



Proposal Adjacent to Jack Straw's Castle

Structural Methodology Report

Brief

This document is the structural methodology report carried out for the purposes of the planning application for the proposals adjacent to Jack Straw's Castle. 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 Ltd, is to demonstrate that a subterranean development can be constructed on this particular site having regard to the sites existing structural conditions and geology.

The Basement Impact Assessment prepared by GEA Ltd 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

The proposal is to build two four storey (including basement) semi-detached houses on the existing car park adjacent to the existing Jack Straw's Castle building. Refer to the Architects drawings 1370/1, 1370/2 and 1370/3. The proposed basement is approximately 2m deeper than the adjacent lower ground level and the excavation is expected to be approximately 3.3m deep from ground level. Jack Straw's Castle does not show any significant differential movement.

Basement Works

A geotechnical report has been carried out by GEA Ltd; the bore hole confirms up to 1.8m of made ground overlying Clayey Sand. Water inflow was not recorded. Based on this geotechnical information the new basement construction is to comprise reinforced concrete retaining walls constructed in a hit and miss manners with mass concrete underpinning to the adjacent foundation with an internal cavity drain system. This will be described in more detail throughout this report. Please refer to our drawings 4423-SM01 and SM02.

Superstructure Works

The proposal is for the ground floor to be a reinforced concrete slab and the three storeys above to be constructed in a traditional manner of load bearing masonry with timber floors and roof.

Supporting the Proposed Loads

The vertical and horizontal loads will be supported via reinforced concrete walls with the vertical loads from the internal floors and walls being supported by an internal strip footing. The adjacent buildings footings will be locally underpinned to transfer the load deeper. Refer to calculation sheets for justification: 4423-P1 et seq.



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Structural Integrity of Surrounding Structures and Utilities

We do not expect there to be any utilities, tunnels or infrastructure within the area of influence of the proposed basement works apart from the existing foundations mentioned above and therefore we do not expect any impact regarding the structural integrity to these items.

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, 4423-SM01, and SM02.

Impact on Drainage and Surface Water

We do not expect there to be any existing public drainage within the area of influence of the proposed basement works. With regards to surface water the basement is mainly below existing hard standing. Refer to the surface flow assessment in the GEA 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 Ltd and identified in their basement impact assessment.

Structural Stability of the Existing Buildings

The proposed basement is to be constructed adjacent to, on one side, an existing basement but approximately 2m deeper. The existing basement will be locally underpinned in a hit and miss manner so transfer the vertical load deeper to stiffer strata. We refer to clause 10.2.3 of the GEA Ltd BIA report.

Impact on Trees

There are a number of trees near the proposed basement. RGS an Arboricultural consultancy, are involved and have recommended a number of actions to protect the healthy trees.



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Temporary Works

Please refer to the proposed drawings, 4423-SM01, and SM02 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.



Richard Tant Associates
 Consulting Civil & Structural Engineers
 54 Lisson Street London NW1 5DF
 T: 020 7724 1002 F: 020 7224 8883
 E: info@richardtantassociates.com

Job No.	Sheet No.	Rev.
4423	P1	

Job Title
ADJACENT TO JACK STRAW'S CASSE

Member/Location	Drg. Ref.	Made by	Date	Chd.
	BEARING PRESSURE	RT	JAN 2017	JM

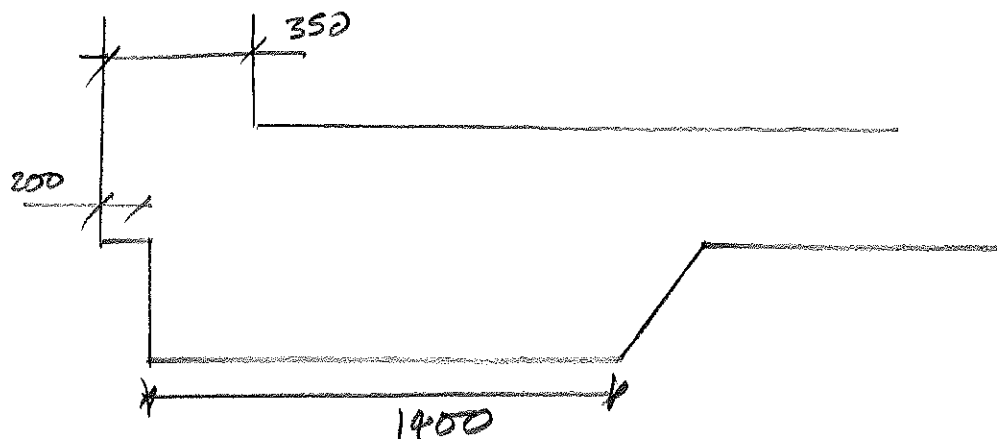
RETAINING / UNDER PIN DESIGN

BEARING PRESSURE CRQ

ADJACENTS 3.4m OF 350 R.C. WALL, 3.75m OF 225 BASEMENT SLAB,
 3.75 OF 300 R.C. GROUND FLOOR SLAB, 2.5m OF 1ST, 2ND TIMBER
 FLOOR & 2.5m OF TIMBER ROOF & 9m OF 300 CAVITY WALL!

