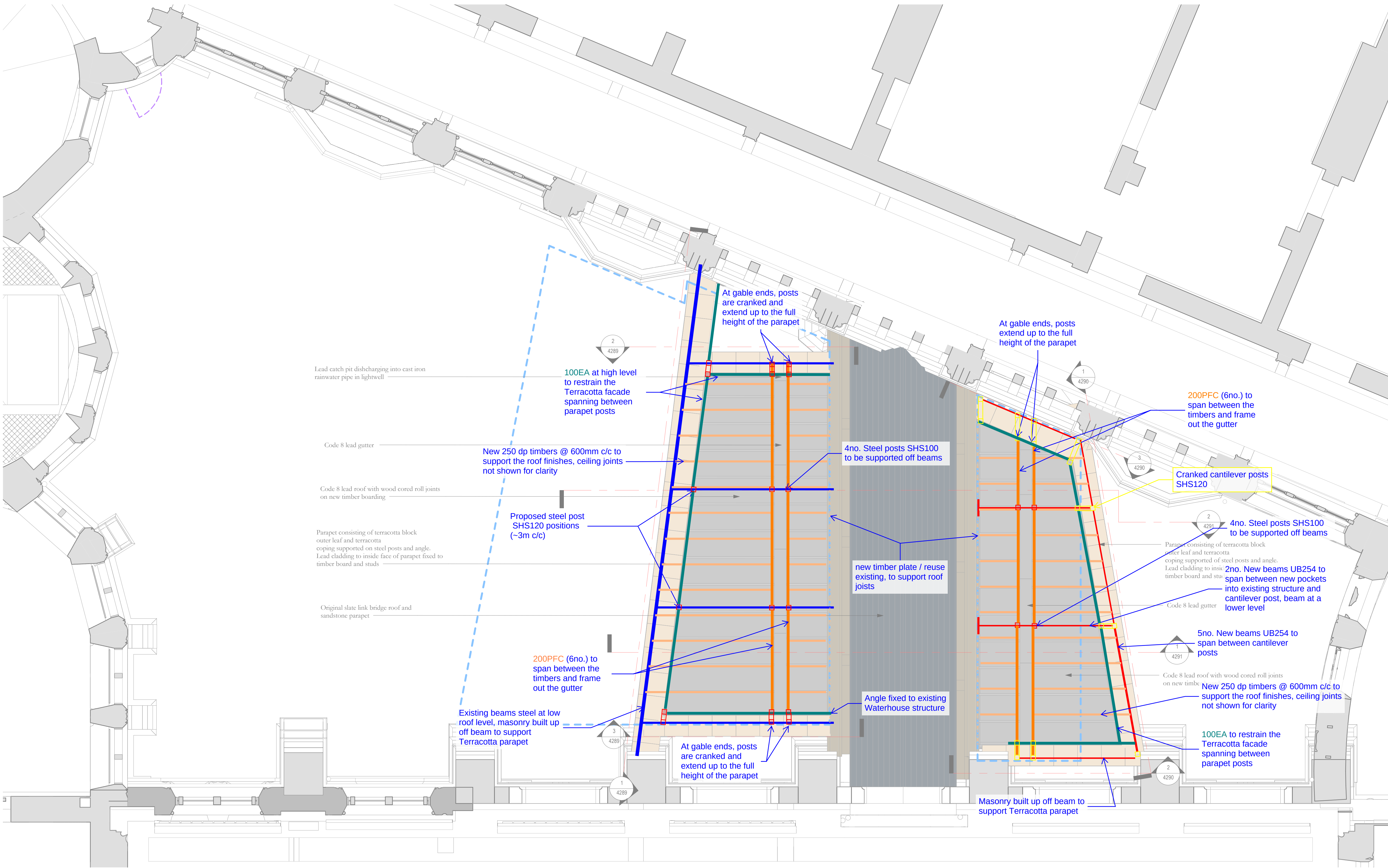
RAMBOLL Kitchen Link
Floor Plan
01/11/2019
Rev. P01

TOWN HALL PROJECT

PURCELL

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PROJECT STATUS	RIBA STAGE 4
CLIENT	MANCHESTER CITY COUNCIL
PROJECT	OUR TOWN HALL
DRAWING TITLE	Link Bridge Extension Proposed Floor Plan
SIZE & SCALE	A1:As indicated
DRAWING STATUS	For Review and Comment
JOB NUMBER	236959
DRAWING NO.	OTH-PUR-TH-01-DWG-A-4287
REV	



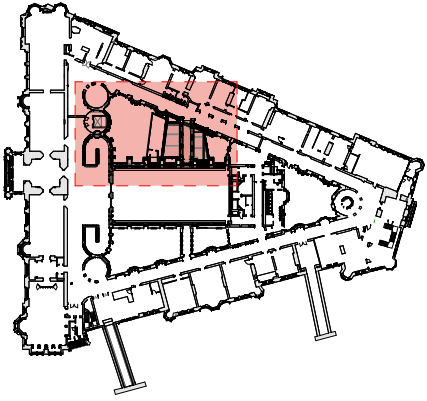
Link Bridge Roof Plan
1 : 50

Scale Bars to be used as guidance only - refer to sheet size below

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1:500	m	5	15	25	35	45	55	65	75
1:1250	m	10	30	50	70	90	110	130	150

Notes:
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Do not scale from this drawing. All dimensions are to be verified on site before proceeding with the work.
All dimensions are in millimeters unless noted otherwise.
Purcell shall be notified in writing of any discrepancies.

Key Plan



Key Plan - Link Bridge
1 : 2000

--- Footprint of Current 1960/1970 Extension

Notes:
All Ramboll text is in blue.
Existing steelwork beams are shown in blue.

