



13 Prince Albert Road NW1

Structural Methodology Report

Brief

This document is the structural methodology report carried out for the purposes of the planning application for the proposals at 13 Prince Albert Road. It should be noted that this report outlines and suggests the assumed construction at this stage. It should also be noted that, as is standard for works of this type, the main contractor will be fully responsible for the design and erection of all temporary works.

The purpose of the report, with the Basement Impact Assessment prepared by GEA, is to demonstrate that a subterranean development can be constructed on the particular site having regard to the sites existing structural conditions and geology.

The Basement Impact Assessment prepared by GEA references to the stages set out in the CPG4 Basement & Lightwells planning document.

Richard Tant Associates

Richard Tant Associates are consulting Civil and Structural Engineers comprising a number of chartered engineers. We have experience in post basement construction and have successfully carried out a number of basements in the Borough Camden from the Basement Impact Assessment stage through to construction on site.

Description of Proposed Basement and Internal Works

13 Prince Albert Road is a semi detached stucco villa dating from the mid 19th Century. The property consists of five storeys including a lower ground floor and is in sound structural condition with no signs of significant differential movement. The proposal is to extend the existing lower ground floor and to create a new basement level, approximately 3.6m below current lower ground floor level and locally deepened by another 2m to accommodate the proposed swimming pool. Please refer to the following drawings produced by Hugh Cullum Architects Ltd: P500 to P517 and the existing survey drawings. The proposal is to construct a contiguous piled wall around the site and to underpin the existing structure in a two staged concrete underpin. Temporary props will be used to prop the contiguous piled walls during construction until the permanent reinforced concrete lining retaining wall is cast. This will be described in more detail throughout this report and shown on the drawings 3561-SG01C and SG02C enclosed.

Basement Works

A geotechnical report including a flood risk assessment has been carried out by GEA; the bore holes confirm up to 1.8m of made ground overlying London Clay with groundwater seepage recorded at a depth of 4m. Standpipe monitoring recorded a water level of 2m below ground level. We note the GEA report highlights that groundwater inflow is likely to be very slow. Based on this geotechnical information the new basement construction is to comprise a piled wall with a liner wall or reinforced concrete underpinned retaining walls with an internal cavity drain system. This will be described in more detail throughout this report. Please refer to our drawings 3561-SG01C and SG02C.



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Supporting the Proposed Loads

The vertical and horizontal loads will be supported via reinforced concrete retaining walls or reinforced concrete underpinning with the vertical loads from the internal floors and ground floor walls being supported via the new steel frames in turn supported via new internal pad foundations and proposed basement walls. Refer to calculation sheets for justification: 3561-P1 et seq.

Structural Integrity of Surrounding Structures and Utilities

A sewer 18m deep is located passing under a corner of the site. Advanced geotechnical analysis has been carried out to confirm the proposed basement does not have a significant adverse structural effect on the sewer approved by Thames Water.

Slope Instability

The proposal is to construct the walls in stages that will be temporarily propped until the final base is constructed and cured. No battering back is proposed. We therefore confirm slope instability will not be initiated due to these works. Please refer to the proposed drawings, 3561-SG01 and SG02.

Impact on Drainage and Surface Water

An existing shallow sewer is being maintained to the approval of Thames Water. With regards to surface water the basement is mainly below existing hard standing. Refer to the surface flow assessment in the Soils Ltd. basement impact assessment.

Geological & Hydrological Concerns

The application is informed and supplemented by the hydrological section of the geotechnical report and flood risk assessment carried out by GEA and identified in their basement impact assessment.

Structural Stability of the Existing Buildings

The proposed basement is to be constructed between reinforced underpinning generally under the existing building's external walls except at the front and back where piling is proposed with a lining wall. Refer to calculation sheets for justification. These works are not expected to create any significant differential settlement or have a detrimental effect on the structural stability of the existing building or neighbouring buildings.

Impact on Trees

There are no significant trees in the zone of influence of the proposed basement.



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Temporary Works

Please refer to the proposed drawings, 3561-SG01C and SG02C for details of the temporary works. When the contractor is appointed he will be fully responsible for the temporary works including the design and erection.

