PROJECT: 26 Netherhall Gardens NW3
LONDON

Amirilan Contractors LTD
715a North Circular Road
NW2 7AH

Method statement for construction

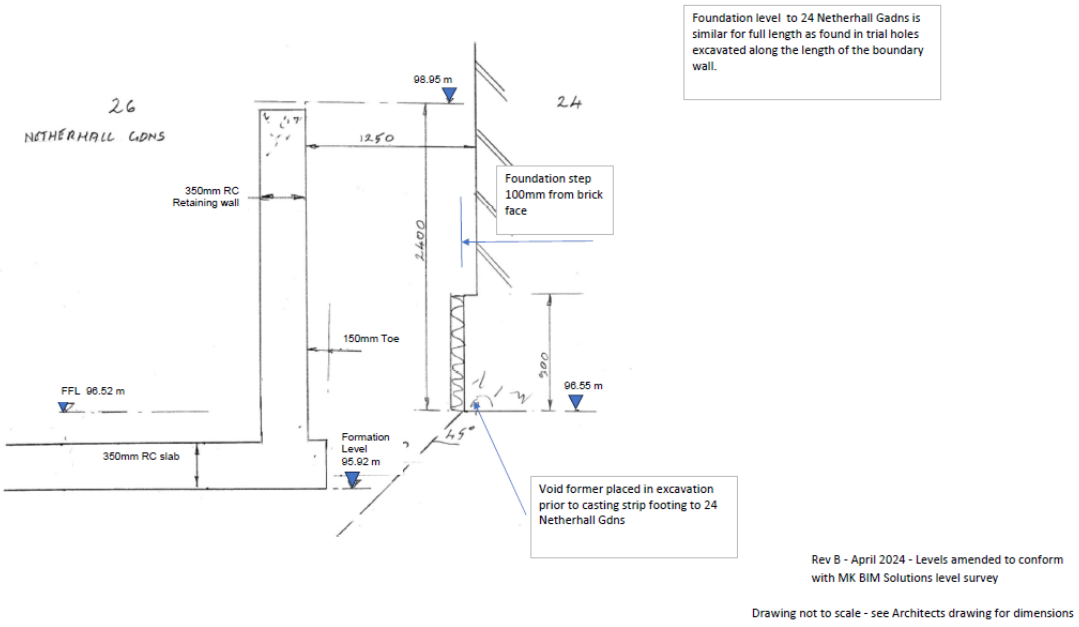
of New 3 story building adjacent to no 24

Introduction:

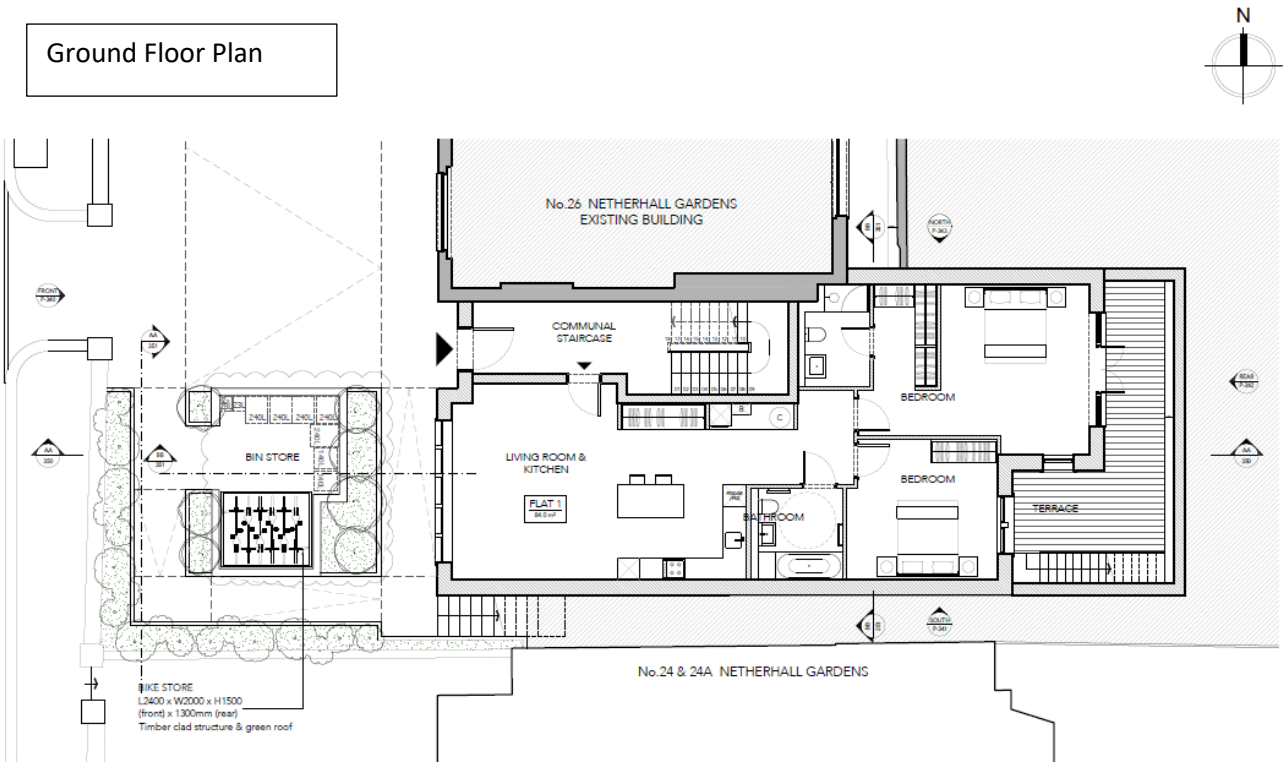
The following method statement is for the preparation and construction of the new residential property. The property is on Netherhall Gardens and is to be constructed on the site between properties no 26 and 24.

In preparation for the design of 26B Netherhall Gardens a series of trial holes were dug in the footpath to the side of 24 Netherhall Gardens to determine the depth of the foundations and their construction. The foundations were found to be of uniform depth comprising a nominal concrete strip footing 900mm deep at a formation level of 96.52m. The concrete section has a 100mm step and is lined with a void former. There is a brick wall built on the concrete foundation which forms the flank wall of 24 Netherhall Gardens. The soil found in the excavation was compacted clay fill for the top 1.5m and then undisturbed clay for the bottom section where the concrete foundation has been formed as shown below in a preliminary design solution.

Section showing existing and proposed Foundations.



Ground Floor Plan



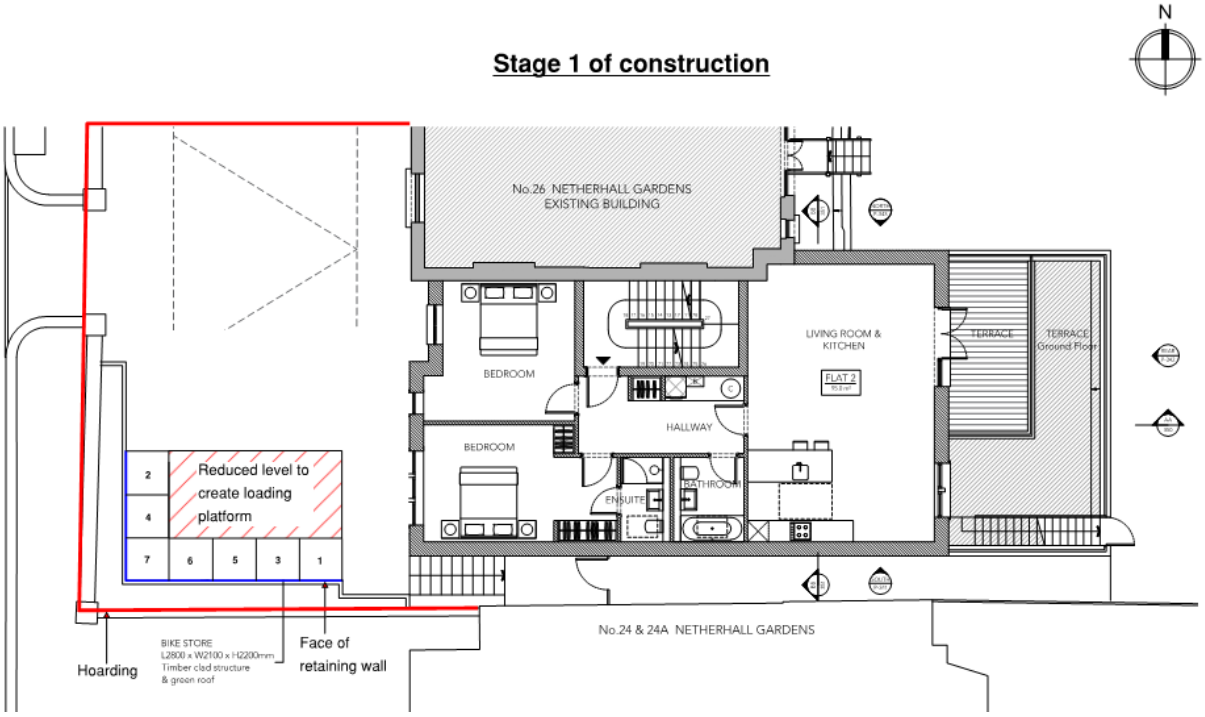
In order not to undermine the foundation of property no. 24, the new build is to be constructed on a raft foundation. The reinforced concrete (RC) wall will be constructed integrally with the raft and has been designed as self-supporting. The raft foundation and the retaining RC walls will supply ample support to both the foundation of the new build, and not affect the existing foundation of no. 24.

The superstructure of the new build will be built using cavity wall construction. The external face of the building will be to match no. 26.

Stage 1

Site preparation

Before construction of the new build commences, the site will be separated from the occupied premises of no. 24 and no. 26. This will be achieved through the installation of a hoarding, which will be 2.4 meters high. Access to the site will be from the road, through a double gate. Followed by fixing retaining walls and loading platform.



Steps of stage 1:

1. Build temporary hoarding

2. Build a retaining wall to party wall to the gardens with no. 24 in sequence of 1.23 meter per pin

3. Reduce level and create a loading platform

Stage 2

Demolition

The existing side building to no. 26 was built partially on top of a garage. It was built in brick and suspended roof joists.

A sequence of demolition will be deployed to remove the old building. Firstly, the roof will be removed, following this the external walls, using a temporary platform and power drills. Lastly, the garage walls are to be removed with 3-ton digger.

All the subsequent debris from the demolition works will be disposed of through the front-loading platform, and to be removed by grab lorries. Two suspended parking bays on the road are required for the grab lorries whilst they are loading the soil.

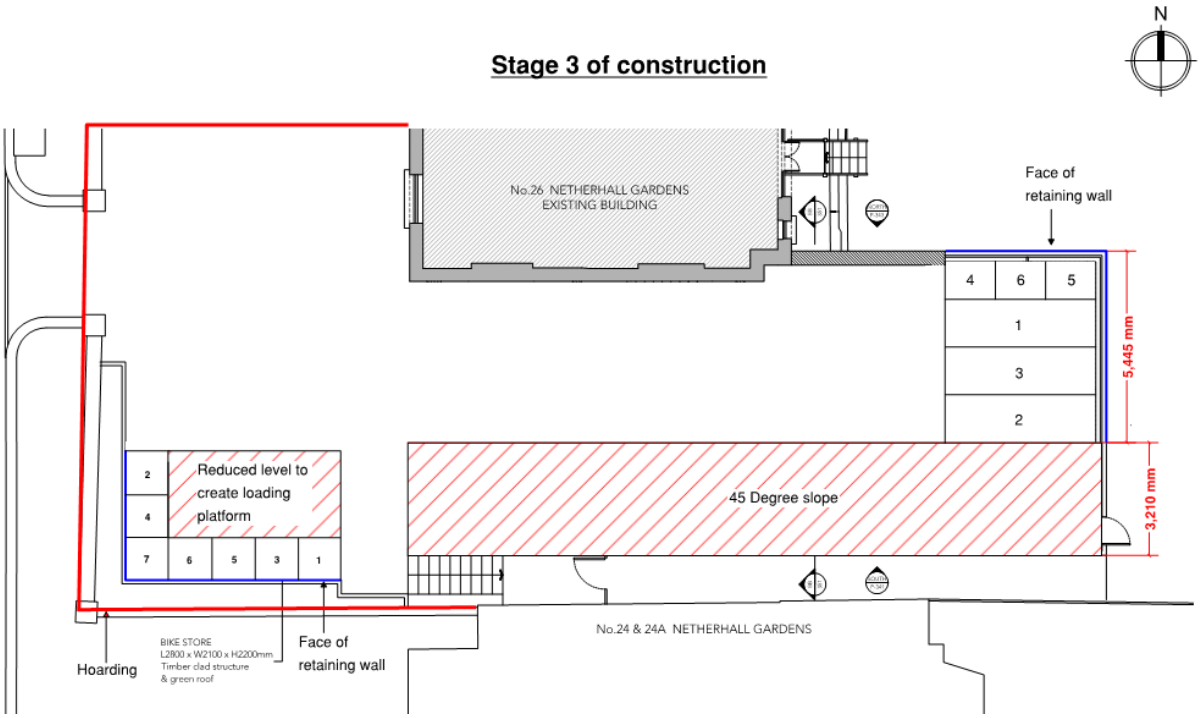
Stage 3

Raft foundation

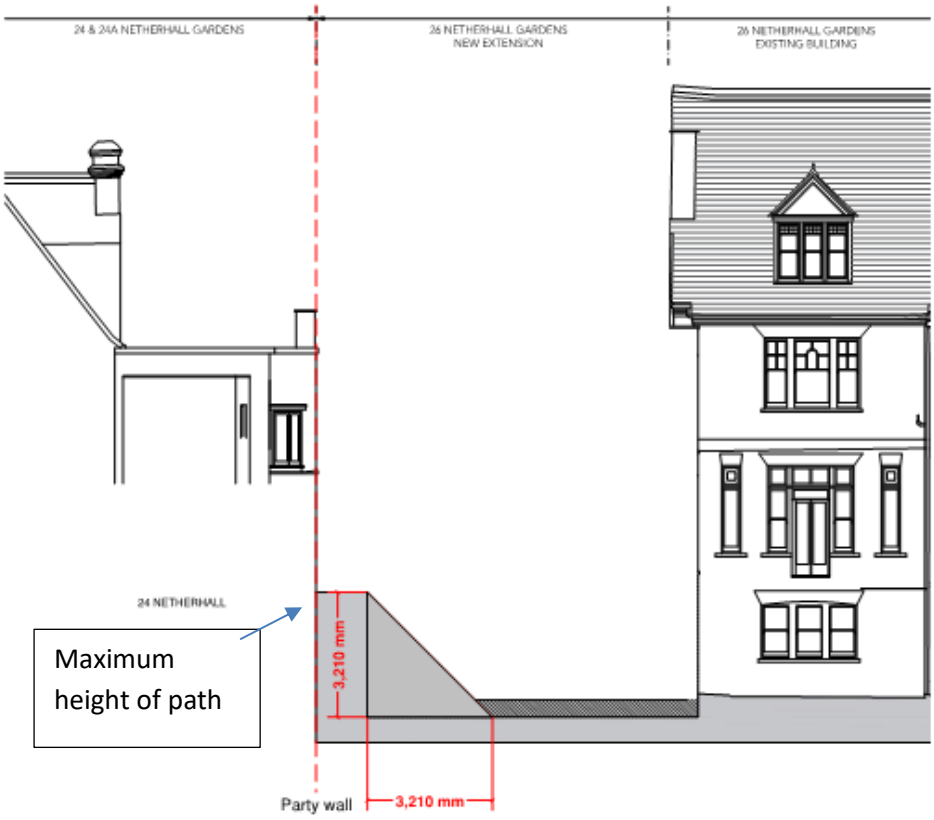
As shown in the sketch section above the new raft foundation will not undermine the foundations to No 24 Netherhall Gardens as the excavation for the raft foundation is above the 45 degrees spread line from the bottom of the foundations to No 24. This conclusion is based on site inspections, trial pits done, and structural calculations.