RAMBOLL Kitchen Link
Roof Plan
01/11/2019
Rev. P01



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PROJECT STATUS	RIBA STAGE 4
CLIENT	MANCHESTER CITY COUNCIL
PROJECT	OUR TOWN HALL
DRAWING TITLE	Link Bridge Extension Roof Plan
SIZE & SCALE	A1:As indicated
DRAWING STATUS	For Review and Comment

JOB NUMBER 236959

DRAWING NO. REV

07TH-PUR-EX-RF-DWG-A-4288 -

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Gary Willis

From: Gary Willis
Sent: 09 August 2019 18:59
To: gareth.richings@purcelluk.com; Thomas.Kirby@purcelluk.com
Cc: Davis, Daniel; Isherwood, Kelly; 'David Hanna'; Paul Maddison; Bentley, Liam; Charlotte Smith; Stelios Koukakis
Subject: RE: OTH - Former Bridge Link
Attachments: Sketch sections PM Comments 22.07.19.pdf; Suspended_Brickwork_Four_Ways_to_Create_Brick_Soffits.pdf; RCP 1.50 RUK Comments 20190809.pdf; Alternative options.pdf; Alternative options.pdf

Follow Up Flag: Follow up
Flag Status: Completed

Hi Gareth, Tom,

Further to the workshop on Wednesday (7th Aug) we confirm the advice given on cladding weights, and possible options forward as follows. This should be read in conjunction with our email (below) and the sketch (attached) as originally sent to Purcell on 22nd July. The sketch included helps identify where the loads described are applied to the west elevation.

West elevation load limits

Based on the original sketch, the allowable loading for the new wall line and roof build-up remain as before, i.e.

- 11.7 kN/m (1170kg/m) – wall allowance at the floor beam
- 2.7 kN/m (270kg/m) – wall allowance at the roof beam
- 0.8 – 1.0 kN/m² (80 – 100 kg/m²) – general roof allowance

If the existing the floor and roof beams were linked, the total capacity could be made available at the base, hence would be able to support 14.4 kN/m (1440 kg/m) – almost half a tonne every metre.

Review of the proposals tabled at 31/07 workshop

For Terracotta units (100mm thk), restrained back to SFS system, this would give an area load of 3 kN/m² (300 kg/m²), hence based on the total capacity noted above, this would allow a maximum height of cladding of 4.8m

For a timber roof finished in code 8 lead roof the self-weight is likely to be similar to that of the above

Items discussed at 07/08 workshop

As discussed, the existing beam capacities do not provide for the current architectural visuals which might have thicker areas of terracotta locally, and with inclusion of a 1.1m high parapet and an arched soffit below, would generate cladding total cladding heights of 7m approx. These would exceed the demonstrated capacities of the existing structure.

The options reusing the existing structure would be to:

1. Reduced the loading on the beam
 - Consider thinner terracotta units. We think the minimum thickness of masonry that can be designed as stacked masonry and not a facing is 75mm, so reduced weights can be derived on a pro-rata basis,
 - Reduce the parapet wall height (return to the rail shown on the previous Purcell sketch, or protect the edge from fall via other means)
 - Use a 35mm thk terracotta rain screen as shown on the previous Purcell sketch and explore the jointing options to achieve a solid stacked masonry effect (we recognise this is not preferred based on feedback from Purcell & the Vic Soc)

- Explore a terracotta “slip” option, with units mounted on an jointed on a carrier board, supported from below & secured back to the SFS
- 2. Strengthen the beam

We do understand your preference is to strengthen the beam to allow your preferred detailing to be supported.

Strengthening options and scheme design information

Assumptions:

- Terracotta (200mm avg. thk) + SFS system would give an area load of 4.6 kN/m² (460kg/m²)
- Maximum cladding height of 7m (incorporating the parapet & arch). This would apply a load of = 32.2 kN/m (3220kg/m²) to the existing beams
- A roof finish of code 8 lead on timber deck, on timber joists, with a lightweight ceiling an nominal services (no heavy plant on the roof or hung from it)
- Deflection allowance = Span/1000 (total load) = 11mm (as the finishes as considered as “brittle”)

Results:

- Plate fixed to the face of the existing 1000mm deep concrete encased steel beam = 900x20mm (or 850x25mm), see attached sketch titled Alternative Options*
- Beam section attached to the top of the 450mm wide concrete encased steel beam (hidden within the wall line) could be; UB 686x254x170, UB 610x305x179 or a UC 356x406x467

* the plate could also provide a fixing points for the masonry support angle. See below.

The sizes of steelwork noted above are driven but limiting deflection rather than have sufficient strength, over this almost 12m span. With a better understanding of permitted deflections (use of solf/lime mortar) and when deflections occur) these sizes might reduce. Similarly if the cladding weight is reduced from 200mm thick and 7m high the steel sizes could reduce.

Masonry support information: see attached Ancon brochure

We can discuss these at the next workshop. Hanging masonry without see the support angle is relatively easy. The decision would be if the angle were in curved sections to follow the profile of the arch below, or is set higher, is straight/level, and the units hanger further down from this to form the profile.

Rear (Eastern) Side of the Original Link

The existing beam appear to be ok in the currently proposed arrangement (as more load is being removed than is being re-applied)

The new diagonal beam, based on same assumptions as above, would be a UB533x312x150 (again limiting total working deflections to span/1000)

Steel Framing System (SFS) – Noting Liam’s record of the chat (albeit I can’t recall this)

With only 2400mm between the floor and underside of the existing roof beam, any proprietary SFS solution will do to resist wind pressures applied. I would allow at this stage for a 150mm deep stud zone. This are a proprietary system, and you can select from their safe load tables (i.e. stud spacing/thickness for various spacings and loadings). When the design is more developed we can explore if the SFS connect the beams together, or if we use hot rolled posts to do this.

Workshop on 13th Aug (which Paul M and I should be at)

As well as review all the above, at next week’s meeting we would like to discuss further:

- the gable ends
- positioning of proposed beams to support the gable
- the cladding allowance for the gable
- removal of existing beams close to the historic building

Kind regards

Gary Willis

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From: Paul Maddison <Paul.Maddison@ramboll.co.uk>

Sent: 22 July 2019 17:45

To: 'David Hanna' <David.Hanna@purcelluk.com>

Cc: Davis, Daniel <Daniel.Davis@lendlease.com>; Isherwood, Kelly <Kelly.Isherwood@lendlease.com>; Gary Willis <Gary.Willis@ramboll.co.uk>

Subject: RE: OTH - Former Bridge Link

David,

Further to the initial sketch details you have sent through, please find attached our initial structural comments to show how we think the structure would work, to ensure that the proposed loading in the remaining structures is not exceeded.

On the face of it, the kind of material build ups you are showing look achievable. There are a few things for us to discuss to assist you in developing your details:

- Roof buildup – span of the timbers and the lead spec
- Loading limits to the top and bottom existing beams
- Vertical support to the terracotta cladding
- The existing floor (is this to be modified, ie removal of existing finishes to accommodate new?)