This report has been produced for the sole use of Camden Council and for their use only and should not be relied upon by any third party. No responsibility is undertaken to any third party without the prior written consent of Richard Tant Associates.

Richard Tant BEng(Hons) CEng MStructE for Richard Tant Associates.



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Job No. Sheet No. Rev.

3561

P1

Member/Location

Job Title

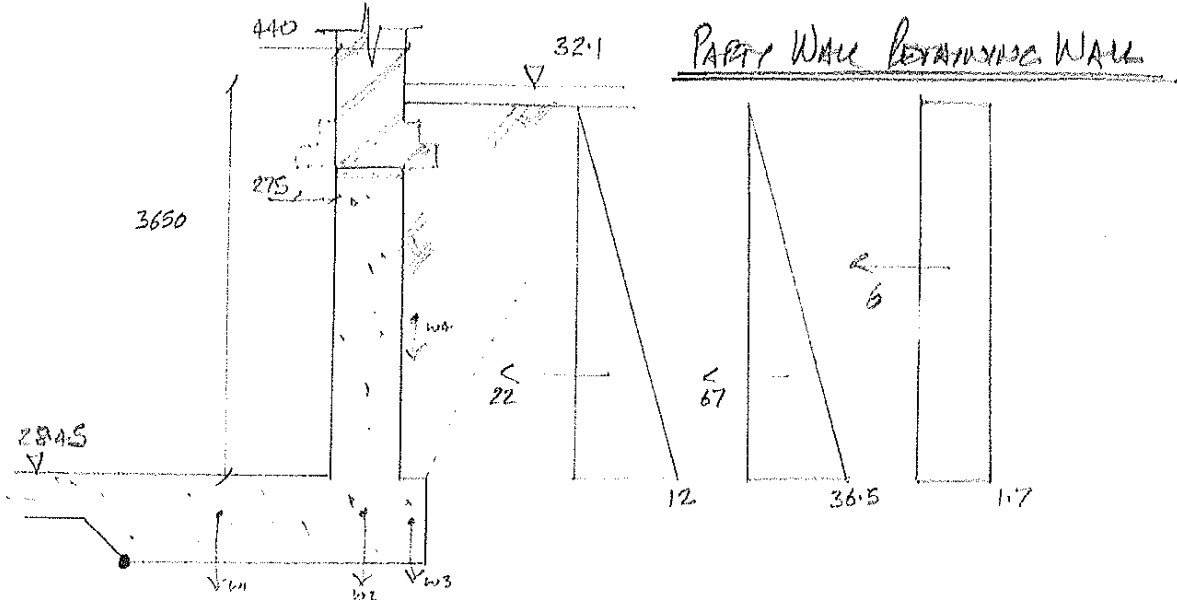
13 PRINCE ALBERT ROAD

Org. Ref.

Made by RT

Date 4/12

Chd.



VERTICAL LOAD DOWN PARTY WALL : DL = 157 kN/m
 LL = 20 kN/m

P.C. WALL P.C. : $0.44 \times 24.5 \times 3.5 = 38 \text{ kN/m}$

$K_a = 0.33$

SATURATED SOIL : $(3.65 \times 10) 0.33 = 12 \text{ kN/m}^2$

WATER : $3.65 \times 10 = 36.5 \text{ kN/m}^2$

SURCHARGE : $5 \times 0.33 = 1.7 \text{ kN/m}^2$

$$\therefore \text{BM} = (22 \times 1.2) + (67 \times 1.2) + (6 \times 1.8)$$

$$= 118 \text{ kNm/m}$$

$$d = 440 - 50 = 390$$

$$K = 118 \times 10^6 / 1000 \cdot 390^3 = 0.35$$

$$A_s = 118 \times 10^6 / 0.95 \cdot 460 \cdot 0.94 \cdot 390 = 737 \text{ mm}^2/\text{m}$$

PROVIDE : H16 - 150 VERTICAL BARS $1340 \text{ mm}^2/\text{m}$ ✓



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12

Member/Location

Job Title

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BEARING PRESSURES

NOTE IN THE PERMANENT STATE THE BASEMENT R.C. SCAB
 WILL RESIST ROTATION AND PROVIDE HORIZONTAL SUPPORT.
 HOWEVER CIRC BEARING PRESSURES IN TEMP. CONDITION.
 PROPPING WILL BE PROVIDED FOR SLIDING.