Excavate the area using a 3-ton digger, up until pin sequence line on the east elevation and leaving a batter support to the footpath adjacent to No 24, the maximum slope of the batter will be 45^0 and the surface will be protected with visqueen sheeting pinned into the ground to reduce the effects of water runoff and prevent the ground drying out.

Each section of retaining wall to the east elevation to the garden elevation at the rear will be dug in 1.36 -meter widths. The retaining wall sections will be propped temporarily to the completed section of raft using pairs of acrow props bolted to the concrete until the RC wall achieves its full design strength.



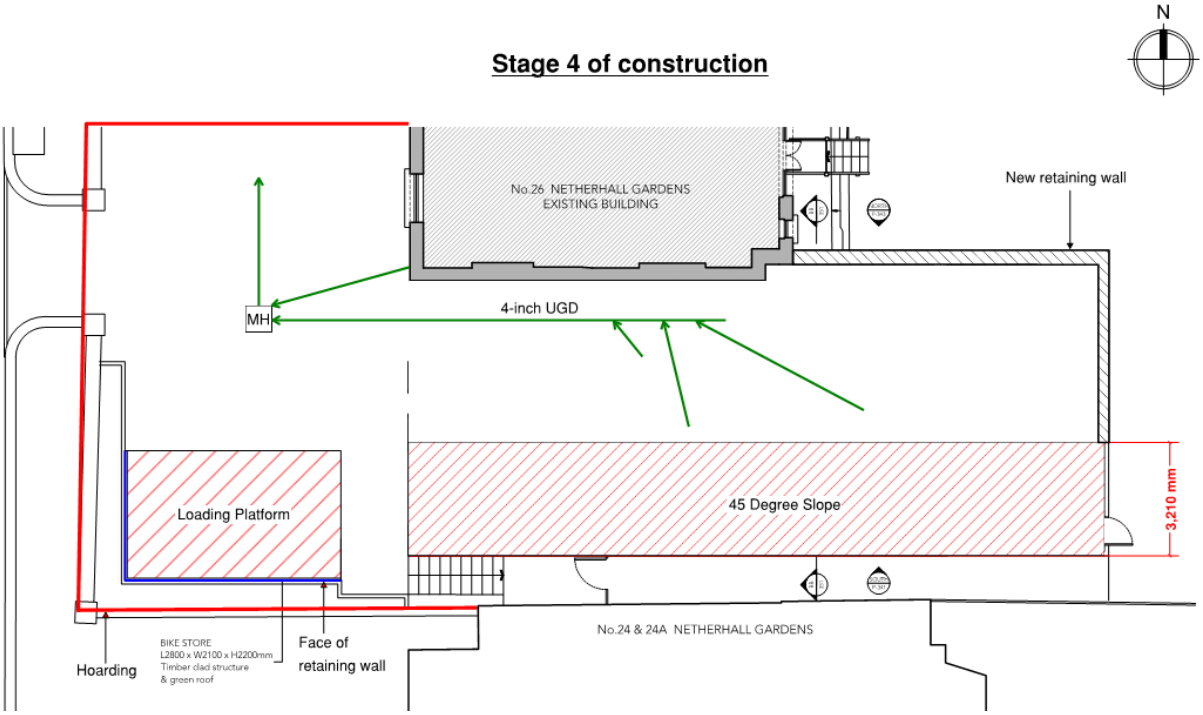
Extent of slope formation



Stage 4

Underground drainage and casting of part 1 of the raft

After completion of retaining wall to east elevation, install unground drain as per the sketch below. The drain is to take the storm water from the rear lightwell and the building. A double drain system may be required if separate foul and storm drains are required to the entry to the combined sewer in the highway.



1. The raft slab will be divided into two sections. The first part will be cast from existing building no. 26 to the bottom of sloping earth which is temporarily supporting the footpath.

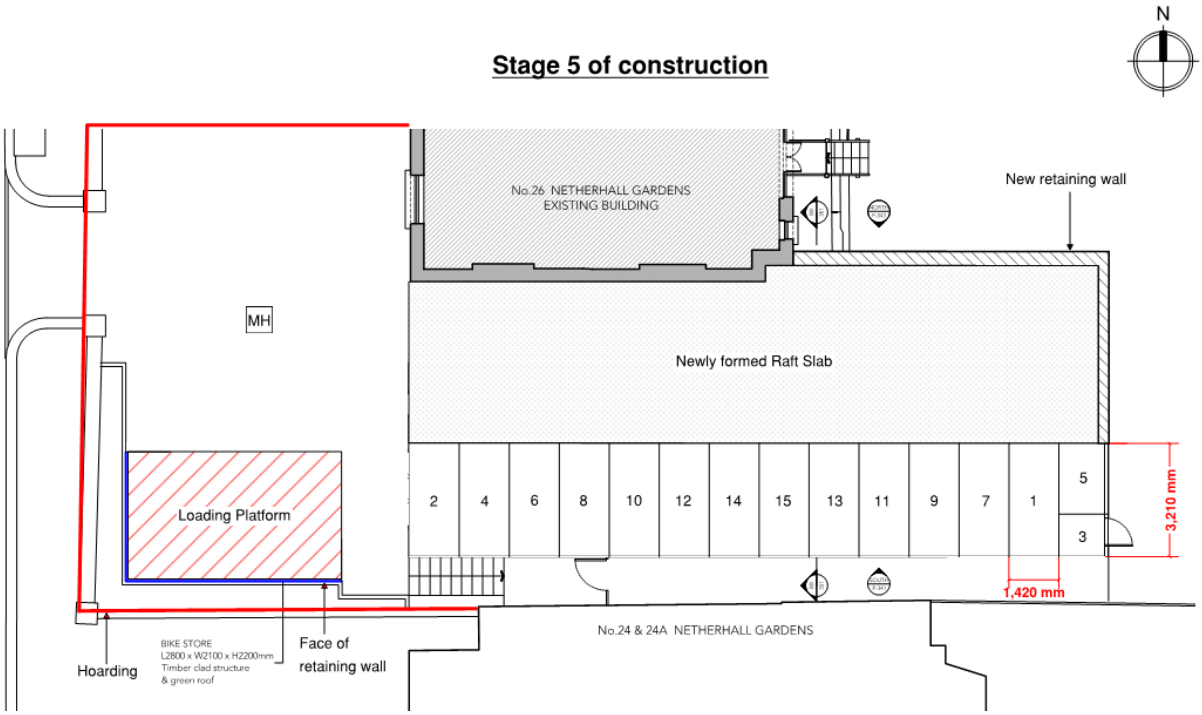
2. East elevation of retaining wall to be cast in sequence of 1.36 meters.

3. Once retaining wall to east elevation is competed, underground drain to be installed.

4. Once drainage is installed, cast the rest of stage one raft foundation.

Stage 5

Retaining Wall to No. 24 NG



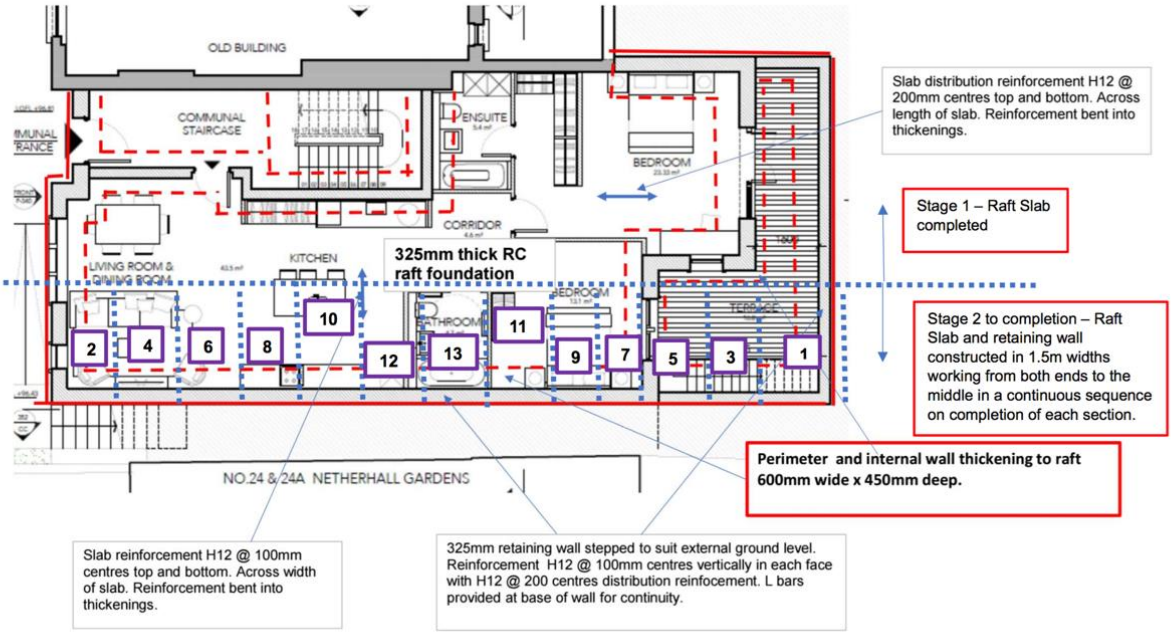
1. The raft slab and the retaining wall are to be constructed in 1.42m widths sequence. The exposed vertical earth face will, if necessary be temporarily supported by steel trench sheets with whalings anchored to the completed wall sections or propped from the completed sections of raft. The RC retaining wall is to be cast against the existing earth face with steel trench sheets removed if the ground is in a stable condition, if the ground is not stable the sheets are to be left in place and concreted in ensuring all voids are filled with concrete.

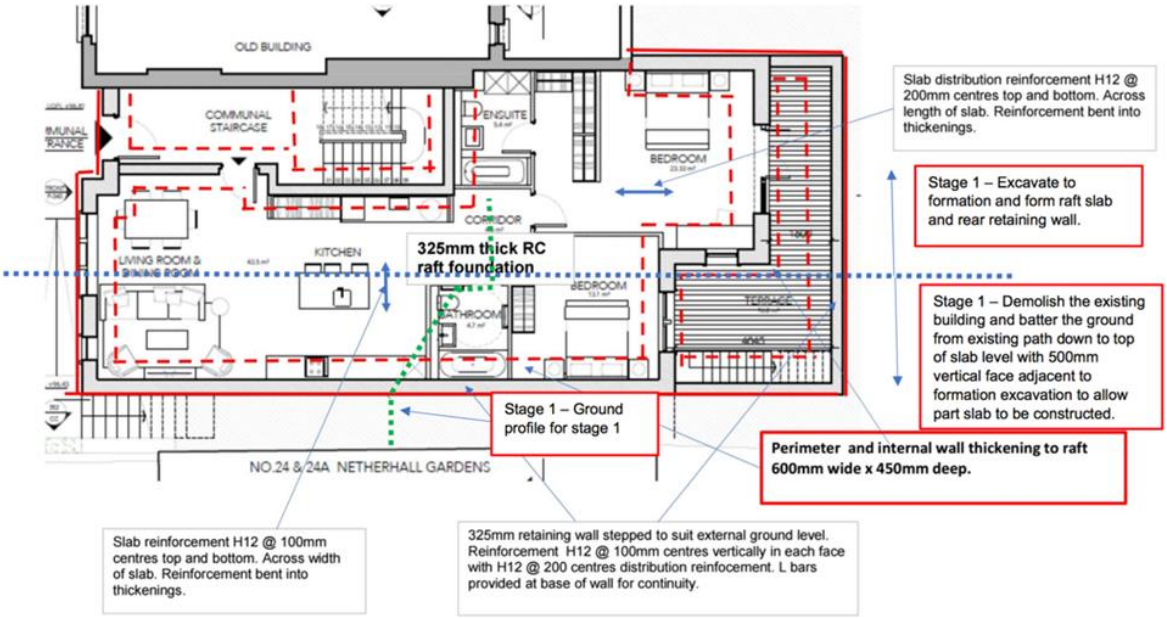
2. The slab/retaining wall is to be poured from both ends simultaneously, until each section is completed. The RC retaining wall will be temporarily propped, after the wall shutter is removed, by 2 Acrow props anchored into the raft slab with chemical anchors until the wall concrete has reached its full design strength.

Following the installation of the raft slab and retaining walls, scaffolding can be erected enabling the construction of the external walls and the roof structure.