Perhaps we can have a catch up between meetings tomorrow (I am free between 11:30 and 14:00).

Kind regards

Paul Maddison

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From: David Hanna <David.Hanna@purcelluk.com>

Sent: 19 July 2019 09:27

To: Paul Maddison <Paul.Maddison@ramboll.co.uk>

Cc: Davis, Daniel <Daniel.Davis@lendlease.com>; Isherwood, Kelly <Kelly.Isherwood@lendlease.com>

Subject: OTH - Former Bridge Link

Paul

Please find attached an indicative sketch detail sections through the former kitchen bridge link to show the proposed build-ups and materials.

Teracotta block façade, built as conventional masonry with mortar joints. Blocks are 35mm thick minimum but with thickened edges – see photo.

For roof, timber deck with lead covering.

Plan and vertical setting out is shown on the current model.

Any questions please let me know – If you could progress with you design we could develop at a workshop on Tuesday after the cluster.

Gareth is also working on this next week for issue on Friday / Monday latest.

Another thought for LBC that we will need some details / description from you on the structural demolition of the existing beams. To explain the impact of the intervention. I recall Jamie mentioning that the beams were steel encased in concrete so the connection to the existing stone buttress would be minimal.

DAVID HANNA

B(Arch) MSc.

Associate

Design and Procurement Lead – OTH Team

Purcell

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Our Town Hall Studio: 07748 923 625

www.purcelluk.com

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Limit of load to be supported off top existing beam is 270kg/m (2.7kN/m) without strengthening

assume approx 1.0kN/m² elevated load

Limit of timber roof/lead covering build up is 100kg/m² to be within existing structural capacity limits (without strengthening)

TERRACOTTA BLOCKS
35mm THICK
(approx 0.65kN/m² elevated load)

Joint - no vertical load transfer

Top existing beam

Limit of load to be supported off bottom existing beam is 1170kg/m (11.7kN/m) without strengthening

assume approx 1.0kN/m² elevated load

Bottom existing beam

STAINLESS STEEL SUPPORT SYSTEM

ARCHED BEAM DEPTH VARIES

OTL KITCHEN BRIDGE LINK
SKETCH SECTION
FACADE BUILDUP

19/7/19

Existing timber ceiling joists span in this direction and bear onto the existing steels. This should be replicated in the new proposal to keep load path the same

Limit of timber roof/lead covering build up is 100kg/m² to be within existing structural capacity limits (without strengthening)

Timber wall plate / build up from existing steel up to underside of structure. New ceiling/roof joists to bear onto this wall plate

Assume that floor loadings are like for like (ie no additional weight on top existing build up). To incorporate new floor tiles and insulation, some existing build up is removed (ie no load increase)

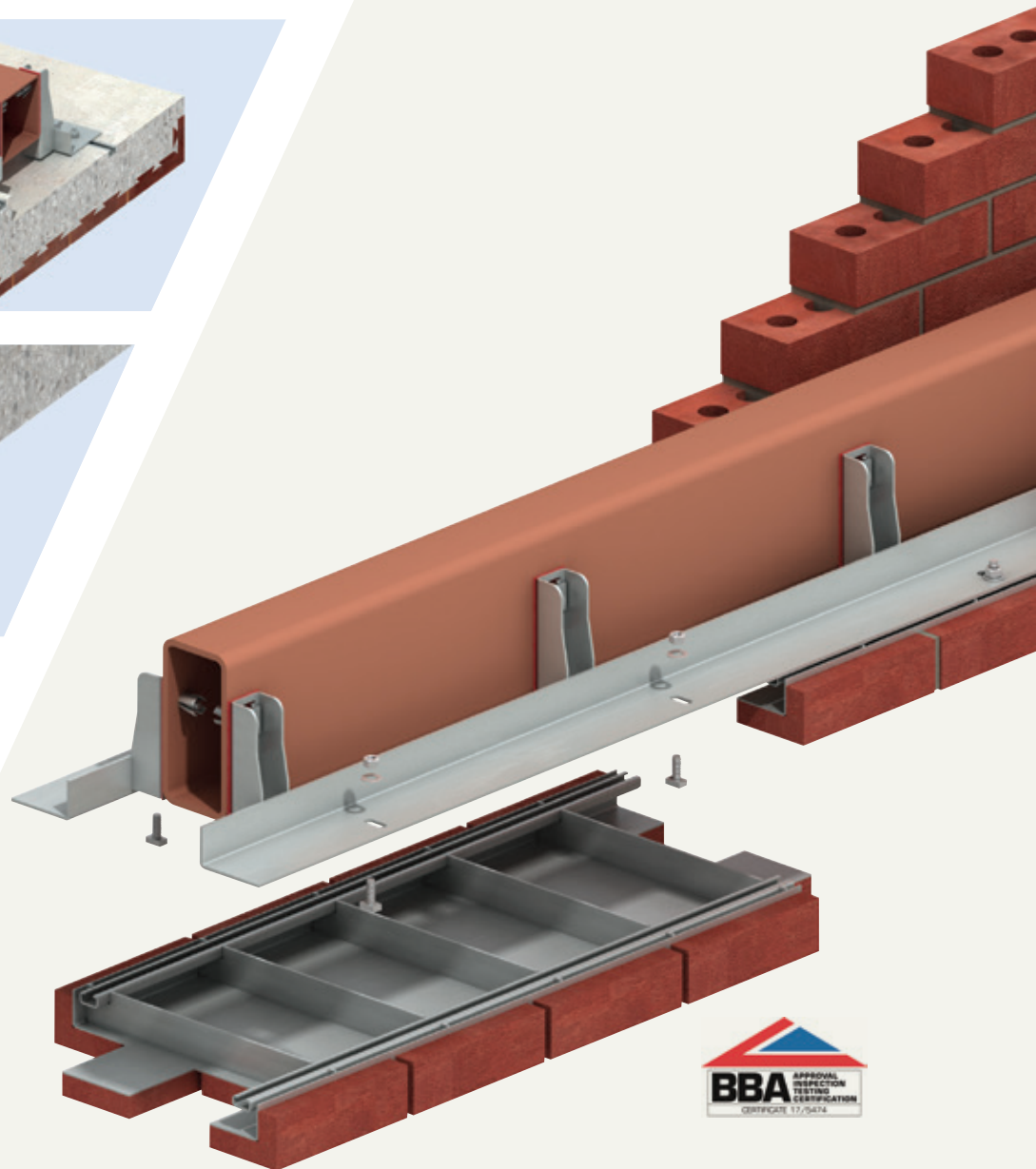
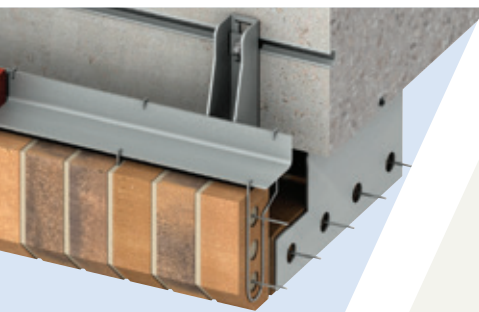
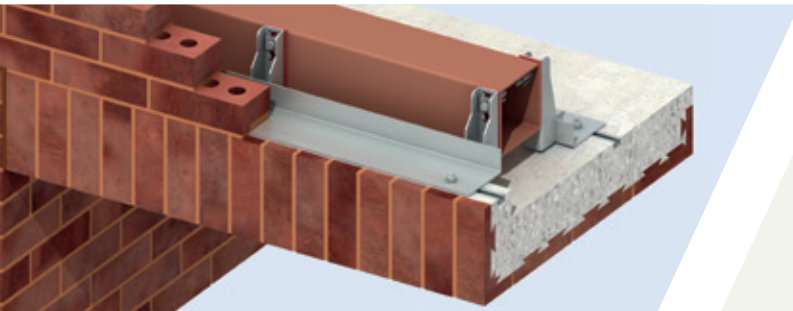
SECTION X-X
OTL KITCHEN BRIDGE LINK
SKETCH SECTION