$$\bar{M} = 118 \text{ kNm/m}$$

$$\bar{M}^v = w_1 = (24 \times 0.75 \times 1.965) 0.48 = 35$$

$$w_2 = (157.38) 1.47 = 287$$

$$w_3 = (0.275 + 0.75 \times 24) 1.83 = 9$$

$$\Sigma \underline{331 \text{ kNm/m}}$$

$$\therefore \text{F.O.S} = 2.8 \therefore \text{O.K.} \checkmark$$

MOMENTS ABOUT CENTRE OF BASE :

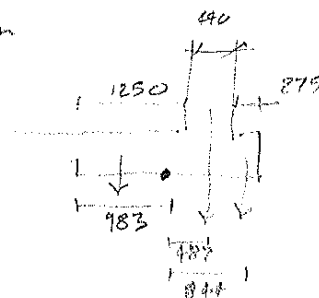
$$\bar{M}^v = (157.38) 0.49 + (0.275 \times 0.75 \times 24) 0.84$$

$$= 99.7 \text{ kNm}$$

$$\bar{M} = 118 \text{ kNm/m} + (0.98 \times 0.75 \times 24) 0.49$$

$$= 127 \text{ kNm}$$

$$\therefore \text{NET } \bar{M} = 27 \text{ kNm/m}$$





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Job No. Sheet No. Rev.

3561

P3

Member/Location

Job Title

13 PRINCE ALBERT ROAD

Org. Ref.

Made by BT

Date

4/12

Chd.

$$\begin{aligned} \text{TOTAL VERTICAL LOAD DOWN STBM} &= 157 + 20 + 38 \\ &= 215 \text{ kN (CHAR)} \end{aligned}$$

$$D = 1.97 \text{ m}$$

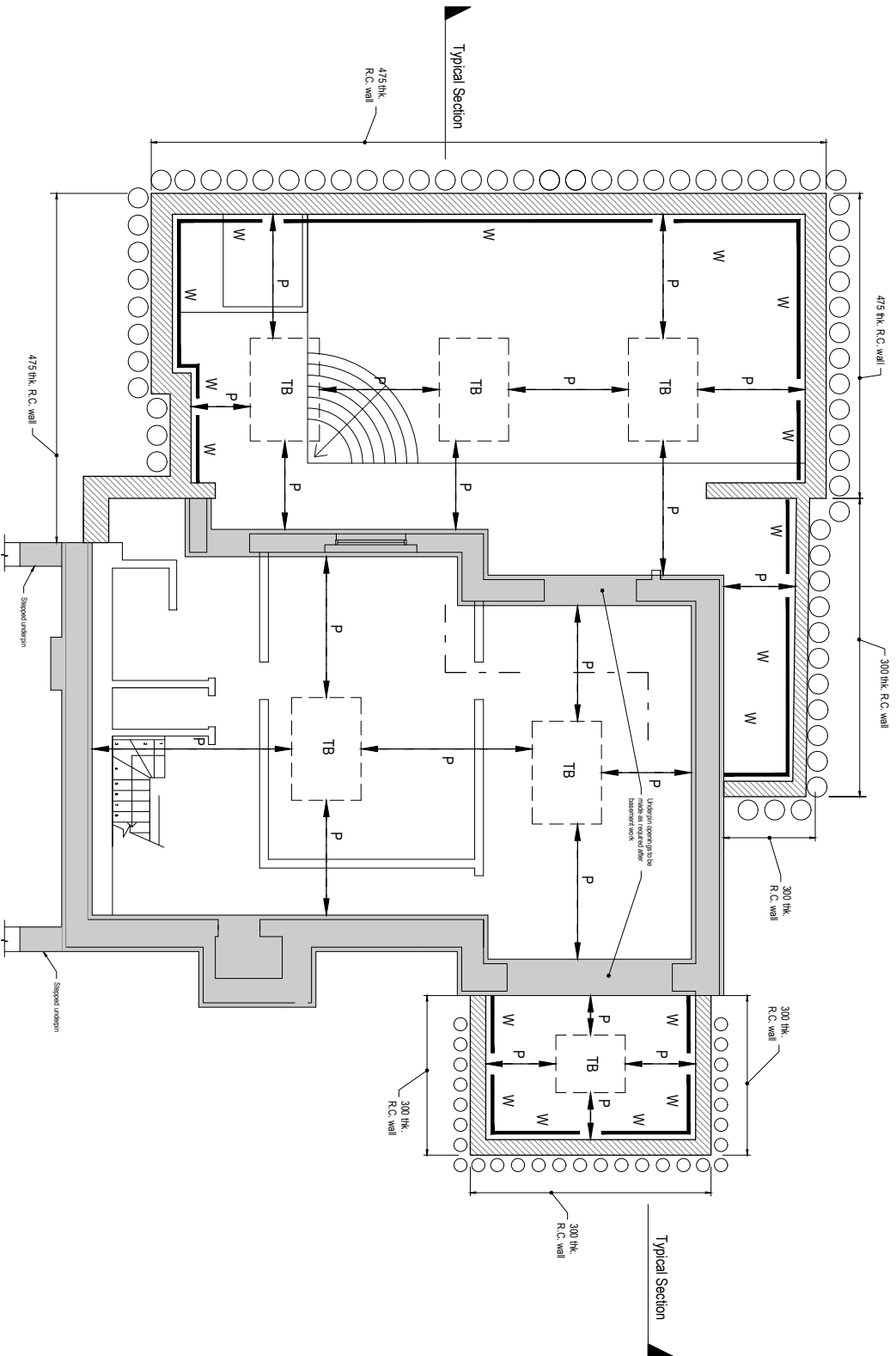
$$p_{\text{top}} = \frac{N}{D} + \frac{6M}{D^2} = \frac{215}{1.97} + \frac{6.27}{1.97^2} = 151 \text{ kN/m}^2$$