DEAD LOAD:	kN/m	LIVE LOAD:	kN/m
$3.4 \times 0.35 \times 24.5 =$	29	$3.75 \times 2.5 =$	10
$3.75 \times 0.225 \times 24.5 =$	29	$3.75 \times 2.5 =$	10
$3.75 \times 0.3 \times 24.5 =$	29	$2.5 \times 2.5 \times 2 =$	13
$(2.5 \times 0.6) \times 2 =$	3	$2.5 \times 0.75 =$	2
$2.5 \times 1.6 =$	4		
$9 \times 5 =$	45		
	<u>139 kN/m</u>		<u>35 kN/m</u>

TOTAL = 174 kN/m (CHAR)



$$\sigma = \frac{174 \text{ kN}}{1400} = \underline{\underline{125 \text{ kN/m}^2}}$$

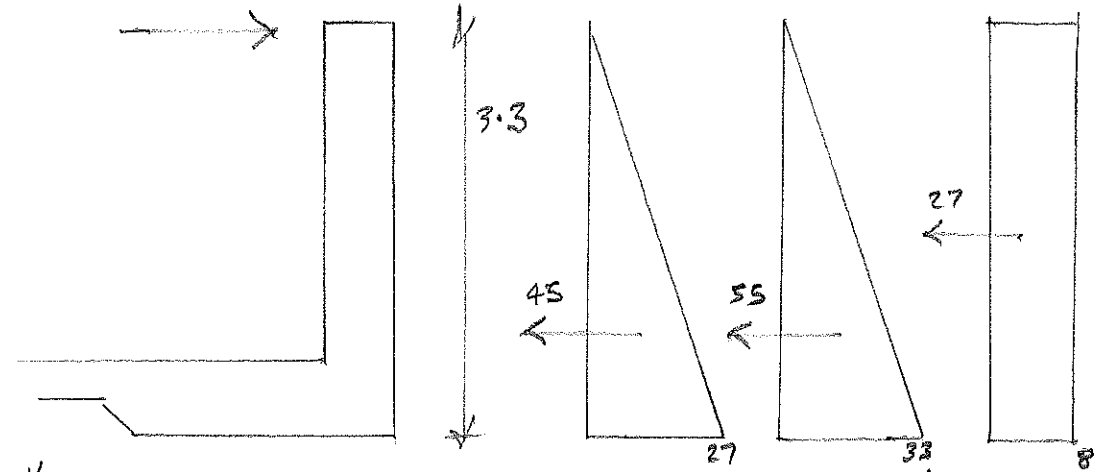


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 Consulting Civil & Structural Engineers
 54 Lisson Street London NW1 5DF
 T: 020 7724 1002 F: 020 7224 8883
 E: info@richardtantassociates.com

Job No.	Sheet No.	Rev.
4423	P2	

Member/Location	Drg. Ref.	Made by	Date	Chd.
	RETAINING WALL CALCS	PT	JAN 2017	JM

Job Title
 ADJUSTED TO JACK STRAIN'S CASES



$K_0 = 0.8$
 ACTIVE / REST
 $SOIL = 3.3 \times 10 \times 0.8 = 27 \text{ kN/m}^2$
 $WATER = 3.3 \times 10 = 33 \text{ kN/m}^2$
 $SURCHARGE = 10 \times 0.8 = 8 \text{ kN/m}^2$

ASSUME NO GROUND FLOOR PROP:

\therefore Max CAUST B.M. = $(45+55) \times 1.1 + 27 \times 1.7 = 156 \text{ kNm/m (CHAR)}$
 $\times 1.5 = 234 \text{ kNm/m (ULT)}$

$K = \frac{234}{1000 \times 300^2 \times 40} = 0.07$

$A_s = \frac{234}{0.95 \times 460 \times 0.91 \times 300} = 1961 \text{ mm}^2/\text{m}$ B25-150 = 3270 mm²/m