19/7/19

CI/SfB		Xt6	
July 2018 (Version 1)			

Suspended Brickwork

Four ways to create attractive soffit details



Ancon®

Suspended Brickwork

Four ways to create attractive soffit details

Deep reveals and soffits are an increasingly popular design feature that add an extra depth and dimension to masonry façades. Creating these effects can be key to the aesthetics of the building but can pose engineering problems as the main building façade must be maintained across an opening, while seeming to be unsupported by structural steelwork.

The unique expertise of Ancon in the design and manufacture of high integrity steel components has enabled the company to develop four effective solutions to achieve this popular design feature – allowing architects greater freedom in design.

Solutions range from the suspension of factory-made brick faced steel or precast concrete units that are simply lifted and bolted to the underside of an Ancon MDC brick support system, to more complex hanger systems that are assembled on site using Ancon stirrups and stitching rods or channels and dowelled wall ties.

All systems are manufactured to meet individual project specifications. System designs vary depending on factors such as load, cavity, soffit dimensions, brick pattern and coursing.

Our experience shows a prefabricated soffit offers contractors a far easier and more cost-effective solution. Our latest innovation, Nexus®, has been developed in partnership with cut-brick specialist Ibstock Kevington and offers a lightweight steel alternative to cast concrete. See pages 4-5 for more information.

Brick Slip Systems

Ideal for large/numerous soffits

- Nexus® lightweight steel system – bolted to MDC brick support
- Precast concrete system – bolted to MDC brick support

Full Brick Systems

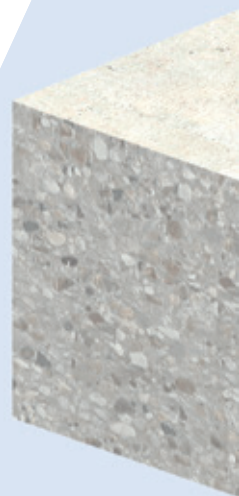
Ideal for the occasional/small opening

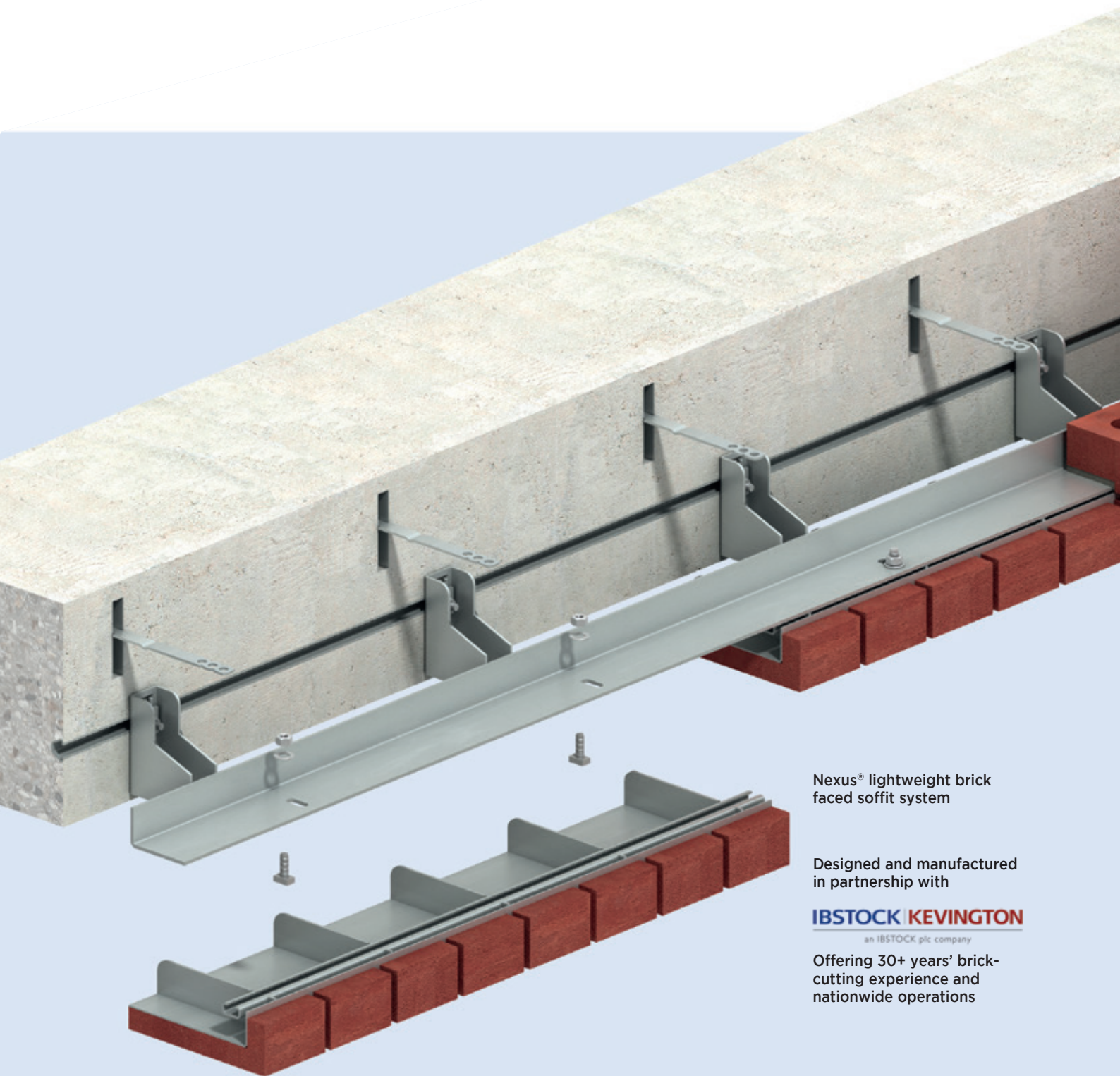
- Hanger tie system – channel on underside of MDC brick support to carry hanger ties
- Stirrup and stitching rod system – attached to MDC brick support