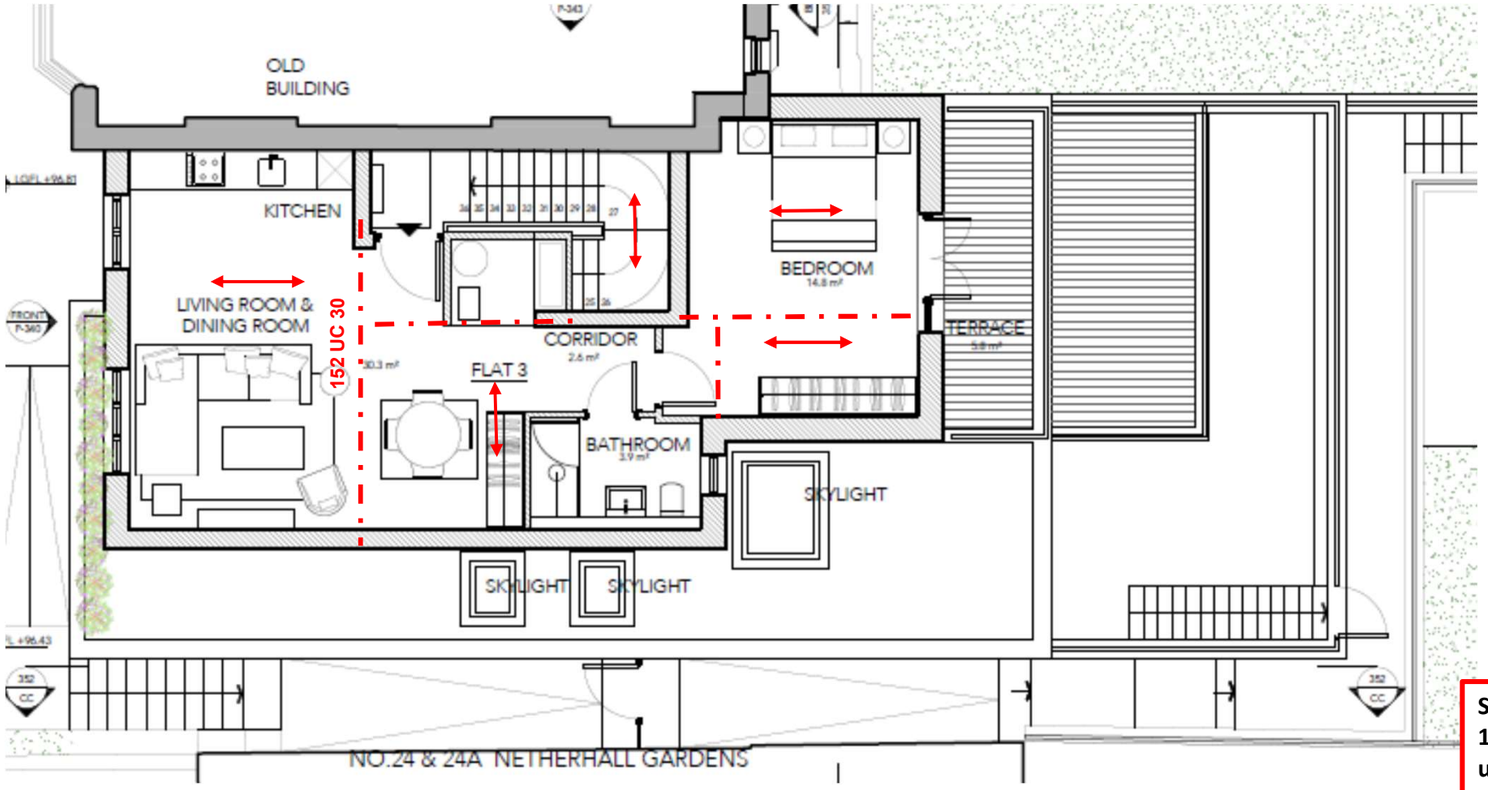
Reference Drawings and Supporting Documents – Structural Engineer

Construction along flank– 26B Netherhall





26 Netherhall Gardens, NW3
Side Extension - Structural Layout



Stair enclosure blockwork - 5.2 N /mm2 strength 100mm block laid flat to achieve a 200mm wall using M6 Mortar

Cavity wall using facing brick and 100mm block inner leaf. 5.2N/mm2 in M6 Mortar.

Rafters 175 x 50 @ 400 ctrs in threes trimming roof lights.Alternatively provide similar sized engineered joists in same configuration.
Timber grade C24
All steel beams 152 UC 23 UNO
All padstones to be full block UNO
All lintels - Catnic CG90/100 for 100 cavity and 100 inner leaf block UNO

Rev B - For Construction

Drawing not to scale - see Architects drawing for dimensions

For Construction

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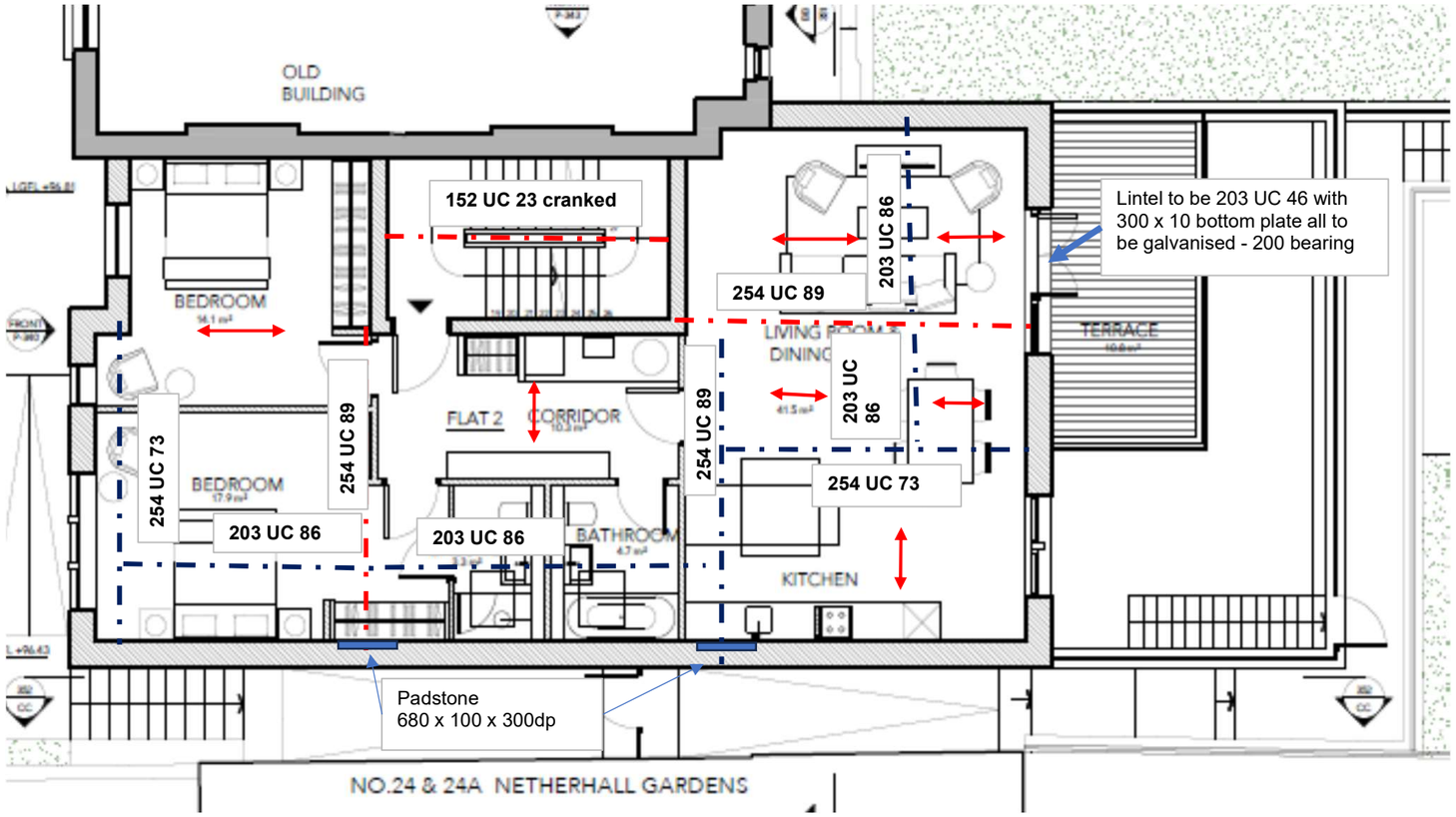
Sheet 2277 - 26B - SE 1
Rev: **B**
Date: Nov '23

26 Netherhall Gardens NW3
Side Extension - Second floor plan showing roof structure over

26 Netherhall Gardens, NW3
Side Extension - Structural Layout



Floor Joists 200 x 50 @ 400 ctrs in three's trimming roof lights.Alternatively provide similar sized engineered joists in same configuration.
Timber grade C24
All steel beams as noted with full block padstones.
Steel beams shown in Blue to have 300 x 10 top plate to carry cavity wall
203 UC 86 can be replaced with 254 UC 73

All lintels UNO - Catnic CG90/100 for 100 cavity and 100 inner leaf block
Lintel to stair doorway 150 high x wall width Prestressed concrete beams.

Stair enclosure blockwork - 5.2 N /mm2 strength 100mm block laid flat to achieve a 200mm wall using M6 Mortar

Cavity wall using facing brick and 100mm block inner leaf. 5.2N/mm2 in M6 Mortar.

Rev B - For Construction
Rev A - Beam section amended
Drawing not to scale - see Architects drawing for dimensions

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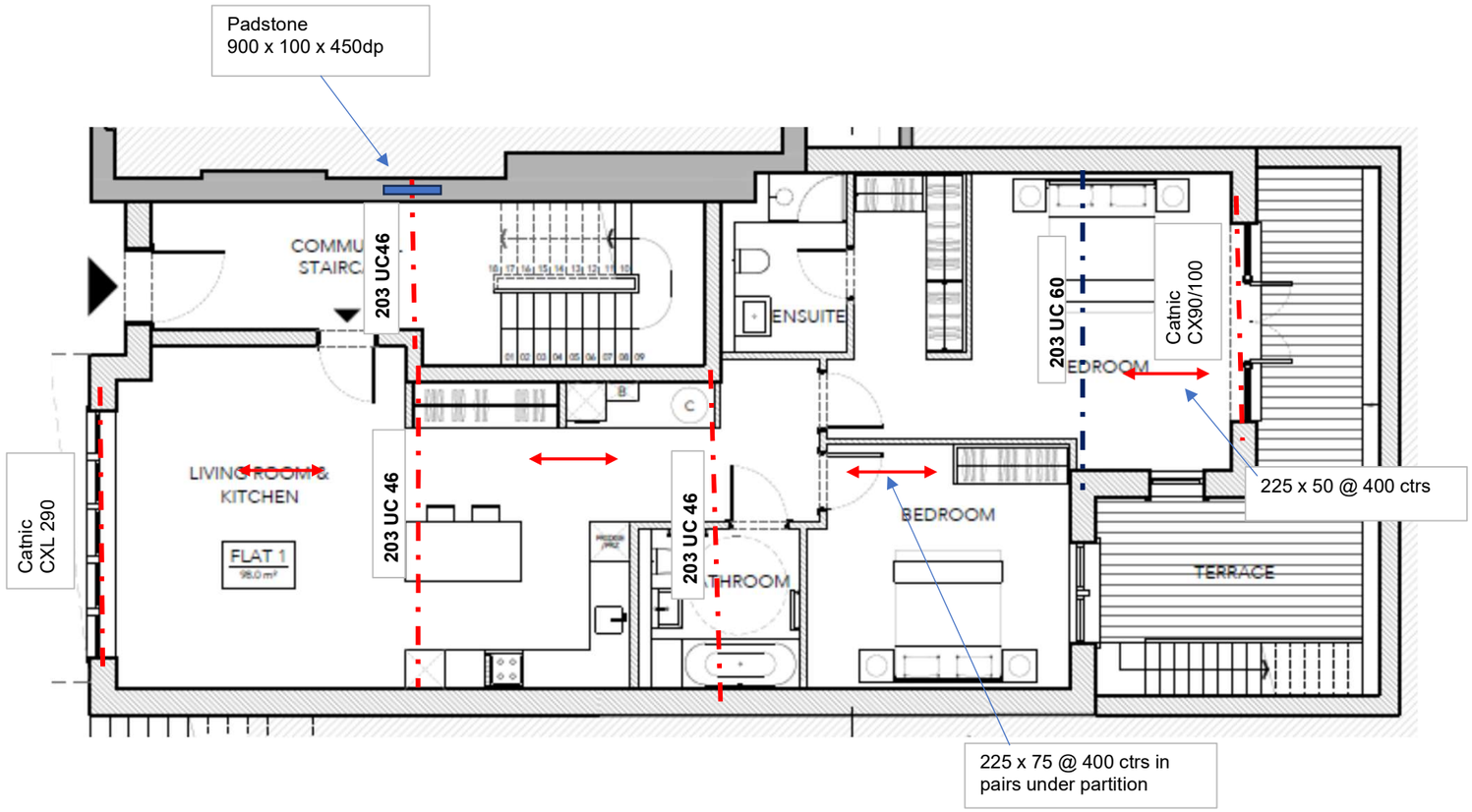
For Construction

26 Netherhall Gardens NW3
Side Extension - First floor plan showing structure over

26 Netherhall Gardens, NW3
Side Extension - Structural Layout



Floor Joists 225 x 75 @ 400 UNO in pairs under partitions. Alternatively provide similar depth engineered joists in same configuration.
Timber grade C24
All steel beams as noted
Steel beams shown in Blue to have 300 x 10 top plate to carry cavity wall
Top flange of beams to be flush

All lintels UNO - Catnic CG90/100 for 100 cavity and 100 inner leaf block

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Drawing not to scale - see Architects drawing for dimensions