$\frac{SPAN}{d} = \frac{3300}{300} = 11$ M.F. REQ = 1.6

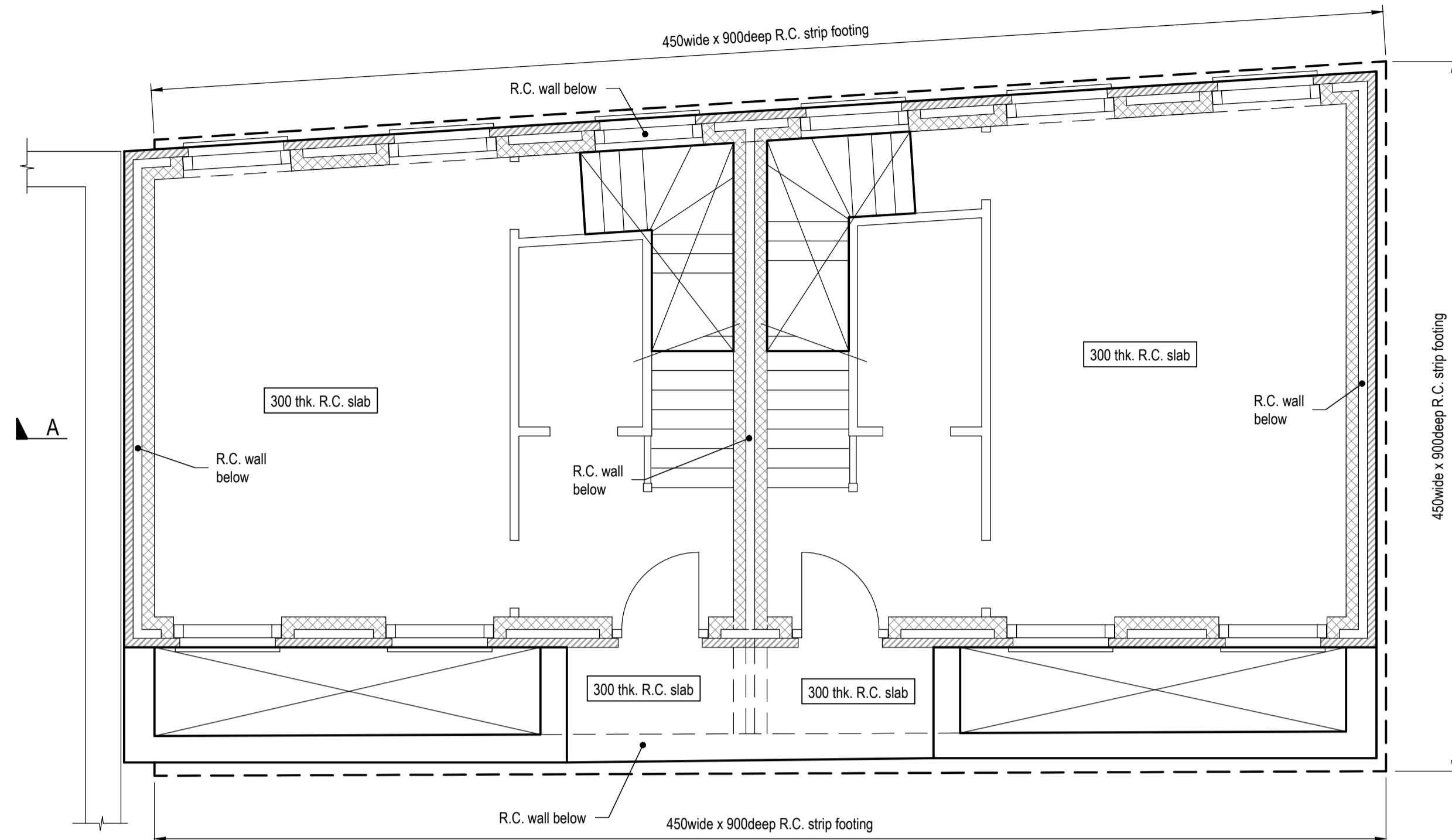
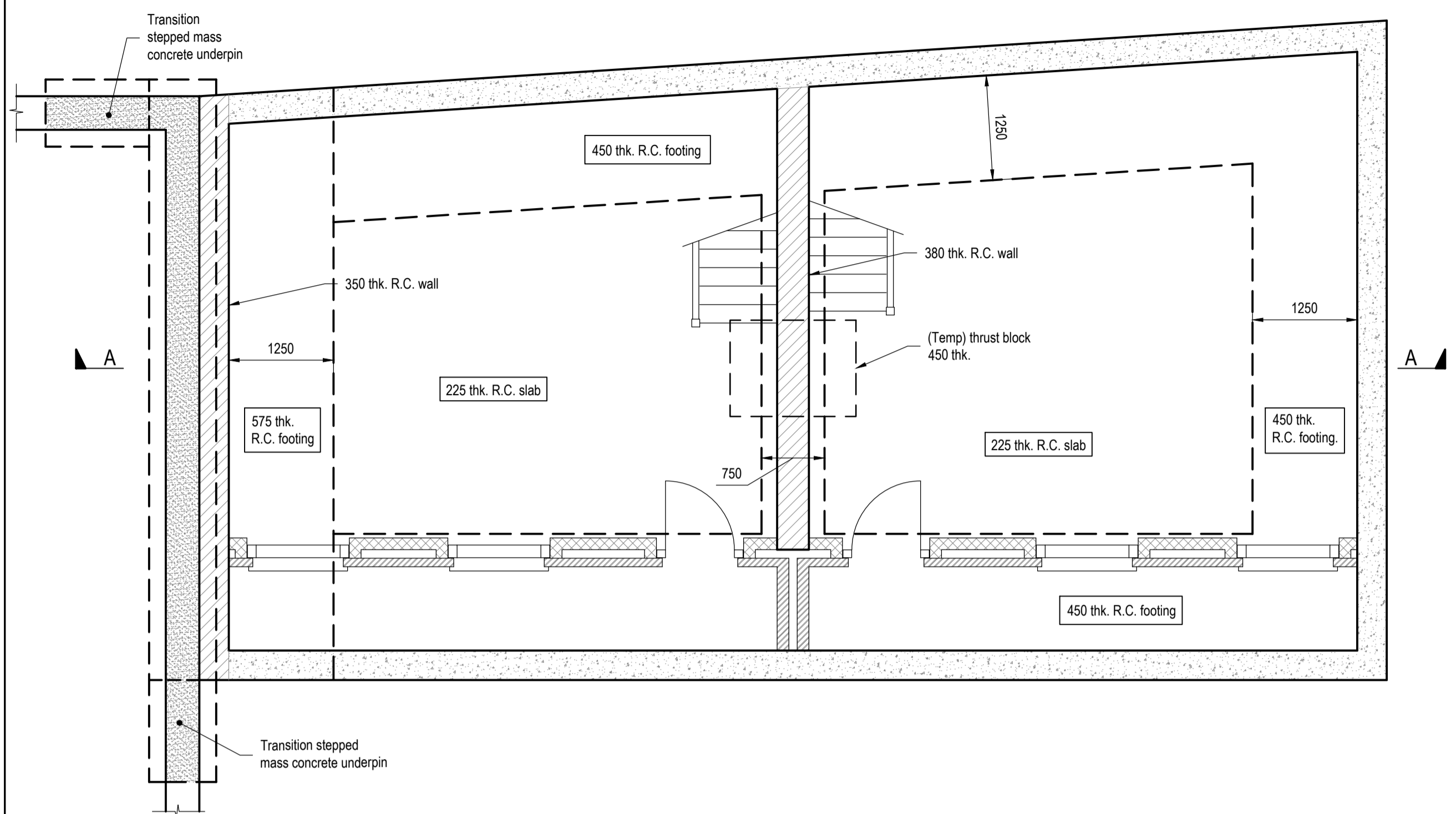
$\frac{M}{bd^2} = 2.6$ $f_s = 172$ \therefore M.F. = 1.3