Contents

Nexus® Brick Faced Support System	4-5
Precast Concrete System	5
Hanger Tie System	6
Stirrup and Stitching Rod System	7





Nexus® lightweight brick
faced soffit system

Designed and manufactured
in partnership with

IBSTOCK KEVINGTON
an IBSTOCK plc company

Offering 30+ years' brick-
cutting experience and
nationwide operations



Brick Support
Specialist



Free Technical
Advice and
Design Service



Bespoke
Solutions



Manufactured
in the UK



ISO 9001, ISO 14001
and OHSAS 18001



100% Corrosion
Resistant
Stainless Steel



Hidden Support -
No Exposed
Steelwork



Animated
Installation Video



CE Marked to
BS EN 1090-1

Suspended Brickwork

NEXUS® Next Generation Brick Faced Support System

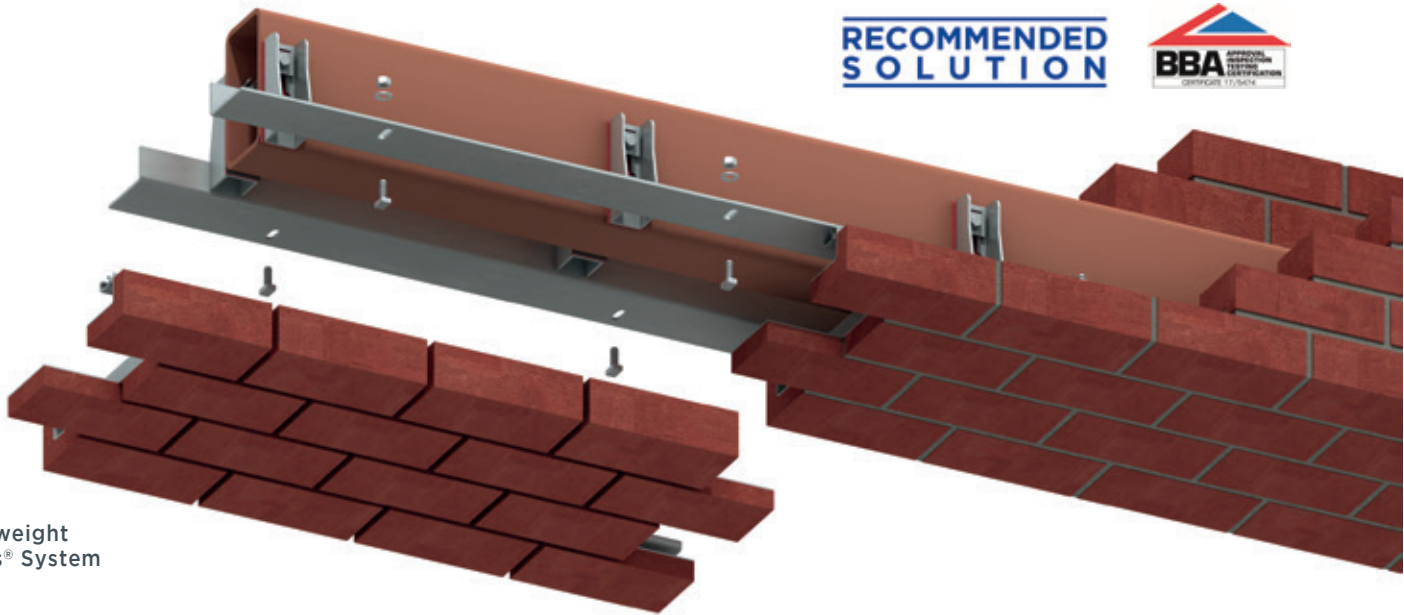
- ✓ Lightweight, prefabricated system
- ✓ Developed by two industry experts
- ✓ Two-part system allows full adjustment for perfect alignment
- ✓ Easier to handle than precast concrete systems
- ✓ Quick to install - no mechanical lifting

Ancon MDC Nexus® Support System with Nexus® brick faced soffit unit from Ibstock Kevington

**RECOMMENDED
SOLUTION**



Lightweight
Nexus® System



Nexus® combines a lightweight, steel-backed, brick faced unit manufactured by Ibstock Kevington with Ancon's tried and tested MDC stainless steel bracket angle support system.

The system offers considerable benefits over cast concrete alternatives (page 5). It cuts the weight by more than half, which in most cases will allow the brick faced units to be installed without specialist lifting equipment and provides significant savings in installation time, making it particularly appropriate for fast-track or time-limited projects.

Individual Nexus® units are designed and prefabricated off-site to suit the soffit dimensions so there is no cutting required on-site. They are simply offered up to the pre-fixed and pre-drilled Ancon MDC angle and then bolted into position using T-head fixings in a continuous channel.

The two-part design allows maximum adjustability, both vertically and horizontally, for quick and simple alignment on site.

Being the first brick-faced soffit unit recognised by the BBA to offer a working life commensurate with the building on which it is installed, Nexus® should now be specified with even greater confidence than ever before.