$$p_{\text{heel}} = \frac{N}{D} - \frac{6M}{D^2} = 67 \text{ kN/m}^2$$

FROM SOILS REPORT SAFE BEARING CAPACITY = 160 kN/m²

∴ O.K. IN TEMP CASE AND PERMANENT.





- Legend:
- P - Temporary horizontal prop
 - W - Temporary walling beam
 - TB - Thrust block (temporary)
 - Underpinning
 - R.C. wall 300/475 thick - refer to plan
- All temporary works to be fully designed by Contractor.
- For Suggested Method of Works refer to typical section on fig. 35B - SMD.

Suggested Temporary Propping Basement Plan
 Scale 1:50

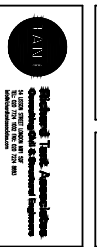
REV.	AMENDMENTS	BY	DATE	CHKD BY
C	Issued for tender	RF	22.12.2016	RF
B	Value Engineering Change	RF	17.12.2016	RF
A	Issue for Value Engineering	RF	09.09.2016	RF

PROJECT
13 Prince Albert Road
London NW1 7SR

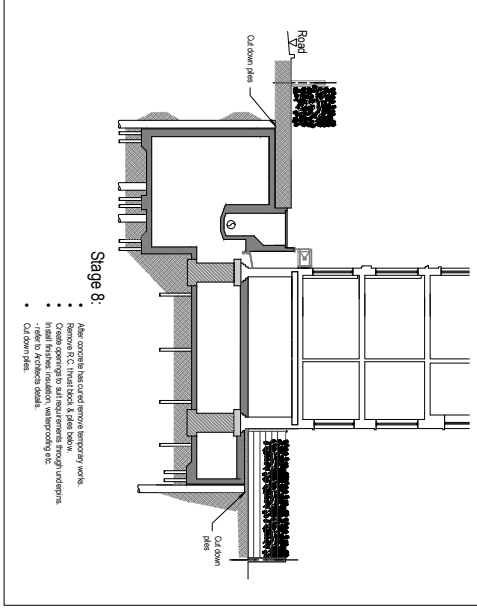
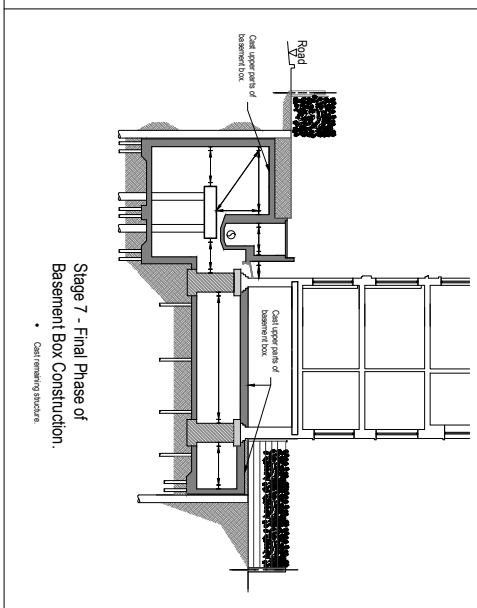
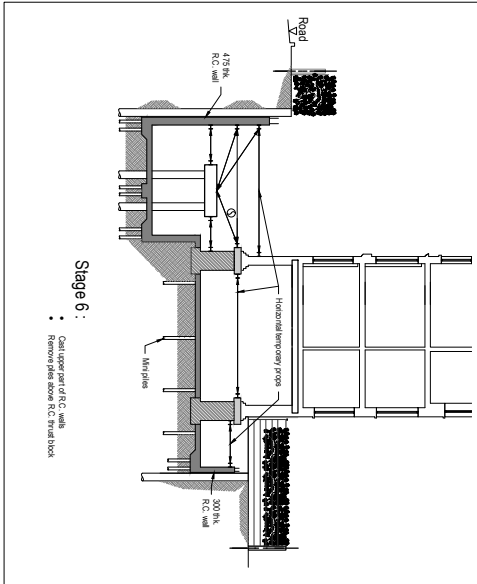
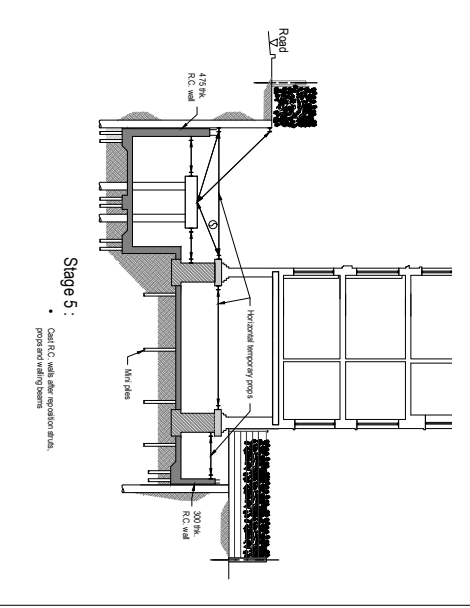
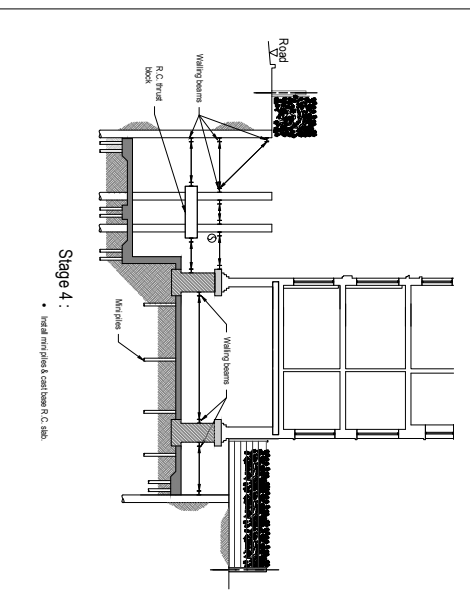
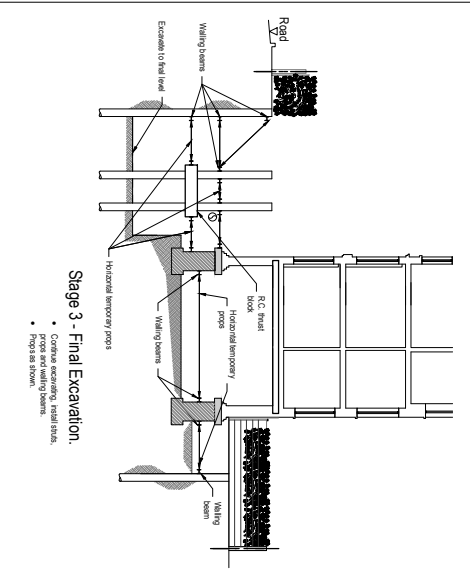
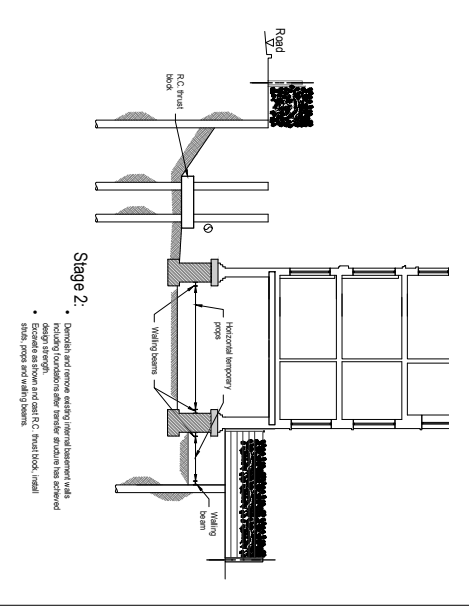
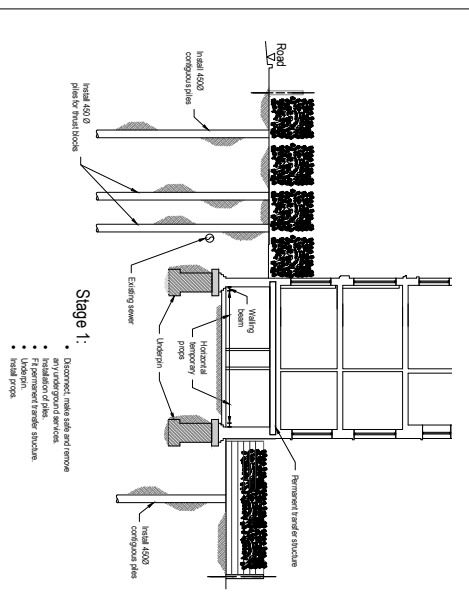
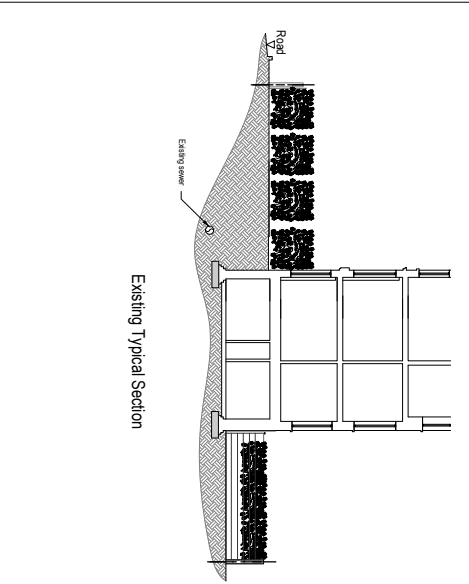
TITLE
Suggested Temporary Works

ARCHITECTS
Hugh Cullum Architects

DESCRIPTION	DATE	SCALE	BY	CHKD BY
3561-SG01C	27.08.2016	A3 FROM A1	RF	RF
			RF	RF
			RF	RF



Suggested Method of Works
 The suggested method is a suggestion only and does not constitute a contract. The method of works and all temporary works including design and erection are to be the full responsibility of the main contractor.



NO.	REVISIONS	DATE	BY	CHKD BY
C	Structural	18/12/2016	BT	
B	Walling beam/strut frame	17/12/2016	BT	
A	Walling beams	10/09/2016	BT	
REV.	AMENDMENTS	BY	DATE	CHECKED

PROJECT
 13 Prince Albert Road
 London NW1 7SR

TITLE
 Suggested Method of Works

ARCHITECTS
 Hugh Cullum Architects

DATE
 27/06/2016

SCALE
 A1: S
 A2: N
 A3: S
 A4: S
 A5: S

3561-SG02C