\therefore 1.23 REQ FOR COMP: $A'_s = \frac{1000 \times 300}{100} = 3000 \text{ mm}^2/\text{m}$

\therefore PROVIDE B25-150 BOTH FACES ✓

Notes.

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Legend:

:Mass concrete underpinning - wall thickness no less than masonry wall above.

:R.C. wall - wall thickness refer to plan.

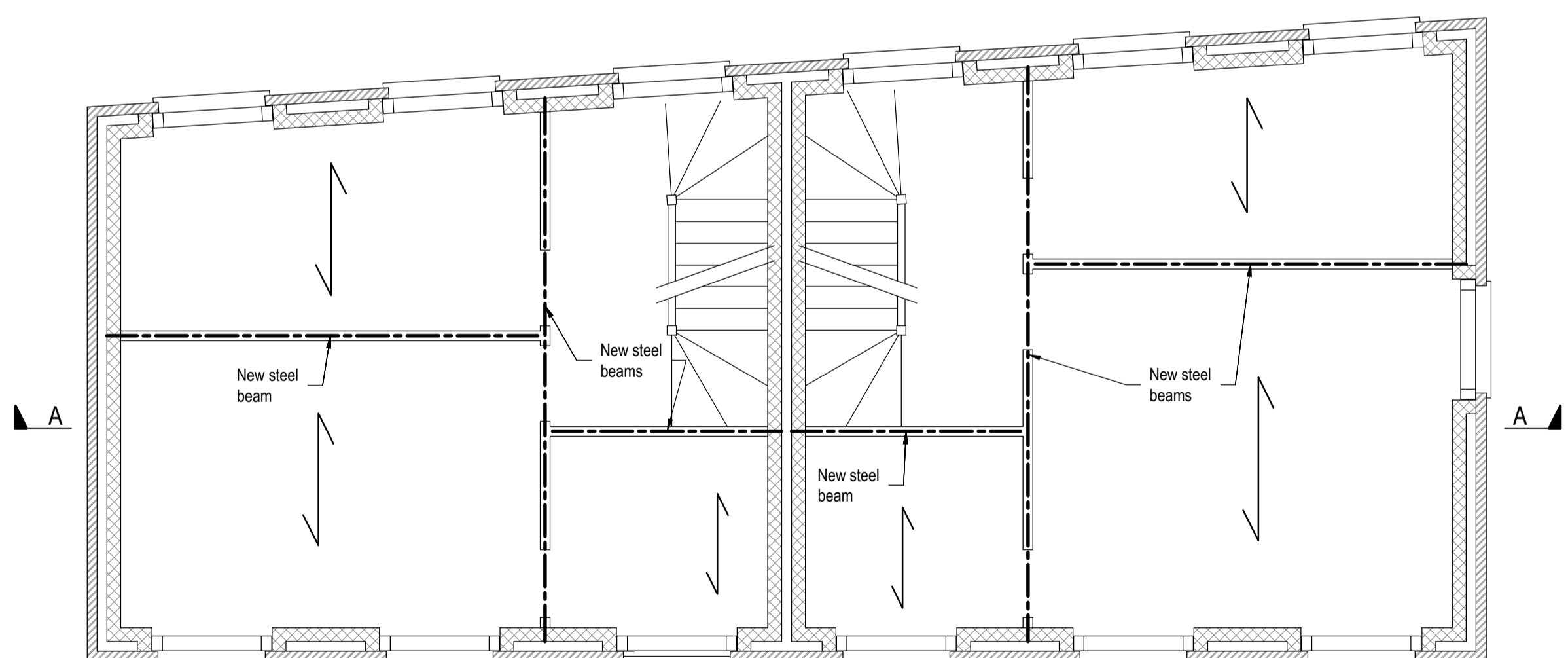
:350 thk. R.C. underpinning & 450wide x 900deep R.C. strip footing above.