For more detailed product information please refer to the Nexus® brochure.

Due to a change in the Building Regulations, use of Nexus brick-faced soffits is limited to a maximum building height of 18 metres. This change affects residential construction projects in England that start on site after 21st February 2019. Contact Ancon for more information.

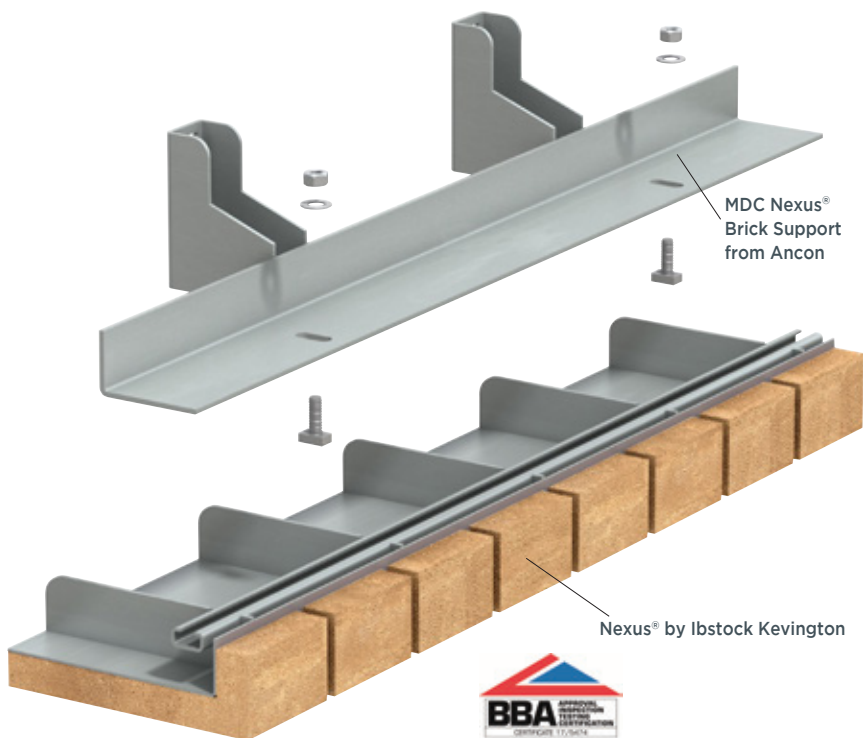
SIMPLE INSTALLATION

- 1.** Install Ancon MDC Nexus® support system ensuring fixing bolts are fully torqued.
- 2.** Fix Nexus® brick faced unit to pre-installed support system by finger tightening bolts.
- 3.** Adjust vertical and horizontal alignment.
Fully tighten bolts to correct torque.
- 4.** Point to match main brickwork.

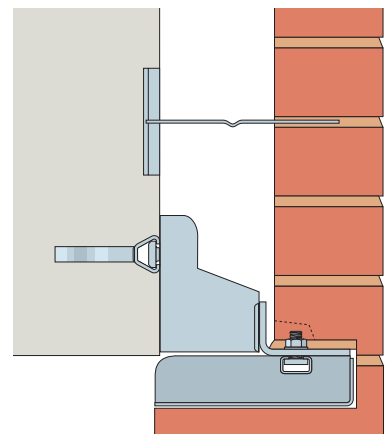


Scan the code
to watch an
installation video.

A full installation guide is available to download from www.ancon.co.uk

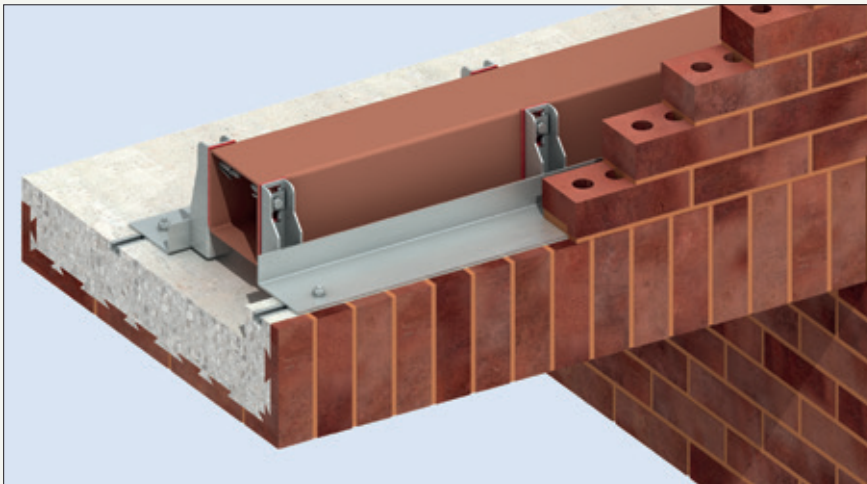


Nexus® in use at Silchester, Kensington and Chelsea Redevelopment

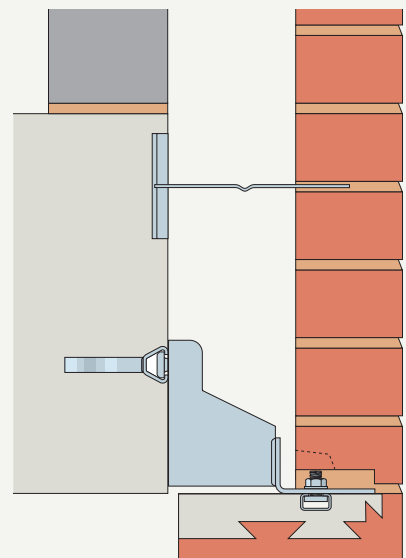


MDC Nexus® Support System

Precast Concrete System



Ancon MDC systems can be designed and manufactured to suspend precast, prefabricated masonry units (supplied by others). Like Nexus, this system removes the build of complicated, time-consuming masonry soffits from a tight site schedule. Unlike Nexus, however, these offsite-manufactured units require a mechanical lifting device when bolting to the underside of an Ancon MDC angle.