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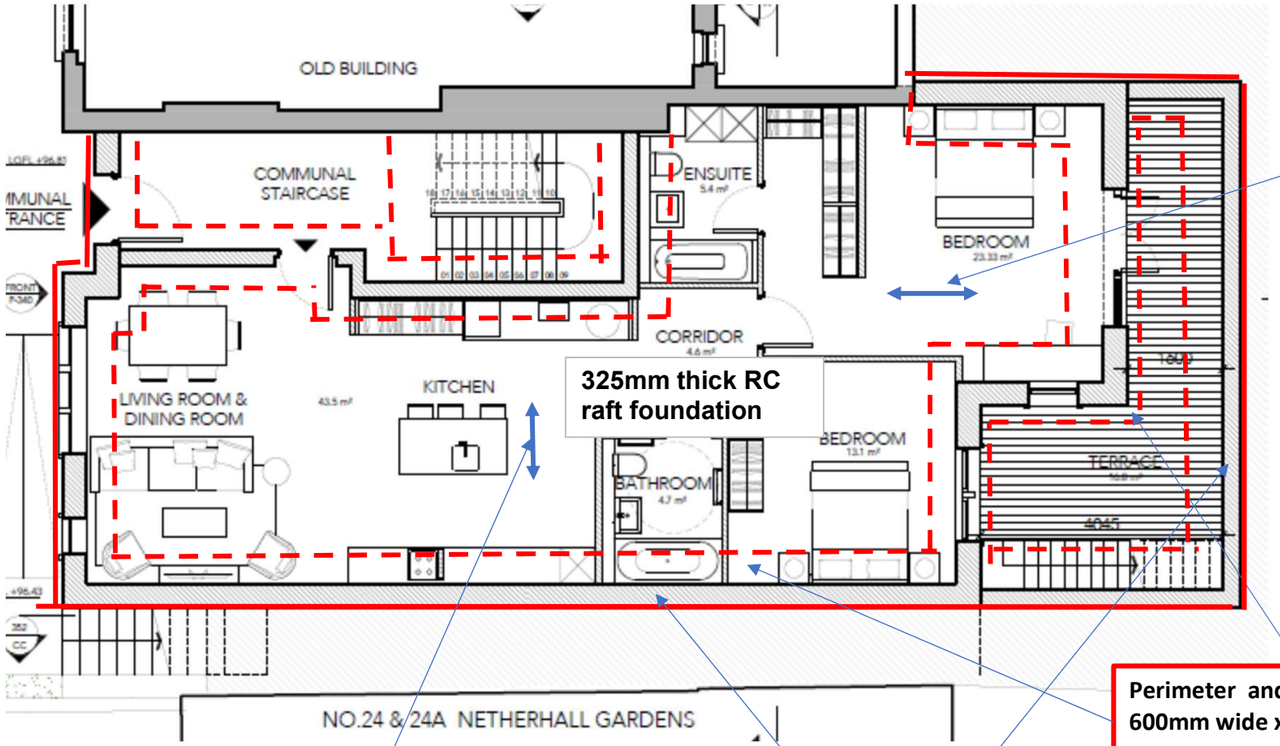
26B Netherhall Gardens NW3
Side Extension - Ground floor plan showing structure over

26 Netherhall Gardens, NW3
Side Extension - Structural Layout



Slab distribution reinforcement H12 @ 200mm centres top and bottom. Across length of slab. Reinforcement bent into thickenings.

325mm thick RC raft foundation

Perimeter and internal wall thickening to raft 600mm wide x 450mm deep.

Slab reinforcement H12 @ 100mm centres top and bottom. Across width of slab. Reinforcement bent into thickenings.

325mm retaining wall stepped to suit external ground level. Reinforcement H12 @ 100mm centres vertically in each face with H12 @ 200 centres distribution reinfocement. L bars provided at base of wall for continuity.

Rev B - For Construction

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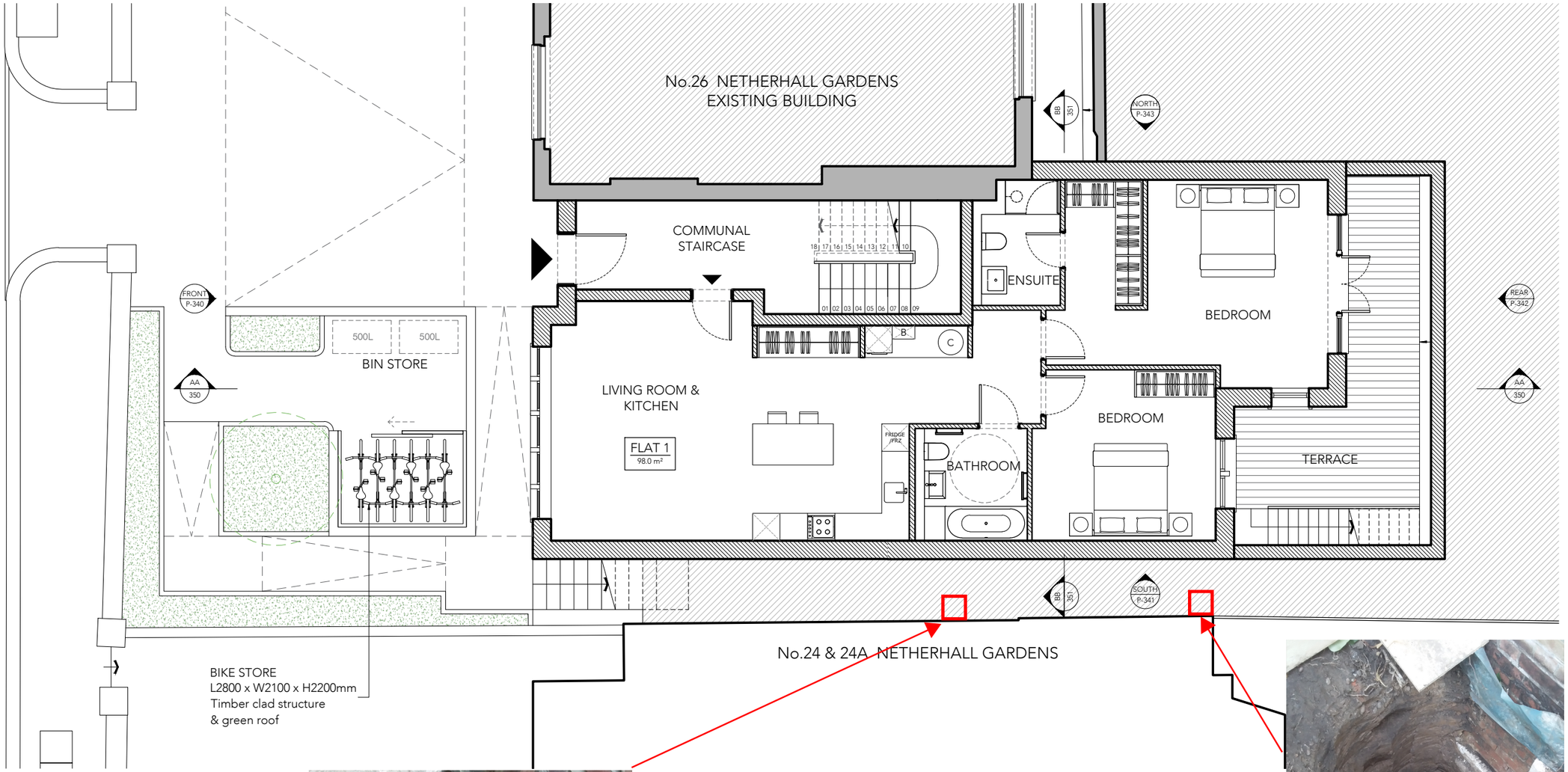
26 Netherhall Gardens NW3
Side Extension - Ground floor plan showing new foundations



Trial Hole: 2m

Trial Hole: 3m

0 1m 5m

N

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Notes

No Rev		Date
1	PLANNING	19.12.22

Status PLANNING

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Project	26 NETHERHALL GARDENS NW3 5TL		
Date	19.12.22	Scale @ A3	1:100
Drawing	PROPOSED PLAN GROUND FLOOR		
Drawn by	DCF	Checked by	LG
Job No.	263	Dwg No.	P-300
Rev	1		

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26B Netherhall Gardens, NW3 5TL

Rev A - Beam reference updated

The following calculations are for the design of the 3 storey new residential block to be built adjacent to the main property.

These calculations should be read in conjunction with all relevant Architects Drawings. The caculations have been prepared to comply with all relevant British Standards and Building Regulations.

Loadings

Roof - 40 degree pitch

Slate tiles	0.35	KN/m2
Battens & Felt	0.10	KN/m2
Rafters	0.10	KN/m2
P/bd and skim	0.30	KN/m2
	0.85	KN/m2

Plan load 0.85 / cos 40 = 1.05 KN/m2

Super 0.75 KN/m2

1.8 KN/m2

say 1.9 KN/m2

Flat roof allowing for PV say 1.8 KN/m2

Floor

Boards	0.15	KN/m2
Joists	0.15	KN/m2
Plasterboard & Skim	0.30	KN/m2
Super	1.50	KN/m2
	2.10	KN/m2

Partitions - stud say 0.60 KN/m2

Cavity Wall 3.60 KN/m2

Solid wall 215 say 4.50 KN/m2

Solid wall 340 say 7.2 KN/m2

Dormer cheek say 1.5 KN/m2

Minimum Steel connection UNO 4M20 Grade 8.8 bolts 10mm plates and 6mm Full profile fillet weld

Timber to be Grade C24 to BS 5268

Steel to be Grade 43 to BS 449

Soil parameters - clay fill and insitu clay

Density 18 KN/m2

Angle of repose = 15 degrees for both soil types and ignore contributory cohesive effect

Ka = (1 - Sin 15) / (1 + sin 15) = 0.589

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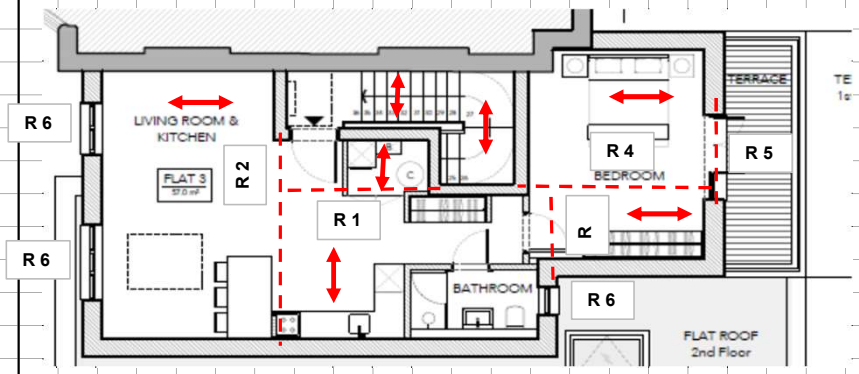
26B Netherhall Gardens, NW3 5TL

Second floor Plan showing Roof support Structure Over



Roof joists - 175 x 50 @ 400 ctrs

For Roof Lights trim with 3 / 175 x 50 bolted together

R1, R3 & R4 - 152 UC 23 with 100 bearing on masonry

R2 - 152UC 30 bearing on full block

Padstones - Full block provided under all steel beams

Lintels R5 and R6 - Catnic CG90/100

Roof joists - worst case

Span 3700

UDL 1.8 KN/m2

Max BM 1.8 x 3.7Sq / 8 = 3.1 KNm

Z reqd 3.1 e6 / 7.5 x 1.1 x 1.25 = 300 e3 mm3 / m

Try 175 x 50 @ 400 ctrs (Z = 560 e3 mm3 / m)

Deflection

5 x 1.8 x 0.4 x (3.7)4 x e3 / 384 x 9.9 x 18.9 = 9.4 mm

0.0025 x span

OK

Provide
175 x 50 @ 400 ctrs
In 3's to trim roof lights

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26B Netherhall Gardens, NW3 5TL

Steel Framing

Beam R 1 within floor depth

Span 3000

UDL as a worst case 1.8 KN/m2 x 6 / 2 = 5.4 KN/m

Max BM 5.4 x 3Sq / 8 = 6.1 KNm

Reaction - 8.1 KN
100 bearing
stress = 0.5 N/mm2

Try 152 UC 23

L / ry = 1.2 x 3000 / 36.8 = 98

Pbc = 132 N/mm2

Fbc = 6.1 e6 / 165.7 e3 = 37 N/mm2

Deflection

5 x 5.4 x (3)4 x e5 / 384 x 210 x 1263 = 2.1mm

OK

Provide
152 UC 23

By inspection Beams R3 & R4 similar

Beam R 2

Span 4500

Loading

UDL floor 1.8 KN/m2 x 3.7 / 2 = 3.3 KN/m

Point load R1 = 8.1 KN

Reaction - 11.4 KN
bearing on full block
stress = 0.3 N/mm2

Worst case BM 3.3 x 4.5Sq / 8 + 8.1 x 4.5 / 4 = 17.5 KNm

Try 152 UC 30

L / Ry = 1.2 x 4500 / 38.2 = 141

Pbc = 114 N/mm2

Fbc = 17.5 e6 / 221.2 e3 = 79 N/mm2

Deflection

Equivalent UDL 17.5 x 8 / 4.5Sq = 6.9 KN/m

5 x 6.9 x (4.5)4 x e5 / 384 x 210 x 1742 = 10.1mm

Span / 445

OK

Provide
152 UC 30

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26B Netherhall Gardens, NW3 5TL

Lintols R5 & R6

Max Span 2m

Loading

Parapet	say 5.0 KN/m2 x 1m	=	5.0 KN/m
Roof	1.8 KN/m2 x 3.7 / 2	=	3.3 KN/m
			8.3 KN/m

Total load - 17 KN

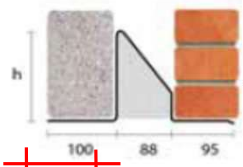
From Catnic catalogue provide CG90/100 (h = 180mm) SWL 22 KN

90-105mm Cavity
100-115mm Inner Leaf

All ratios are shown inner to outer

Standard Duty

Standard lengths are available in 150mm increments up to 3000mm, 300mm at lengths from 3000mm to 3600mm.