Proposed Ground Floor

Scale 1 : 50

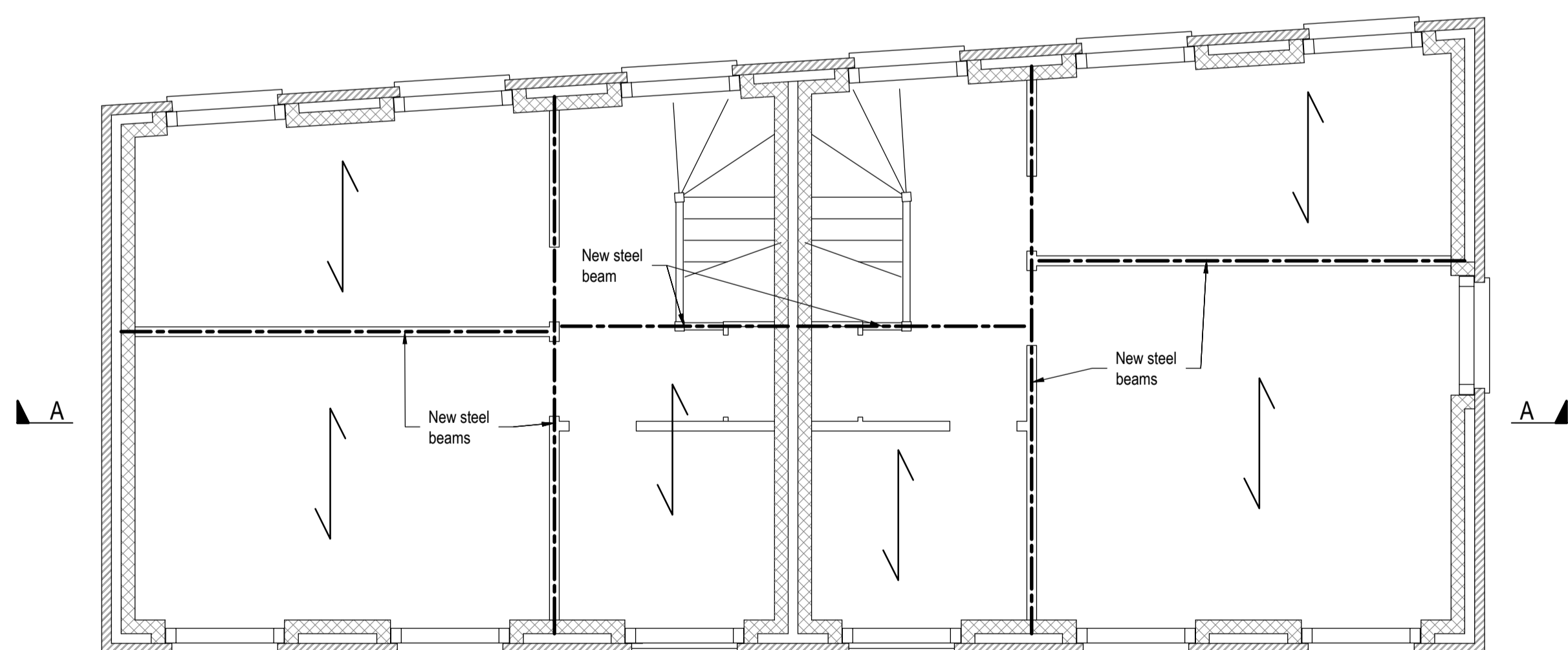
Proposed Basement

Scale 1 : 50



Proposed 1st. Floor

Scale 1 : 50



Proposed 2nd. Floor

Scale 1 : 50

REV.	AMENDMENTS	BY	DATE	CHECKED

PROJECT
Adjacent to Jack Straw's Castle

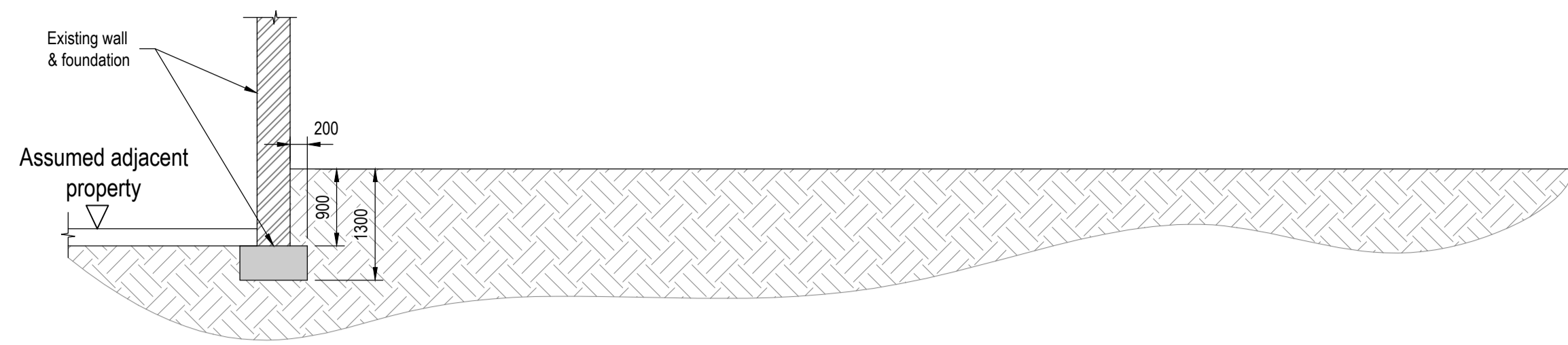
TITLE
Indicative Basement and Ground & 1st. & 2nd. Floor