MDC with Precast Masonry Unit

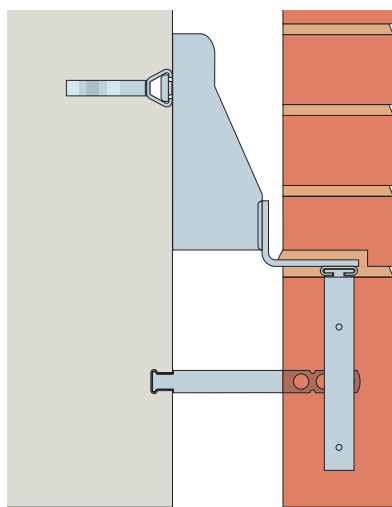
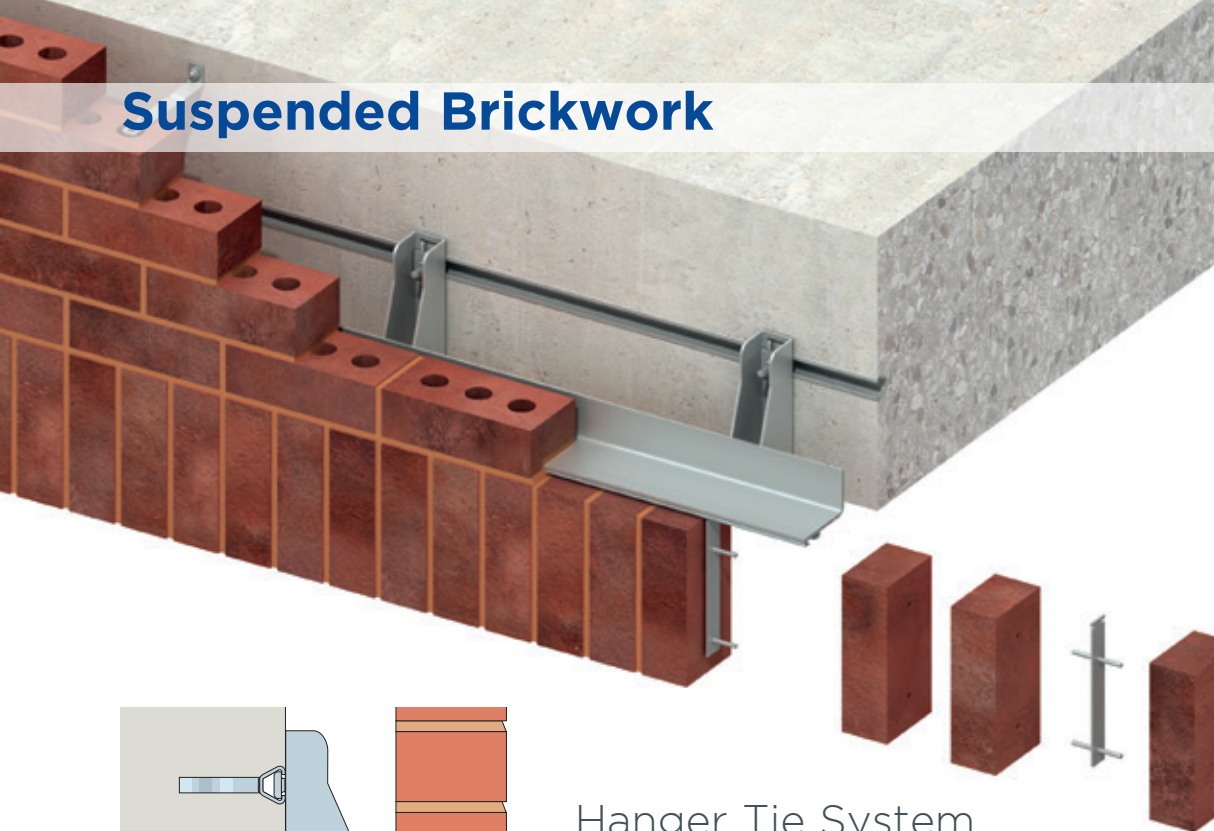
HOW IS THIS SYSTEM INSTALLED?

Install Ancon MDC support system ensuring fixing bolts are fully torqued. Lift and support the precast masonry unit and fix to pre-installed masonry support system by finger tightening bolts. A mechanical lifting device will be required. Adjust vertical and horizontal alignment. Fully tighten bolts to correct torque. Point to match main brickwork.

Contact Ancon with your project requirements

Ancon®

Suspended Brickwork



MDC with Channel and Hanger Tie

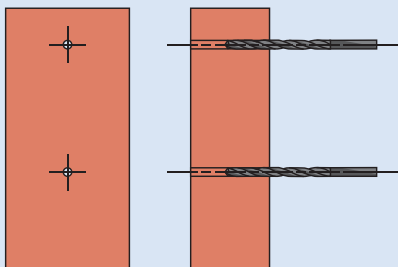
Hanger Tie System

- ✓ Ideal for solid bricks
- ✓ Suitable for small, simple openings
- ✓ Assembled on site

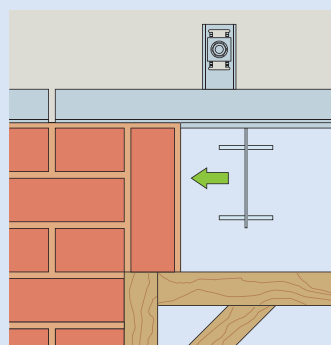
A brickwork soffit without visible means of support can be created when suspending a soldier course of brickwork using a stainless steel hanger system. The Ancon system comprises wall ties complete with welded dowels that fix to Ancon 36/8 channel welded to the underside of the Ancon MDC masonry support angle. The soldier course is constructed by positioning pre-drilled bricks onto the dowelled hanger ties.

HOW IS THIS SYSTEM INSTALLED?

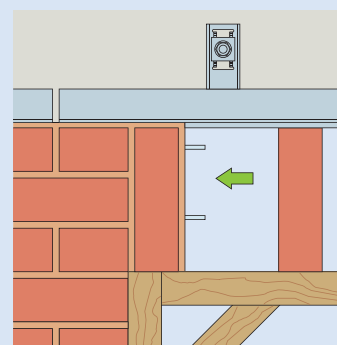
Install Ancon MDC support system ensuring fixing bolts are fully torqued. Brickwork is built up to support angle level on each side of the opening. A temporary support is built for the soffit bricks.



7mm diameter holes are drilled through each soffit brick at the dowel positions. Position first brick on the temporary support.