CG90/100

Standard lengths (mm)	750-1500	1650-1800	1950-2100	2250-2400	2550-2700	2850-3600
SWL 1:1/3:1 (kN)	15	18	20	22	26	26
Weight (kg/m)	6.1	7.6	8.3	8.9	10.2	13.0
Nominal height 'h' (mm)	140	140	160	180	220	220

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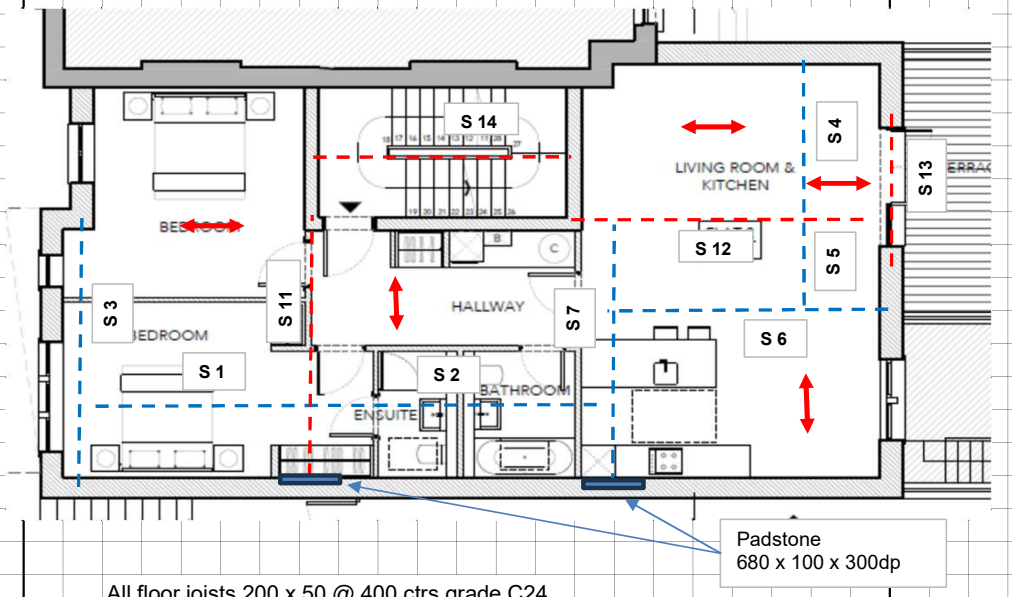
26B Netherhall Gardens, NW3 5TL

First floor plan showing 2nd flr structure over



All floor joists 200 x 50 @ 400 ctrs grade C24
Joist in 3's to trim roof lights

Steels S 1 to S7 to be provided with 300 x 10 top plate to support cavity wall as necessary.

Rev A - Beam reference updated

Beams S1, S2, S4 & S5 to be 203 UC 86

Beams S 7, S 11 & S 12 - 254 UC 89

Beam S 13 - 203 UC 46 with 300 x 10 bottom plate
200 bearing

Lintels to windows UNO Catnic CG90/100

Beam S 14 - Cranked support to stair 152 UC 23
Cranks to be formed with full strength butt welds

Padstones - Full block provided under all steel beams UNO

Beam S3 & S 6 - 254 UC 73

Beam References S8, S9, S10 NOT USED

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26B Netherhall Gardens, NW3 5TL

Floor joists

Max Span say 4000

UDL 2.1 KN/m2

Max BM 2.1 KN/m2 x 4Sq / 8 = 4.2 KNm

Z reqd 4.2 e6 / 7.5 x 1.1 = 510 e3 mm3 / m

Try 200 x 50 @ 400 ctrs (Z = 737 e3 mm3 / m)

Deflection

5 x 2.1 x 0.4 x (4)4 x e3 / 384 x 9.9 x 28.6 = 10 mm

Ok

Provide
200 x 50 @ 400 ctrs

Steel beams supporting external walls (S1 - S 7)

All beams to have 300 x 10 top plate where carrying wall over

Beam S 2 (S1 similar)

Span 5300

Loading

Roof	1.8 KN/m2 x 3.5 / 2	= 3.2 KN/m
2nd flr	2.1 KN/m2 x 3.5 / 2	= 3.7 KN/m
Terrace	say 2.0 KN/m2 x 1.2 / 2	= 1.2 KN/m
Cavity wall	3.6 KN/m2 x 3.3	= 11.9 KN/m

20.0 KN/m

Reaction - 53 KN

Max BM 20 x 5.3Sq / 8 = 70.2 KNm

Try 203 UC 86 with top plate

L / ry = 1.2 x 5300 / 53.2 = 120

Pbc = 145 N/mm2

Fbc = 70.2 e6 / 851.5 e3 = 83 N/mm2

OK

Deflection

5 x 20 x (5.3)4 x e5 / 384 x 210 x 9462 = 10.3mm

Span / 510

Provide
203 UC 86

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26B Netherhall Gardens, NW3 5TL

Beam S 3

Span 5300

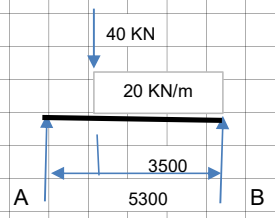
Loading

UDL as S2 = 20.0 KN/m

Point load S 1 = 20 x 4m / 2 = 40 KN

Ra = 40 x 3.5 / 5.3 + 20 x 3.5 x 1.75 / 5.3 =
49.5 KN

Rb = 40 x 1.8 / 5.3 + 20 x 3.5 x 3.55 / 5.3 =
60.5 KN



Point of zero shear from B = 60.5 / 20 = 3.025

Max BM = 60.5 x 3.025 / 2 = 91.5 KNm

Try 254 UC 73

L / Ry = 1.2 x 5300 / 64.6 = 99

Pbc = 140 N/mm2

Fbc = 91.5 e6 / 894.5 e3 = 102 N/mm2

Deflection

Equivalent UDL = 91.5 x 8 / 5.3Sq = 26.1 KN/m

5 x 26.1 x (5.3)4 x e5 / 384 x 210 x 11360 = 11.2mm

Span / 470

OK

Provide
254 UC 73

Beam S4 (S5 similar)

Span 3200

Loading

UDL as S 2 + terrace = 20 KN/m + say 2.5 KN/m2 x 2 / 2 = 22.5 KN/m

Max BM 22.5 x 3.2Sq / 8 = 28.8 KNm

Reaction - 36 KN

Try 203 UC 46

L / ry = 1.2 x 3200 / 51.1 = 75

Pbc = 157 N/mm2

Fbc = 28.8 e6 / 449.2 e3 = 64 N/mm2

ok

Deflection

5 x 22.5 x (3.2)4 x e5 / 384 x 210 x 4564 = 3.2mm

OK

Provide
203 UC 46 with top
plate

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Beam S 6

Span 5000

Loading

Say as S2 = 20 KN/m

Reaction - 50 KN

Point load S5 = 22.5 x 3.2 / 2 = 36 KN

Better case than S 3

Provide
254 UC 73

Beam S 7

Span 5000

Loading

S2 = 53 KN

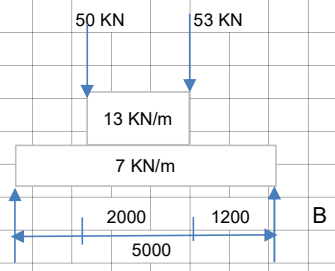
S6 = 50 KN

UDL case 1 as S 2 = 20 KN/m

UDL Case 2 say 2.1 KN/m2 x 3 = 7 KN/m

R a = 53 x 1.2 / 5 + 50 x 3.2 / 5 +
13 x 2 x 2.2 / 5 + 7 x 5 / 2 = 73.7 KN

Rb = 50 x 1.8 / 5 + 53 x 3.8 / 5 +
13 x 2 x 2.8 / 5 + 7 x 5 / 2 = 90.3 KN



Padstone
680 x 100 x 300 dp
Capacity =
70 KN x 1.5 = 105 KN
Sht /16

Point of zero shear from B

1.2m + (90.3 - 53 - [1.2 x 7])/20 = 2.645m

Max BM 90.3 x 2.645 - 53 x 1.445 - 7 x 2.645Sq / 2 -
13 x 1.445Sq / 2 = 124.2 KNm

Try 254 UC 89

L / Ry 1.2 x 5000 / 65.2 = 92

Pbc = 150 N/mm2

Fbc = 124.2 e6 / 1099 e3 = 113 N/mm2

OK

Deflection

Equivalent UDL 124.2 x 8 / 5Sq = 39.7 KN/m

5 x 39.7 x (5)4 x e5 / 384 x 210 x 14307 = 10.8 mm

Span / 460

Provide
254 UC 89

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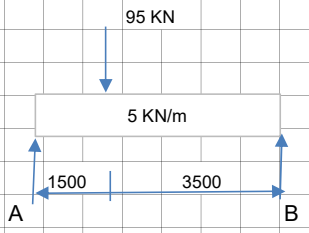
Beam S 11

Span 5000

Point load S1 & S2 = 20 KN/m x 9.5 / 2 = 95 KN

UDL say 2.1 KN/m2 x 4 / 2 = say 5 KN/m



Ra = 5 x 5 / 2 + 95 x 3.5 / 5 = 79 KN

Rb = 5 x 5 / 2 + 95 x 1.5 / 5 = 41 KN

Padstone on cavity wall 680 x 100 x 300 dp

Max BM = 41 x 3.5 - 5 x 3.5Sq / 2 = 112.9 KNm

Similar to S7

Provide 254 UC 89

Beam S 12

Span 5500

Loading

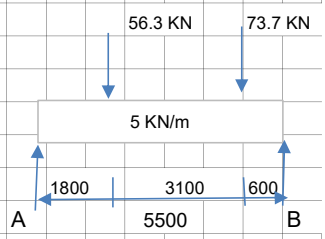
Point load S4 & S5 = 22.5 KN/m x 5 / 2 = 56.3 KN

Point load S 7 = 73.7 KN

UDL say 5KN/m

Ra = 5 x 5.5 / 2 + 73.7 x 0.6 / 5.5 + 56.3 x 3.7 / 5.5 = 59.7 KN

Rb = 5 x 5.5 / 2 + 56.3 x 1.8 / 5.5 + 73.7 x 4.9 / 5.5 = 97.8 KN



Point of zero shear under point load

Max BM = 59.7 x 1.8 - 5 x 1.8Sq / 2 = 99.4 KNm

Try 254 UC 89

L / Ry = 1.2 x 5500 / 65.2 = 101

Pbc = 144 N/mm2

Fbc = 99.4 e6 / 1099 e3 = 91 N/mm2

OK

Provide 254 UC 89

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26B Netherhall Gardens, NW3 5TL

S 13 over window carrying S S 12

Span 2500

Loading

Parapet	5 KN/m2 x 1m	=	5.0 KN/m
Terrace	say 2.5 KN/m2 x 2 / 2	=	2.5 KN/m
			7.5 KN/m

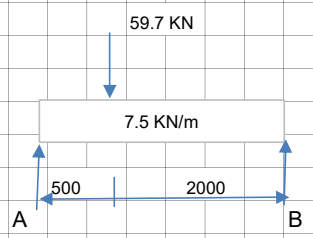
Point load S12 = 59.7 KN

Ra = 59.7 x 2 / 2.5 + 7.5 x 2.5 / 2 =

57.1 KN

Rb = 59.7 x 0.5 / 2.5 + 7.5 x 2.5 / 2 =

21.3 KN



Max BM = 57.1 x 0.5 = 28.6 KNm

By Inspection

Provide 203 UC 46 with top plate

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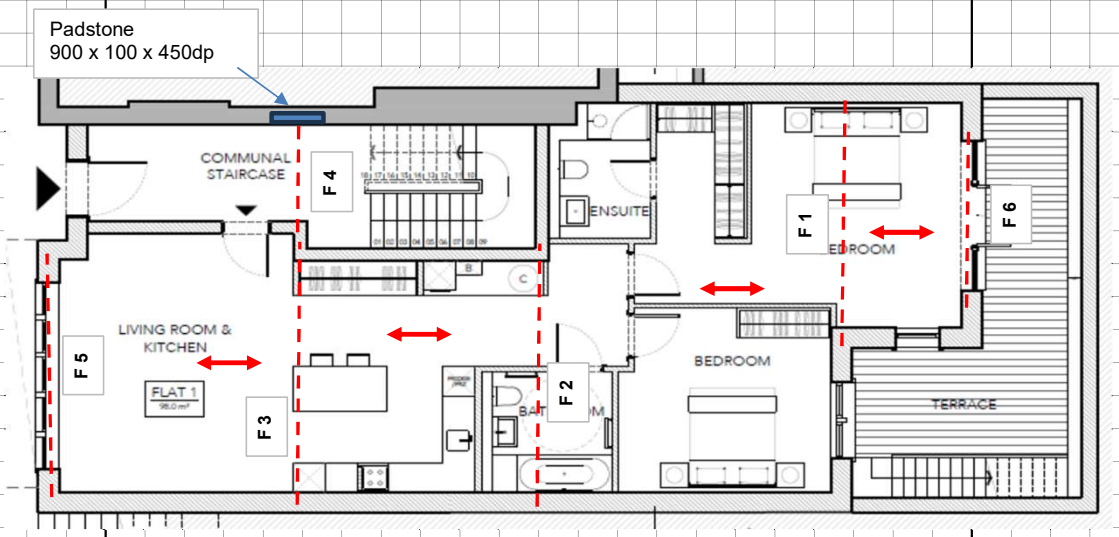
26B Netherhall Gardens, NW3 5TL

Ground floor plan showing 1st floor structure over



Floor joists - 225 x 75 @ 400 ctrs in pairs under partitions
Grade C24

F 1 - 203 UC 60

F2, F3 & F4 - 203 UC 46

Lintel F 5 on front elevation Catnic CXL290

Lintel F6 on rear elevation Catnic CX90/100

Padstone for F4 into main building - 900 x 100 x 450dp

Padstones - Full block provided under all steel beams UNO

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26B Netherhall Gardens, NW3 5TL

Floor joists

Max Span 5500

UDL 2.1 KN/m2

Max BM 2.1 x 5.5Sq / 8 = 7.9 KNm

Z reqd = 7.9 e6 / 7.5 x 1.1 = 963 e3 mm3 / m

Try 225 x 63 @ 400 ctrs (Z = 1200 e3 mm3 / m)