ARCHITECTS
Quinlan Terry Architect

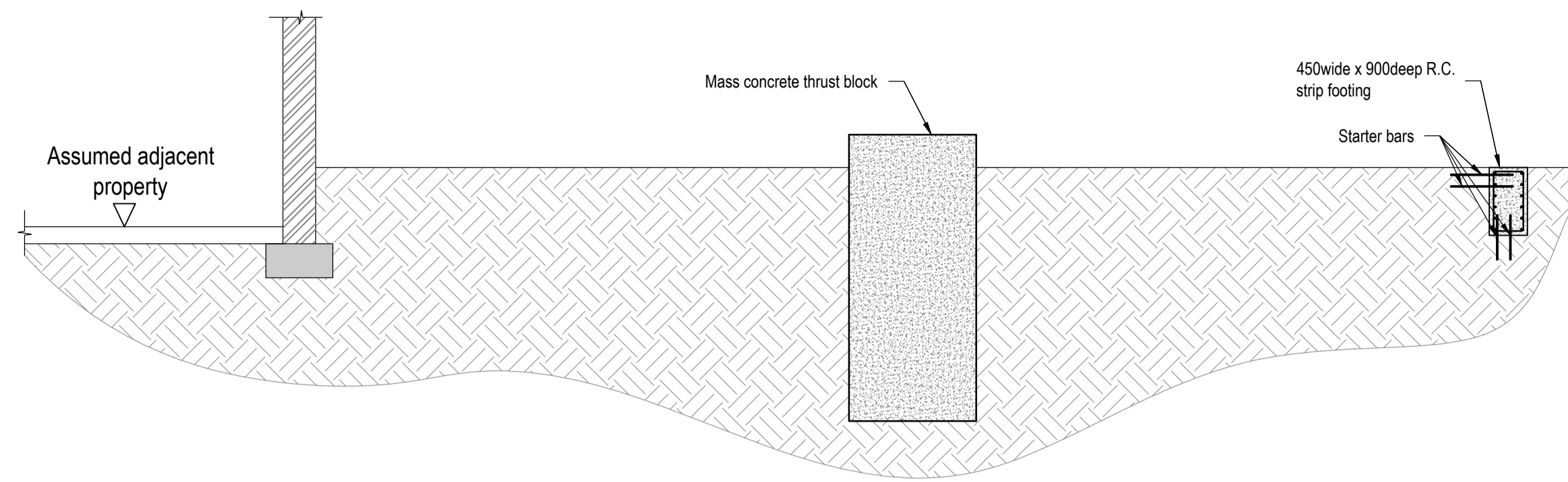
DRAWING No.
4423-SM01

DATE 24.01.2017
SCALE As shown @ A1
DRAWN AR
CHECKED RT
REVIEWED -

Suggested structural proposal to be confirmed after full structural inspection. Not suitable for tender or construction.