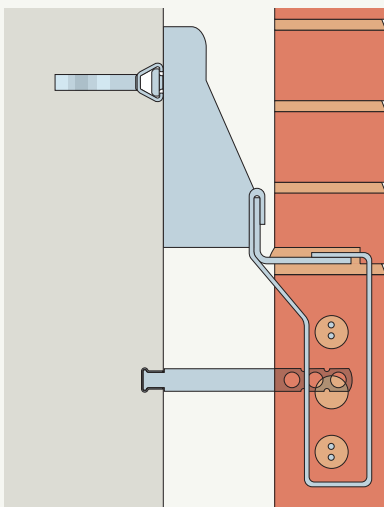
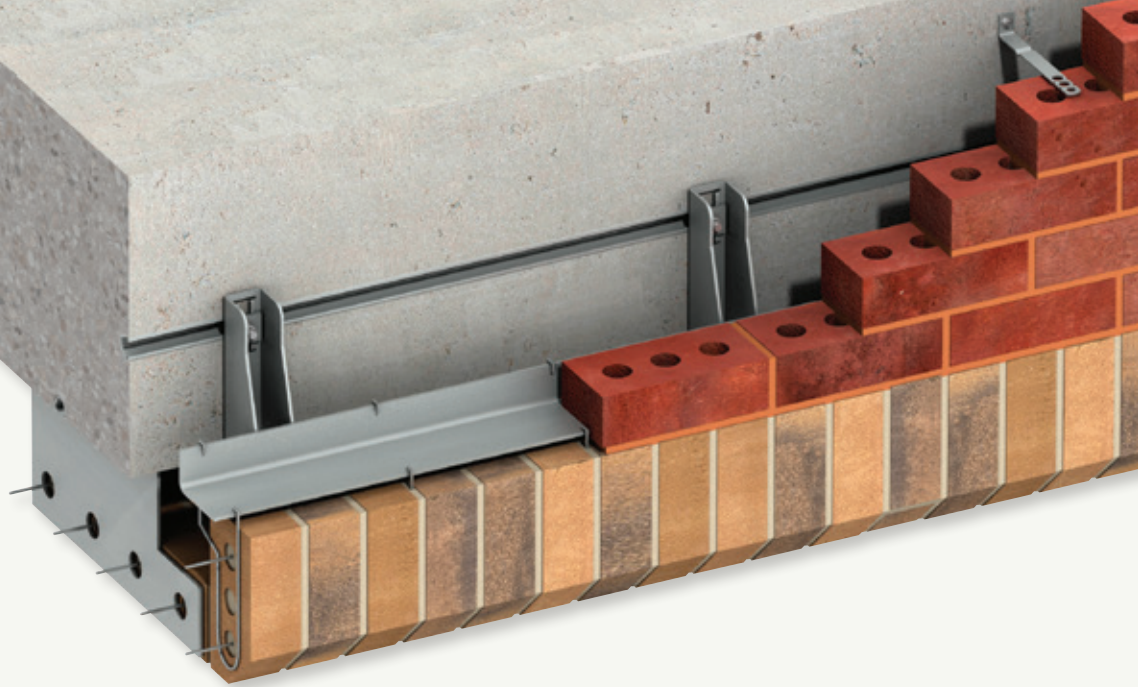


Insert dowelled hanger tie into channel by turning head through 90° and slide towards brick. Press into and cover with mortar.



Push next brick onto hanger tie. Cover side of brick with fresh mortar and position next brick.

Repeat until all bricks are installed. Ensure that the vertical joints are fully filled with type M12 (or equivalent) mortar. Brickwork is pointed. Temporary support is removed. A full installation guide is available to download from www.ancon.co.uk.



MDC with Stirrup and Stitching Rod

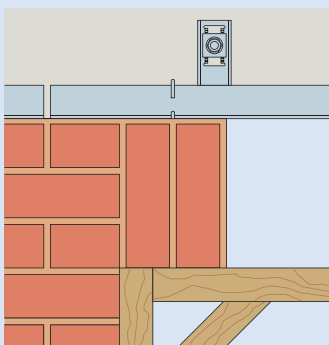
Stirrup & Stitching Rod System

- ✓ Ideal for cored bricks
- ✓ Suitable for small, simple openings
- ✓ Assembled on site
- ✓ Suitable for the skilled tradesman

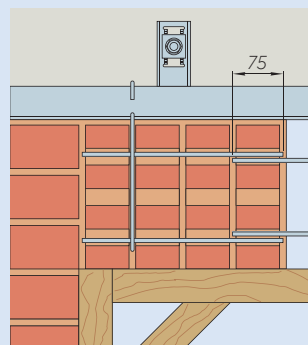
A brickwork soffit without visible means of support can be created by suspending a soldier course of brickwork on stainless steel stirrups located at 225mm centres. The stirrups fit over the angle and stitching rods span between the stirrups, supporting cored or holed bricks.

HOW IS THIS SYSTEM INSTALLED?

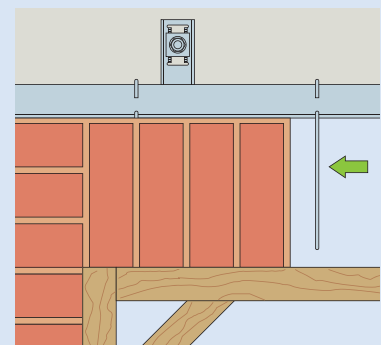
Install Ancon MDC support system ensuring fixing bolts are fully torqued. Brickwork is built up to support angle level on each side of the opening. A temporary support is built for the soffit bricks.



Clip stirrup onto support angle upstand. Offer a brick either side of the stirrup, filling the joint and brick cores completely with mortar.



Position another two bricks, filling joints and cores with mortar. Stitching rods are fed through the brick cores with a 75mm overlap.



Clip next stirrup onto support angle and repeat with stirrups at 225mm centres until all bricks are installed.

Ensure that type M12 (or equivalent) mortar is used. Once mortar has achieved design strength, temporary support is removed and brickwork pointed. A full installation guide is available to download from www.ancon.co.uk.

Masonry Support Systems

Lintels

Masonry Reinforcement

Windposts and Parapet Posts

Wall Ties and Restraint Fixings

Channel and Bolt Fixings

Tension and Compression Systems

Insulated Balcony Connectors

Shear Load Connectors

Punching Shear Reinforcement

Reinforcing Bar Couplers

Reinforcement Continuity Systems

Stainless Steel Fabrications

Flooring and Formed Sections

Refractory Fixings



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