Deflection

5 x 2.1 x 0.4 x (5.5)4 x e3 / 384 x 9.9 x 52.5 = 19.3mm

Too high

Provide
225 x 75 @ 400 ctrs
Def = 16.0mm
0.0029 x span

Floor beam F 1

Span 4800

Loading

Cavity wall 3.6 KN/m2 x 3.3m x 80% = 9.5 KN/m

Terrace say 2.5 KN/m2 x 2.5 / 2 = 3.1 KN/m

12.6 KN/m

Beam S12 = 59.7 KN

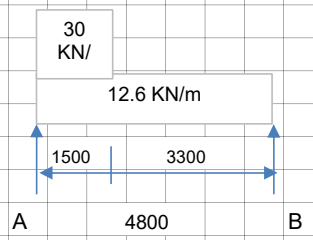
Load spread over pier to side of door UDL = 59.7 / 2 = 30 KN/m

Ra = 12.6 x 4.8 / 2 + 30 x 1.5 x 4.05/4.8 =

68.2 KN

Rb = 12.6 x 4.8 / 2 + 30 x 1.5 x 0.75 / 4.8

37.3 KN



OK

Point of zero shear from B = 37.3 / 12.6 = 2.96

Max BM 37.3 x 2.96 / 2 = 55.2 KNm

Try 203 UC 60

L / ry = 1.2 x 4800 / 51.9 = 111

Pbc = 138 N/mm2

Fbc = 55.2 e6 / 581.1 e3 = 95 N/mm2

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26B Netherhall Gardens, NW3 5TL

Deflection

Equivalent UDL 8 x 55.2 / 4.8Sq = 19.2 Kn/m

5 x 19.2 x (4.8)4 x e5 / 384 x 210 x 6088 = 10.4mm — Provide

Span / 460 — 203 UC 60

OK — with top plate

Floor beam F2 (F3 similar)

Span 5000

UDL floor 2.1 KN/m2 x 10 / 2 = 10.5 KN/m — Reaction - 27 KN

Max BM 10.5 x 5Sq / 8 = 32.8 KNm

Try 203 UC 46

L / Ry = 1.2 x 5000 / 51.1 = 117

Pbc = 120 N/mm2

Fbc = 32.8 e6 / 449.2 e3 = 73 N/mm2

ok

Deflection

5 x 10.5 x (5)4 x e5 / 384 x 210 x 4564 = 8.9mm

Span / 560 — Provide

OK — 203 UC 46

Beam F 4 over entrance to stairwell

Span 2300

Loading

Roof	1.8 KN/m2 x 10 / 2 x 6 / 2	= 27.0 KN
2nd floor	2.1 KN/m2 x 10 / 2 x 6 / 2	= 31.5 KN
1st flr	2.1 KN/m2 x 10 / 2 x 2.3	= 24.2 KN
Masonry	say 4 KN/m2 x 6.6m	= 26.4 KN
		109.1 KN

Reaction = 55KN

Padstone

900 x 100 x 300 dp

Stress = 0.6 N/mm2

Max BM = 109.1 x 2.3 / 8 = 31.4 KNm

Better case than F2

Provide — 203 UC 46

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Lintel F 5 (Front elevation)

Span 4000

Loading

First floor	2.1 KN/m2 x 4.5 / 2	=	4.7 Kn/m
Cavity wall	3.6 KN/m2 x 3.3m x 80%	=	9.5 KN/m
Roof	1.8 KN/m2 x say 1	=	1.8 KN/m
			16.0 KN/m

Total load = 64 KN

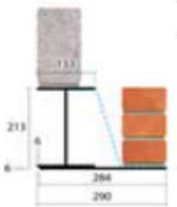
From Catnic catalogue provide CXL290 (SWL 83 KN)

90-105mm Cavity 100-115mm Inner Leaf

CXL290

Standard lengths (mm)	2100-3000	3300-4800	5100	5400	5700	6000	6300	6600
SWL 5:1/19:1 (kN)	88	83	78	71	64	56	52	47

Weight (kg/m)	43.5	Ixx (cm⁴)	4022	Zxx (cm³)	307	Serviceability moment (kNm)	50.6



Lintel F6 (Rear Elevation)

Span 3000

Loading

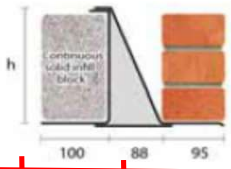
Terrace	say 2.5 KN/m2 x 2.5 / 2	=	3.1 KN/m
Parapet	say 5 KN/m2 x 0.9	=	4.5 KN/m
			7.6 KN/m

Total load - 22.8 KN

From Catnic catalogue provide CX90/100 (SWL 50 KN)

Extra Heavy Duty

Standard lengths are available in 150mm increments up to 3000mm, 300mm at lengths 3000mm to 4800mm (including 4575mm, but excluding 4500mm).



CX90/100

Standard lengths (mm)	900-2700	2850-3000	3300-3900	4200-4800
SWL 1:1/19:1 (kN)	60	55	50	32
Weight (kg/m)	16.9	16.9	20.5	20.5
Nominal height 'h' (mm)	232	232	232	232

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26B Netherhall Gardens, NW3 5TL

Masonry design check

Case 1 - Stair enclosure - 200mm blockwork

Worst case consider wall over F4

Ultimate load = say 1.5 x 109.1 KN = 163.7 KN

Say length of wall = 2m

Material factor = 3.1

h / t = 0.75 x 3300 / 200 = 12.4 - Capacity red = 0.9

characteristic masonry strength reqd = 163.7 e3 x 3.1 / 0.9 x 200 e3

2.8 N/mm2

Provide 100mm block laid flat

Block to be 5.2 N/mm2 in M6 mortar (fk = 3.7 N/mm2)

Case 2 - Cavity wall

Worst case - consider pier to side of main entrance

Dead load

Cavity wall inner leaf

1.8 Kn/m2 x 8m = 14.4 KN/m

Roof & Floors 0.6 KN/m2 x 3 x 4 / 2 = 3.6 KN/m

18.0 KN/m

Live load

Roof 0.75 KN/m2 x 4 / 2 = 1.5 KN/m

Floors 1.5 KN/m2 x 4 / 2 x 2 = 6.0 KN/m

7.5 KN/m

Ult load = 1.4 x 18 KN/m + 1.6 x 7.5 KN/m = 37.2 KN/m

Load on pier = 37.2 x 1.2m = 44.6 KN

Pier length = 700mm

Ult stress = 44.6 e3 / (700 x 100) = 0.6 N/mm2

h eff / t eff = 0.75 x 3300 / 2 x (100 + 100)/3 = 18.6 Cap Red = 0.74

Area reduction factor = 0.7 + (1.5 x 0.1 x 0.7) = 0.8

Design stress required 0.6 x 3.1 / 0.8 x 0.74 = 3.1 N/mm2

provide 100mm block (5.2 N/mm2 in M6 mortar) fk = 5.0 N/mm2

ok

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26B Netherhall Gardens, NW3 5TL

Padstones

Beams to bear on masonry with 100 bearing into stair enclosure and 75mm bearing on inner leaf.

Localised allowable stress for 200mm block = 1.5 x 3.7 / 3.1 = 1.8 N/mm2

Localised allowable stress in cavity wall = 1.5 x 5.0 / 3.1 = 2.4 N/mm2

Beams to be sat on full block as padstone

	Working load
Stair enclosure 200 block 1.8 x 200 x 440 / e3 = 158 KN	100 KN
Cavity wall 100 block 2.4 N/mm2 x 100 x 440 / e3 = 105 KN	70 KN

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26B Netherhall Gardens, NW3 5TL

Retaining wall to flank wall Ground to First

Maximum height retained 3m

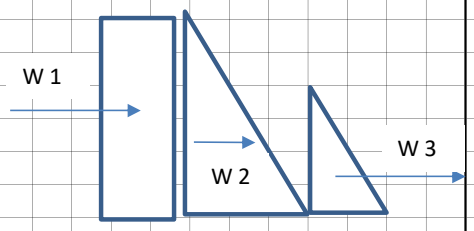
Consider design of the stem as a cantilever

Density = 18 KN/m3
Ka = 0.589
Surcharge in passage / garden say 5.0 KN/m2

W 1 surcharge =
5 x 0.589 x 3m = 8.8 KN

W 2 soil =
18 x 0.589x 3Sq / 2 = 47.7 KN

W 3 Water
10 x 2Sq / 2 = 20 KN



Taking moments about the base

8.8 x 3 / 2 + 47.7 x 3 / 3 + 20 x 2 / 3 = 74.2 KNm

Ultimate BM = 74.2 x say 1.5 = 111.4 KNm

Try 325mm thick RC wall and base

d = 325 - 35 cover - 6 = 284mm
Concrete 35N strength

M / b d2 Fcu = 111.4 e6 / (e3 x 284Sq x 35) = 0.04

Mf = 0.94

Ast = 111.4 e6 / 0.87 x 500 x 0.94 x 284 = 959 mm2

Try H12 @ 100 ctrs on each face (Ast = 1130 mm2 / m)

Allowable height of wall
Basic Height / depth = 7

Mf for Tension steel stress = 1.33 Mf compression reinft = 1.12

Allowable cantilever height = 7 x 1.33 x 1.12 x 284 = 2961 mm

OK

Distribution reinforcement - H12 @ 200 ctrs
Vertical reinforcement - H12 @ 100 ctrs

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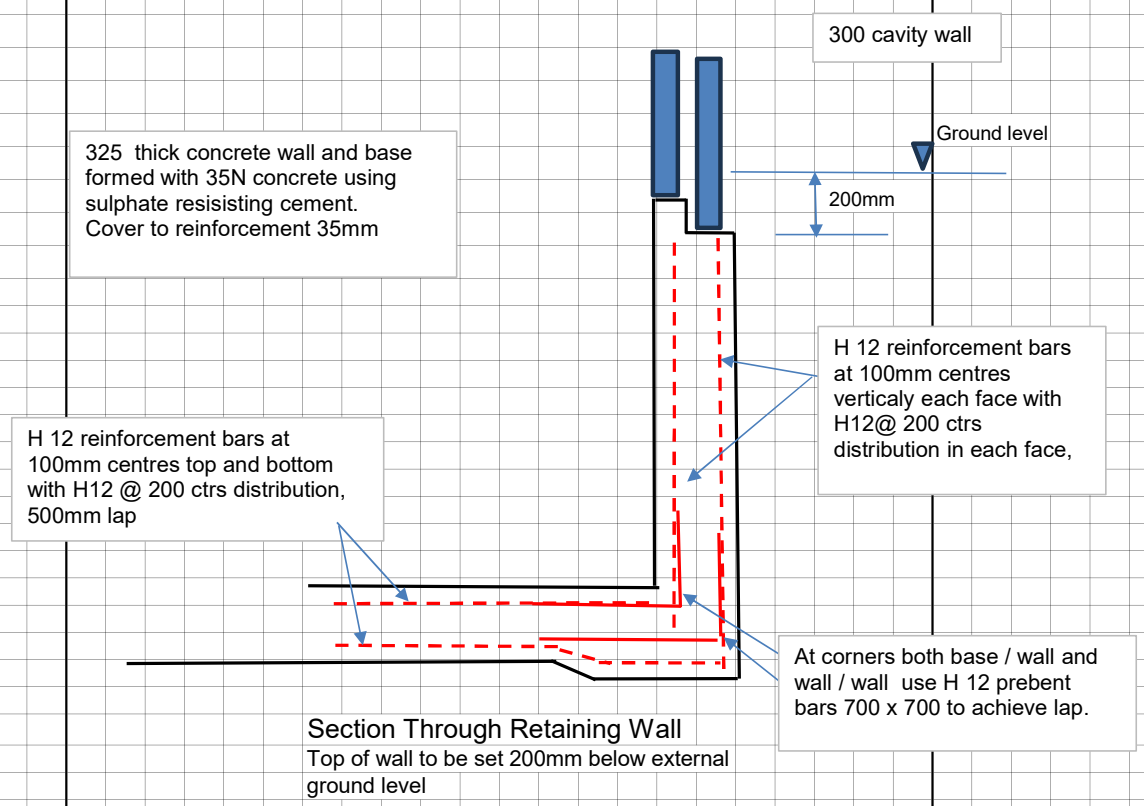
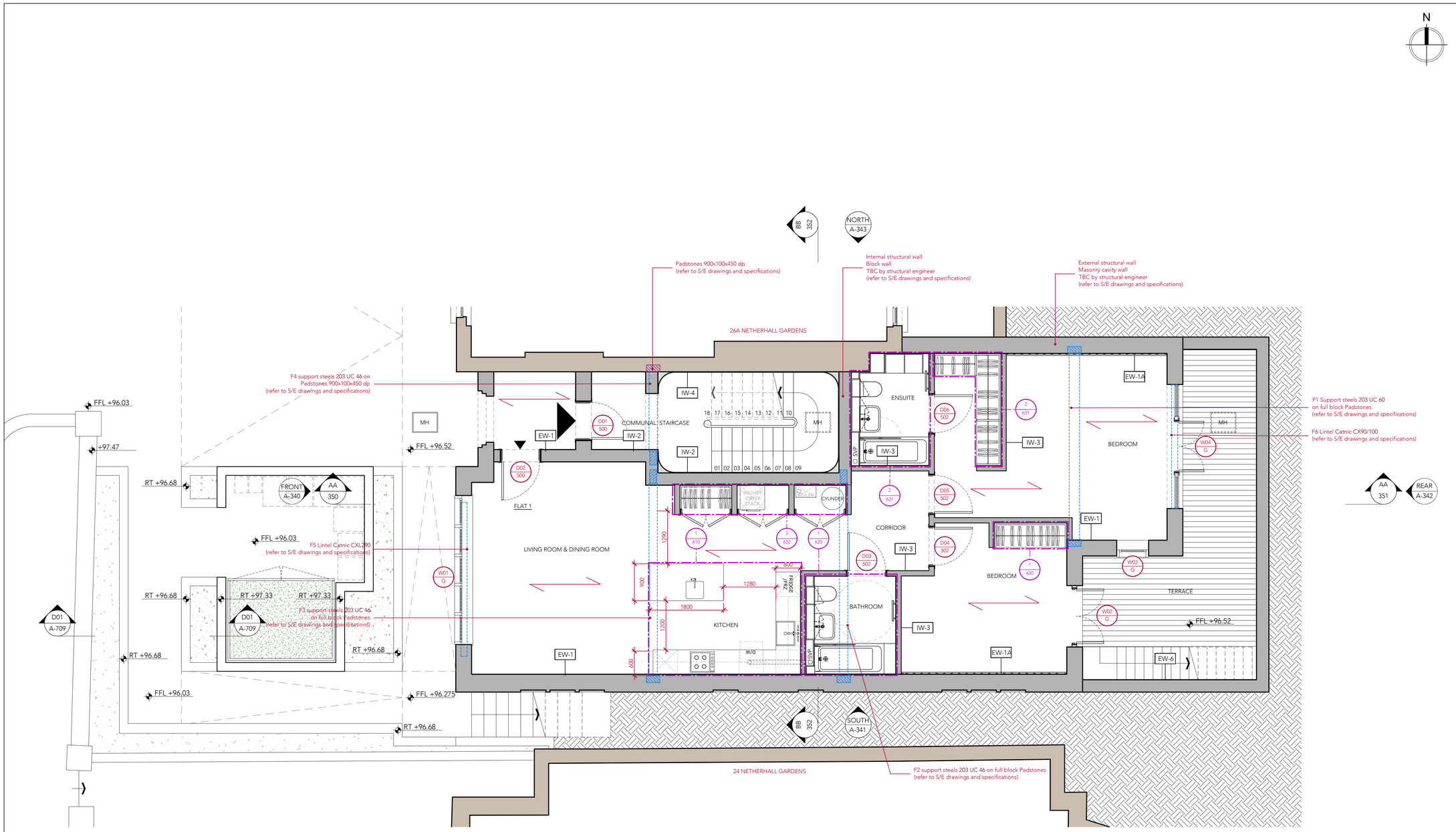


Section Through Retaining Wall

Top of wall to be set 200mm below external ground level

Perimeter of ground floor slab to be thickened to form a 600mm wide x 450mm deep section notched for cavity wall.