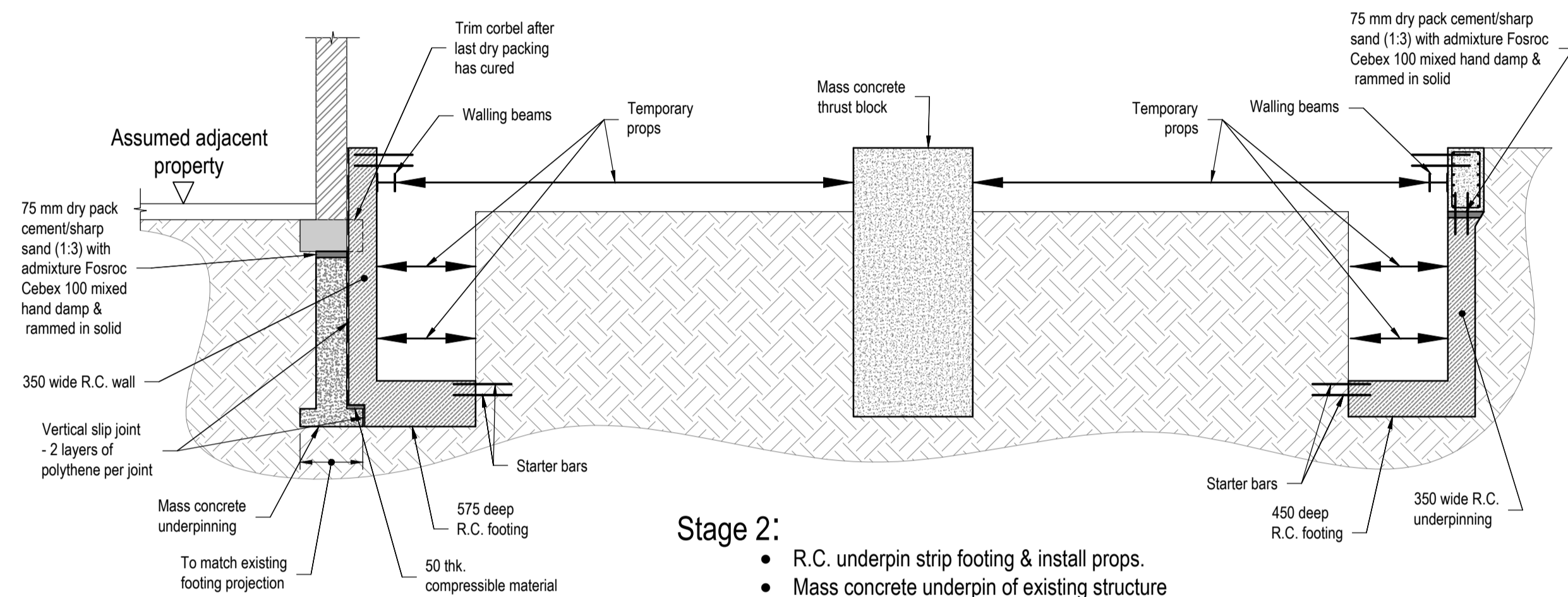


Existing Section A-A



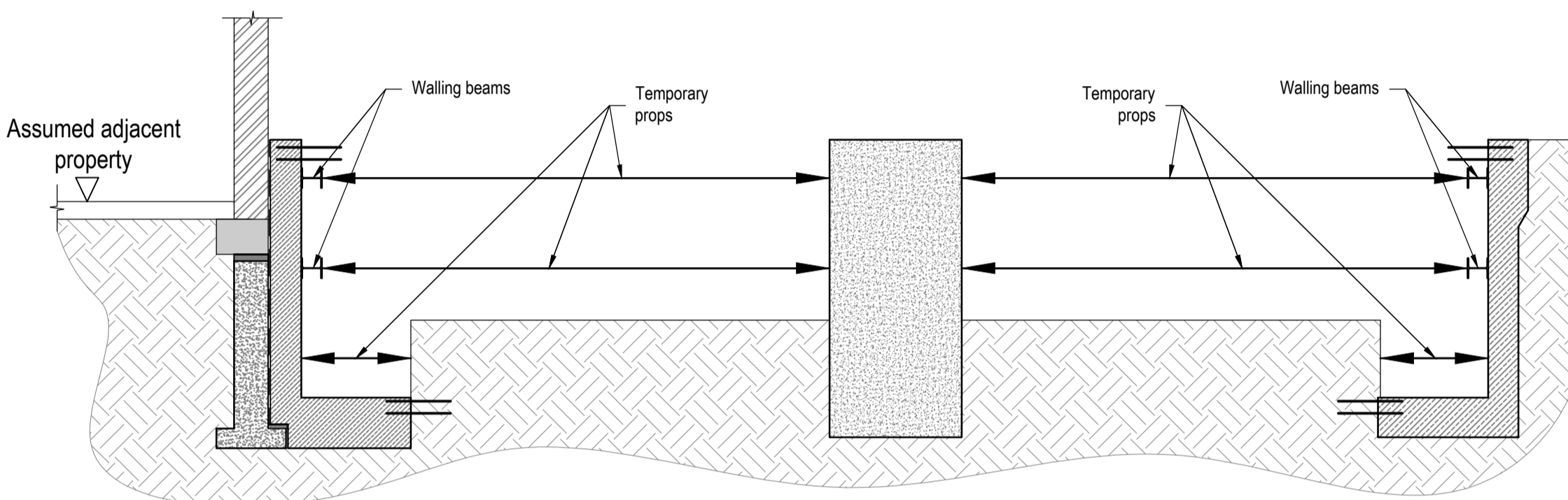
Stage 1:

- Cast 450mm wide x 900mm deep R.C. strip footing.
- Cast mass concrete thrust block.



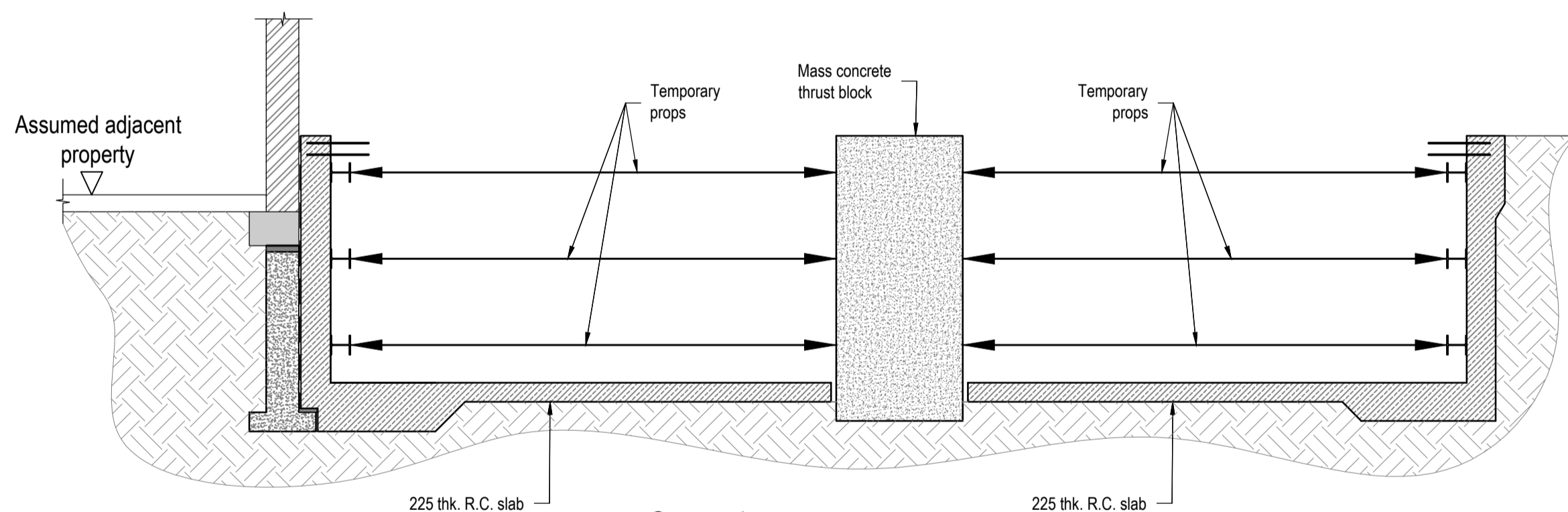
Stage 2:

- R.C. underpin strip footing & install props.
- Mass concrete underpin of existing structure & cast section of R.C. wall & install props.