Other Reference Drawings and Supporting Documents



LEGEND	
SYMBOL	DESCRIPTION
B	BOILER
C	WATER CYLINDER
EW-X	EXTERNAL WALL TYPE
IW-X	INTERNAL WALL TYPE
-·-·-	METALLIC BEAMS STRUCTURE
	DIRECTION OF JOISTS ABOVE

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Notes

No Rev		Date
B	INFORMATION	10.04.2024
A	INFORMATION	05.12.2023
-	INFORMATION	30.11.2023

Status INFORMATION

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ARCHITECTS + INTERIOR DESIGNERS

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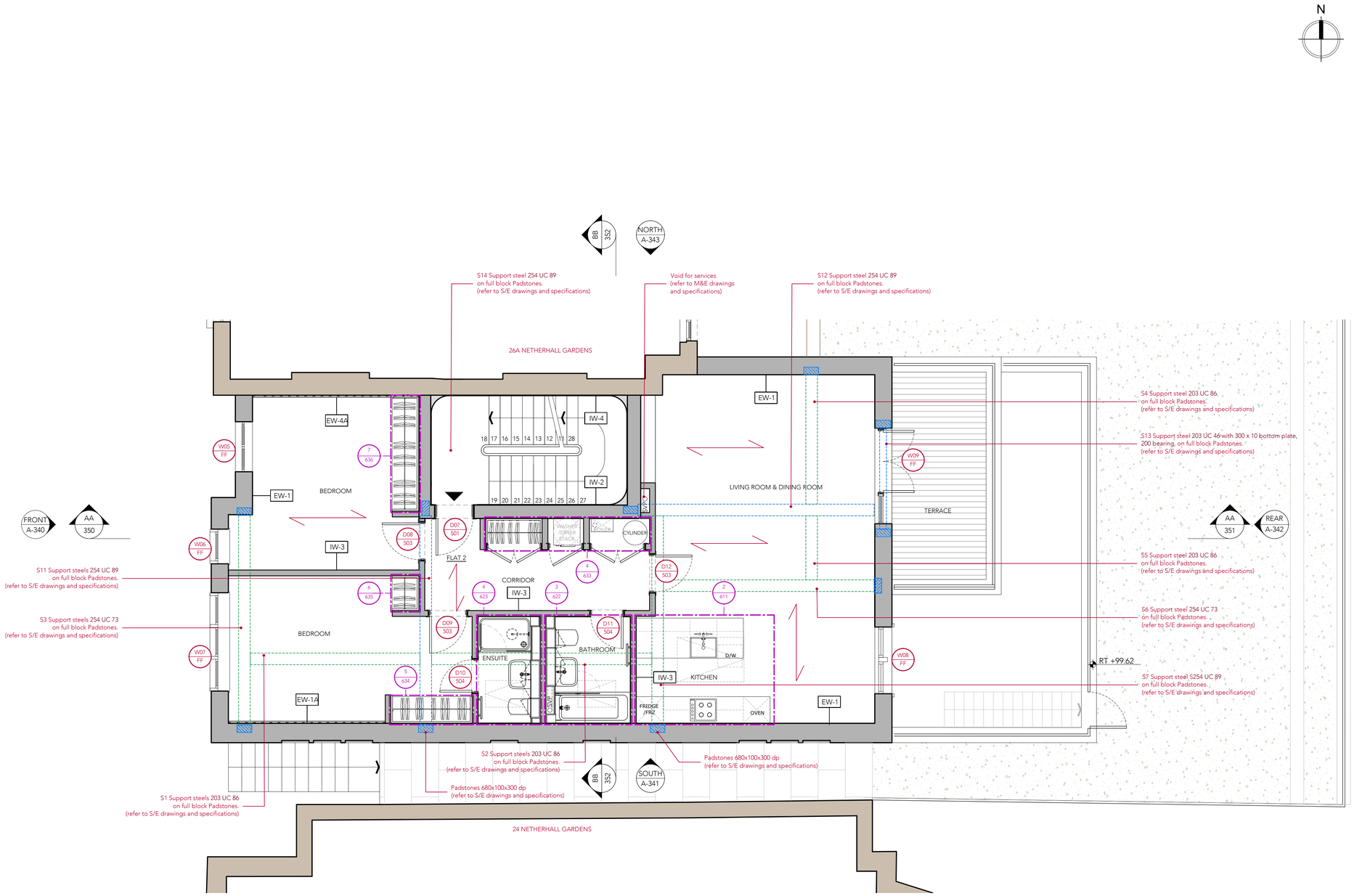
Project	26 NETHERHALL GARDEN NW3 5TL		
Date	05.12.2023	Scale @ A1	1:50
Drawing	GENERAL ARRANGMENT GROUND FLOOR		
Drawn by	RV	Checked by	TG
Job No.	263	Dwg No. A-300	Rev B



LEGEND	
SYMBOL	DESCRIPTION
B	BOILER
C	WATER CYLINDER
EW-X	EXTERNAL WALL TYPE
IW-X	INTERNAL WALL TYPE
	METALLIC BEAMS STRUCTURE
	DIRECTION OF JOISTS ABOVE

0 1m 5m

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Notes

No Rev		Date
A	INFORMATION	10.04.2024
-	INFORMATION	30.11.23

Status INFORMATION

TG STUDIO
ARCHITECTS + INTERIOR DESIGNERS

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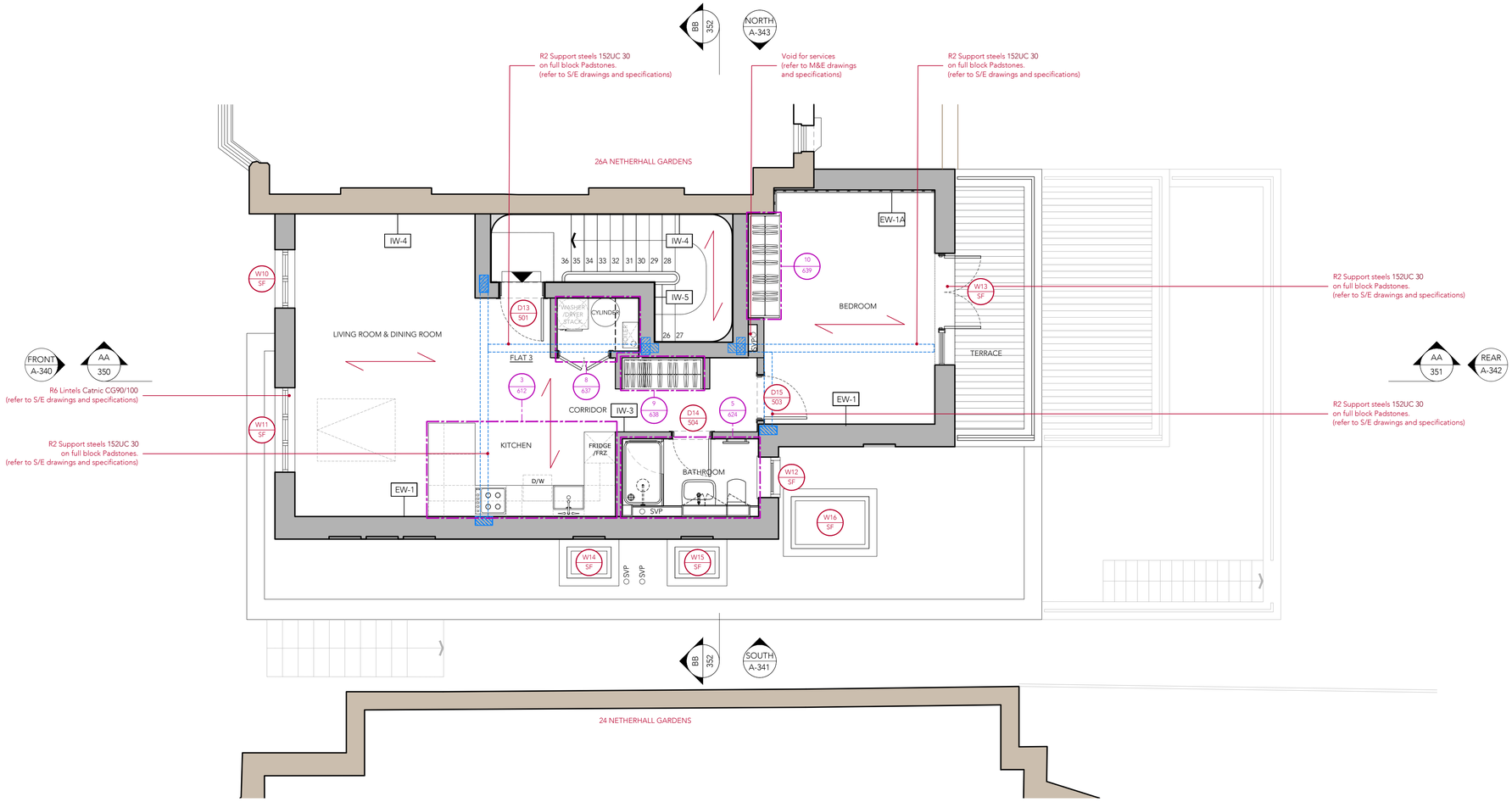
Project	26 NETHERHALL GARDEN NW3 5TL				
Date	30.11.2023	Scale @ A1	1:50		
Drawing	GENERAL ARRANGMENT FIRST FLOOR				
Drawn by	RV	Checked by	TG		
Job No.	263	Dwg No.	A-301	Rev	A



LEGEND	
SYMBOL	DESCRIPTION
B	BOILER
C	WATER CYLINDER
EW-X	EXTERNAL WALL TYPE
IW-X	INTERNAL WALL TYPE
	METALLIC BEAMS STRUCTURE
	DIRECTION OF JOISTS ABOVE

0 1m 5m

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No Rev		Date
A	INFORMATION	10.04.2024
-	INFORMATION	30.11.23

Status INFORMATION

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ARCHITECTS + INTERIOR DESIGNERS

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Tel 020 7636 3838

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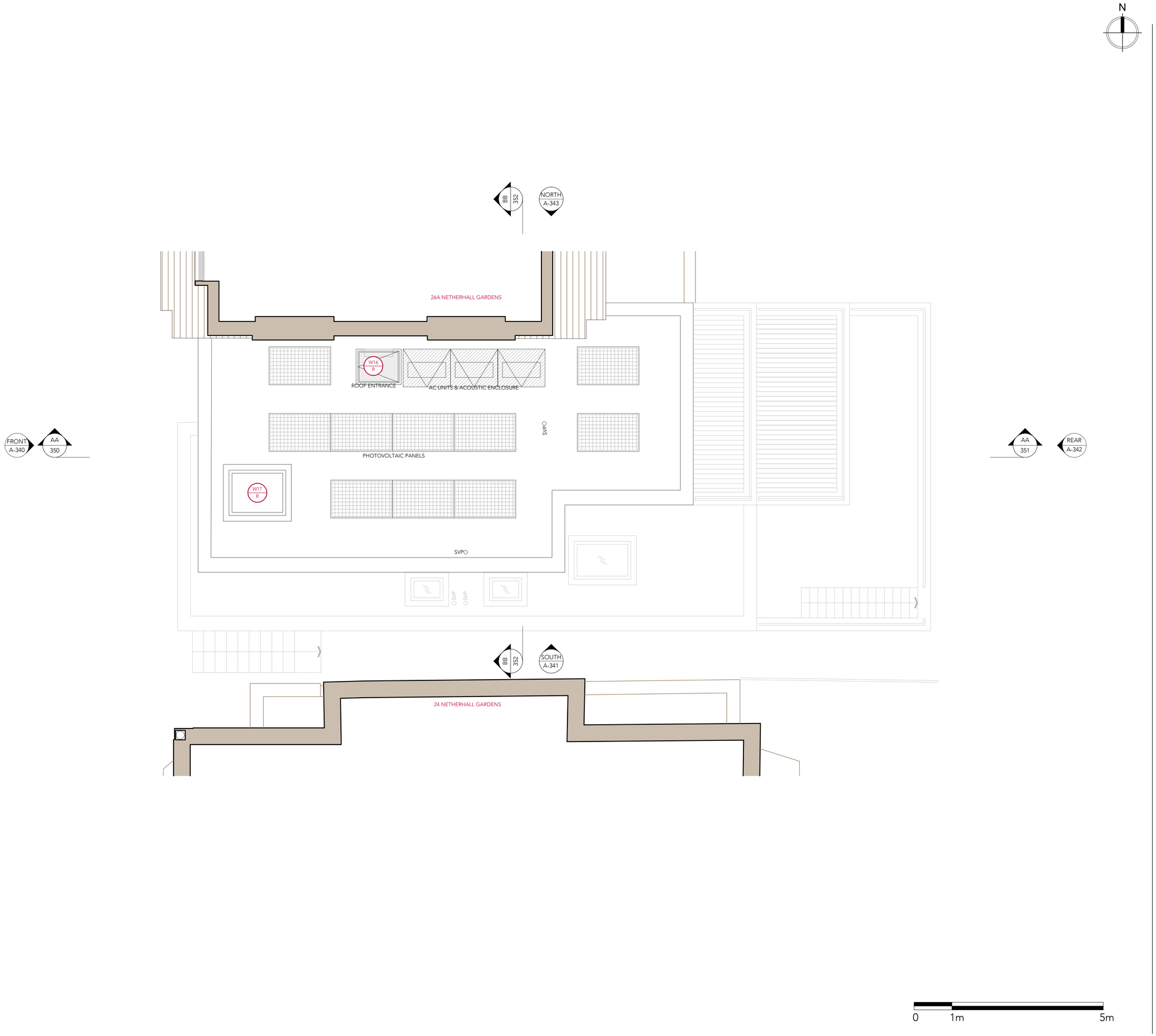
Project	26 NETHERHALL GARDEN NW3 5TL		
Date	30.11.2023	Scale @ A1	1:50
Drawing	GENERAL ARRANGMENT SECOND FLOOR		
Drawn by	RV	Checked by	TG
Job No.	263	Dwg No. A-302	Rev A