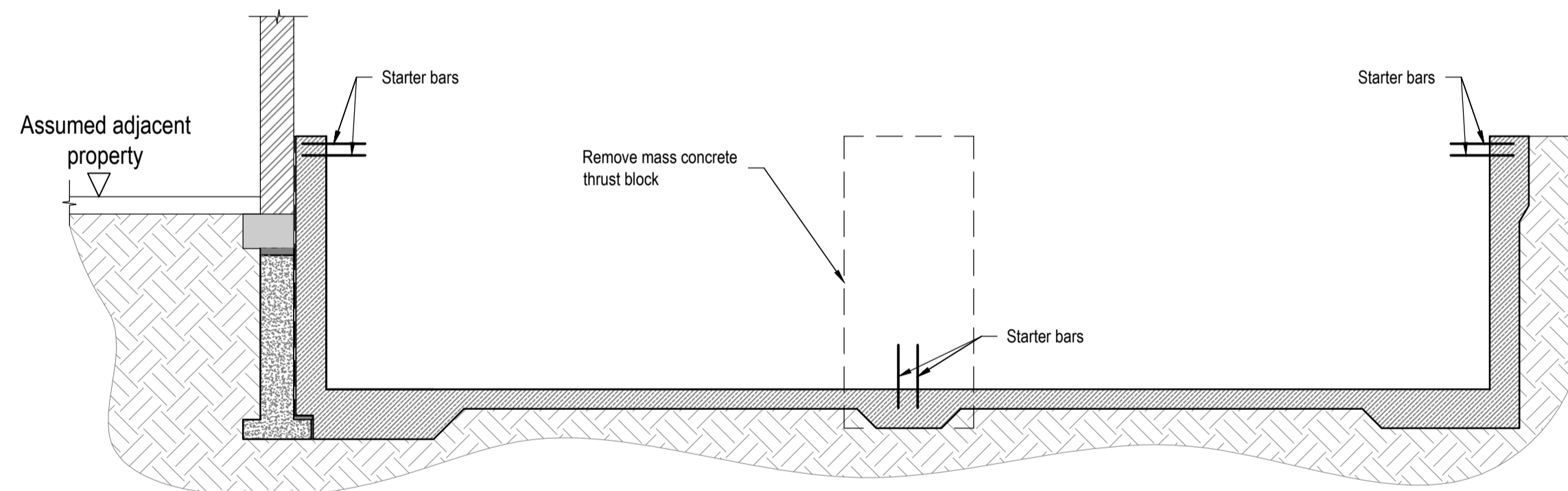
Stage 3:

- Excavate across the site & install props.



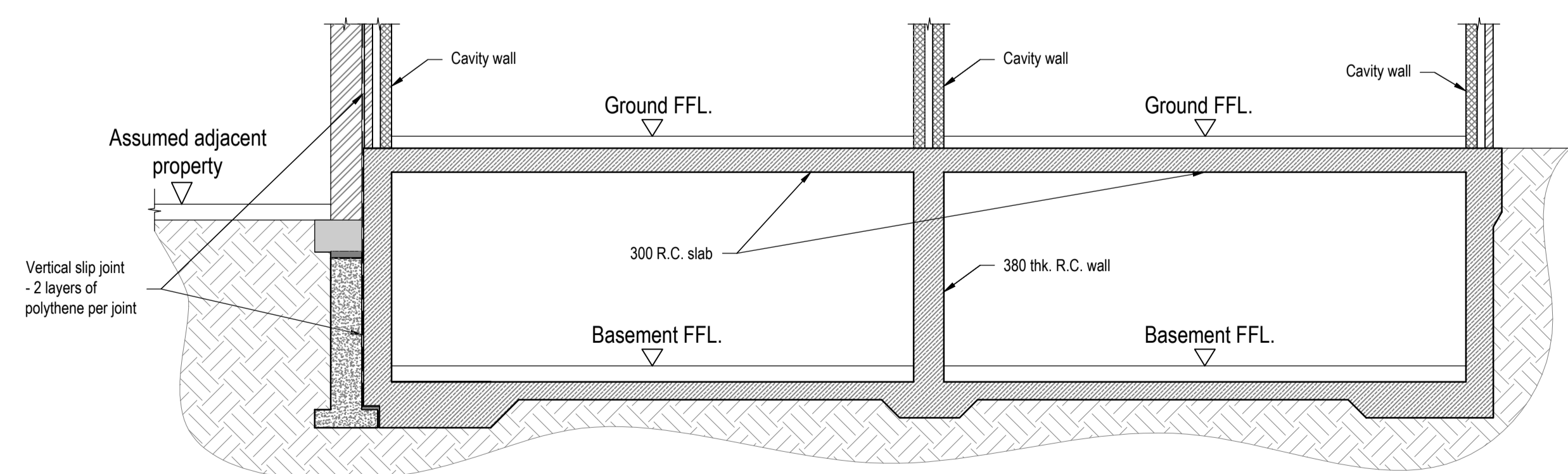
Stage 4:

- Excavate & install props.
- Install basement slab around thrust block.



Stage 5:

- After basement slab cured remove props & thrust block.
- Infill remaining basement slab.



Stage 6:

- Install internal R.C. wall & Ground Floor 300 R.C. slab.
- Install super structure.

Notes.

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REV.	AMENDMENTS	BY	DATE	CHECKED

PROJECT
Adjacent to Jack Straw's Castle

TITLE
Suggested Method of Works

ARCHITECTS
Quinlan Terry Architect

DRAWING No. 4423-SM02
DATE 24.01.2017
SCALE As shown @ A1
DRAWN AR
CHECKED RT
REVIEWED -

Suggested Method of Works

This suggested method is a suggestion only and the contractor may submit alternative proposals. The method of works and all temporary works including design and erection are to be the full responsibility of the main contractor.

Suggested structural proposal to be confirmed after full structural inspection. Not suitable for tender or construction.