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Notes

No Rev		Date
A	INFORMATION	10.04.2024
-	INFORMATION	30.11.23

Status INFORMATION

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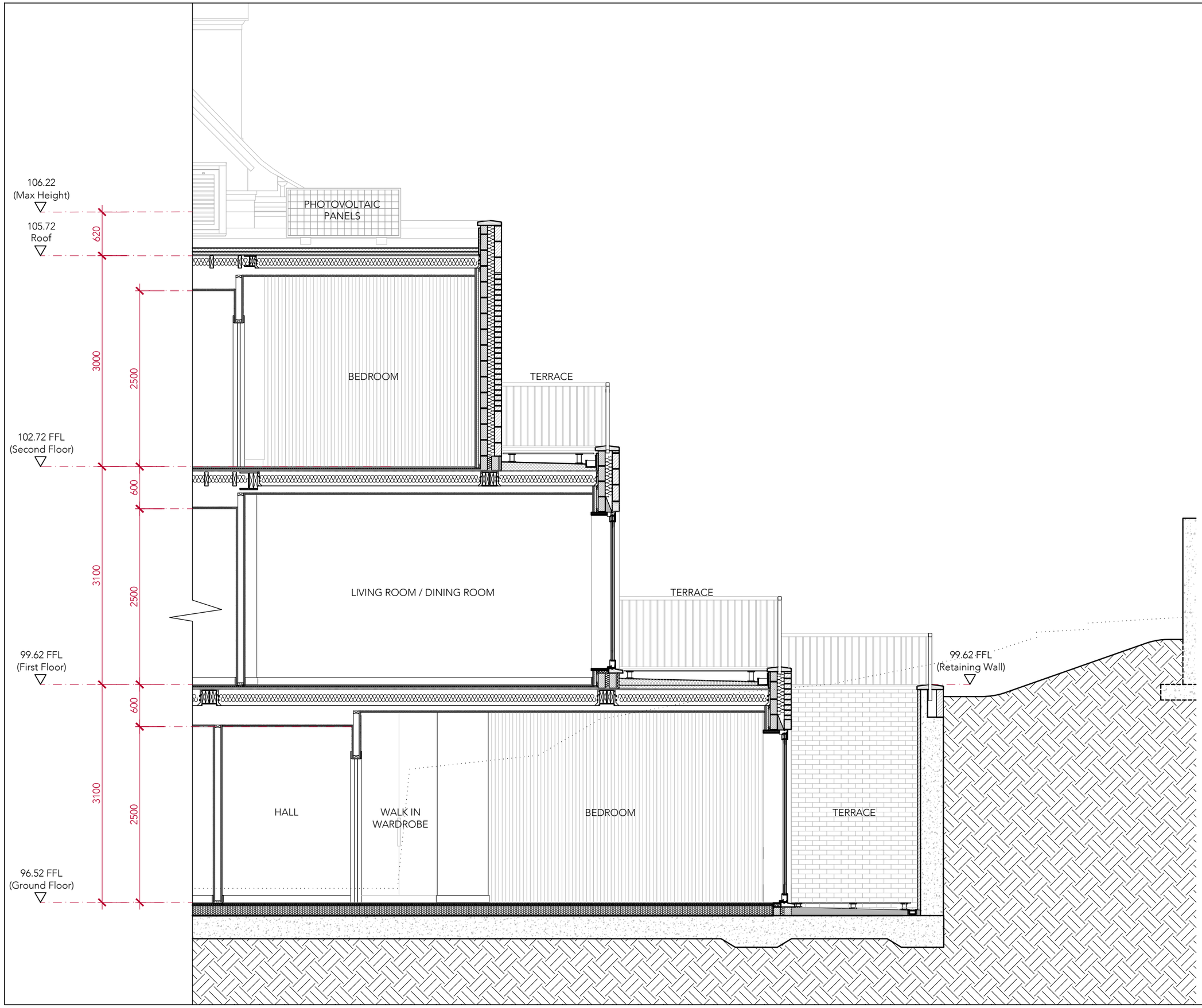
Project	26 NETHERHALL GARDEN NW3 5TL		
Date	30.11.2023	Scale @ A1	1:50
Drawing	GENERAL ARRANGMENT ROOF PLAN		
Drawn by	RV	Checked by	TG
Job No.	263	Dwg No. A-303	Rev A



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Notes

No	Rev		Date
	A	INFORMATION	09.04.2024
	-	INFORMATION	30.11.2023

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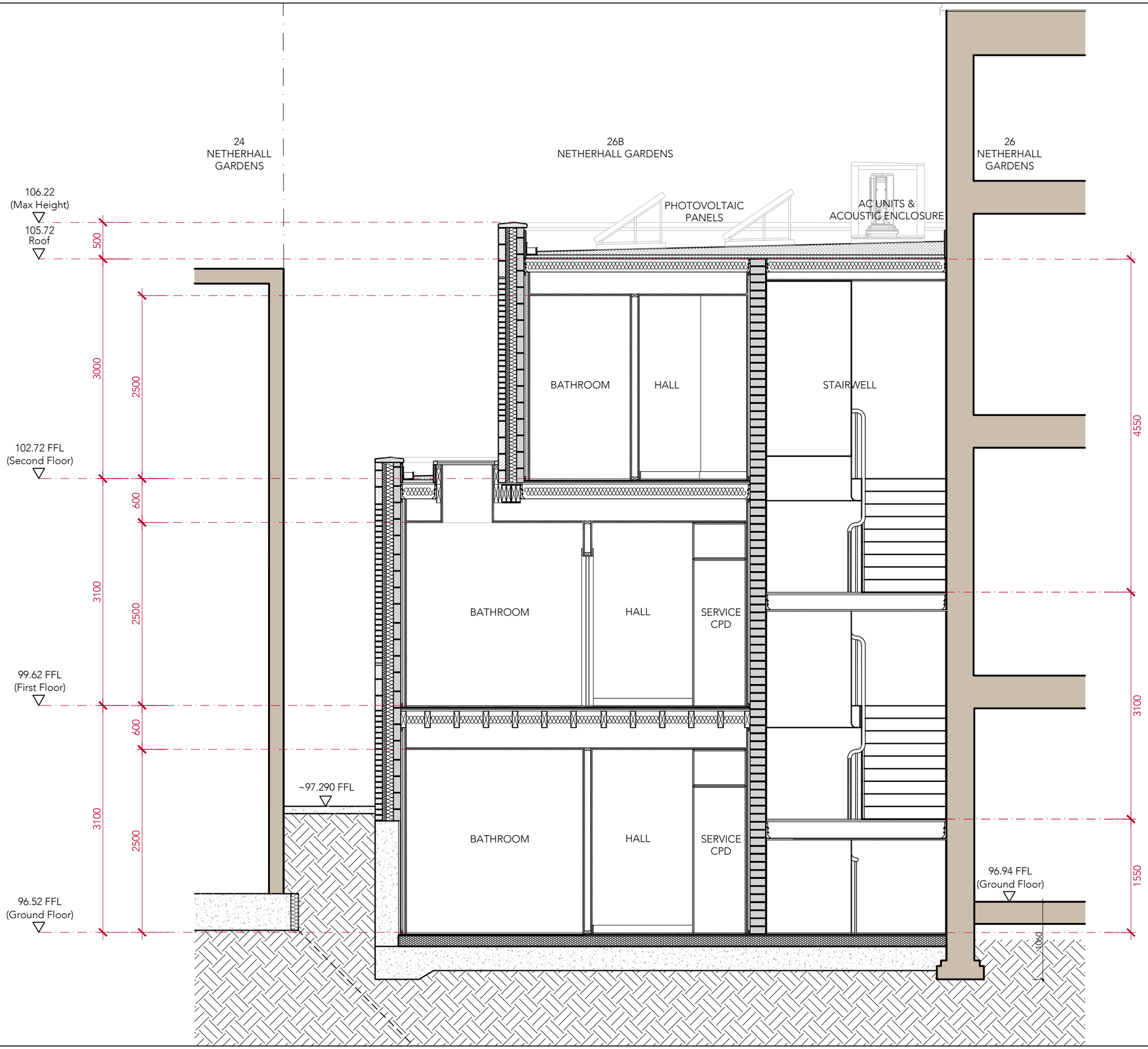
Project: 26B NETHERHALL GARDENS NW3 5TL

Date: 30.11.2023 | Scale @ A3: 1:50

Drawing: PROPOSED SECTION A-A (REAR)

Drawn by: RV | Checked by: TG

Job No.: 263 | Drwg No.: A-351 | Rev: A



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Notes

No	Rev		Date
	B	INFORMATION	09.04.2024
	A	INFORMATION	04.08.2023
	-	INFORMATION	30.11.2023

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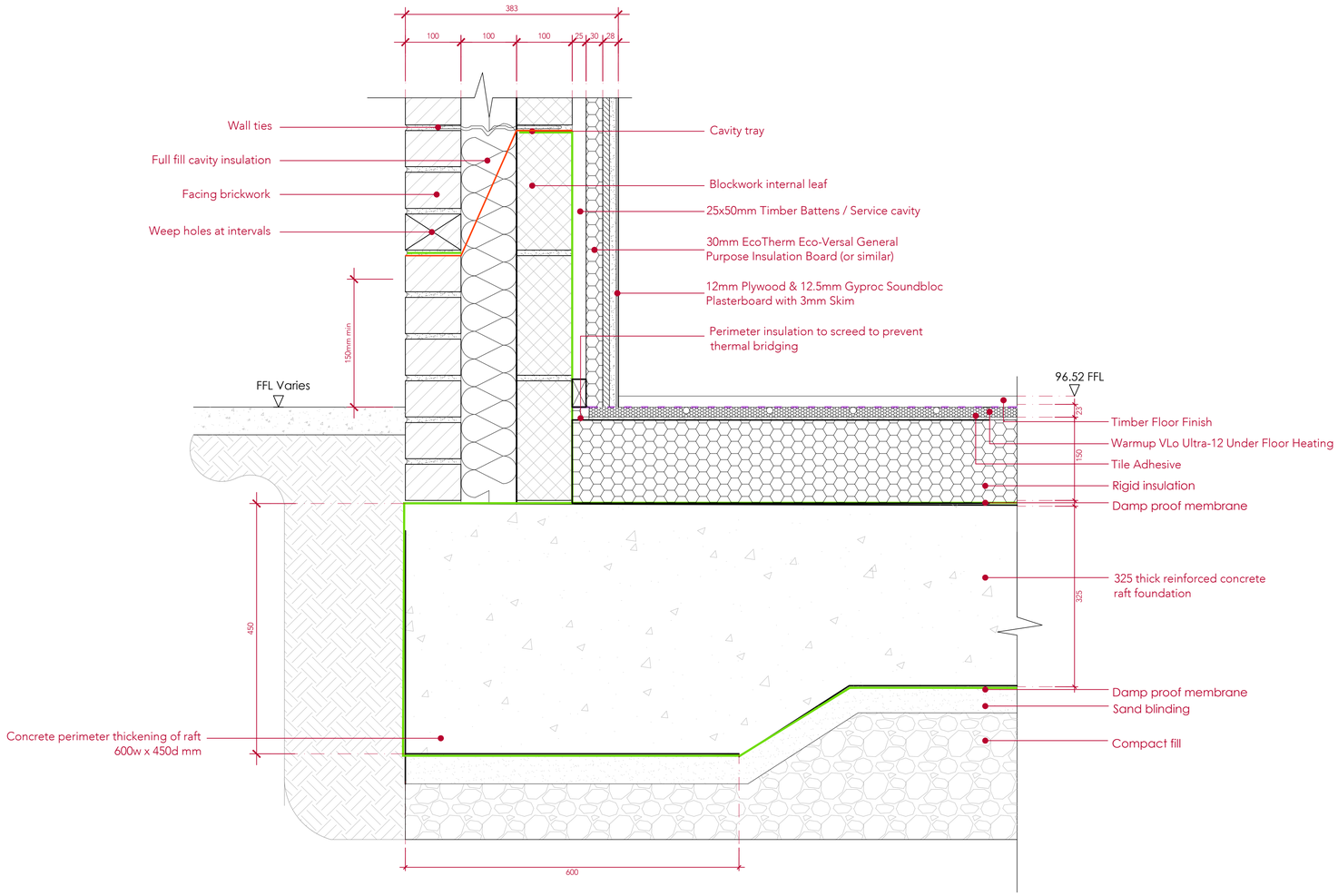
Project: 26 NETHERHALL GARDENS NW3 5TL

Date: 04.08.2023 | Scale @ A3: 1:50

Drawing: PROPOSED SECTION B-B

Drawn by: RV | Checked by: TG

Job No.: 263 | Dwg No.: A-352 | Rev: B



1 FRONT FOUNDATION DETAIL
scale 1:5

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A		INFORMATION	10.04.2024
-		INFORMATION	30.11.2023

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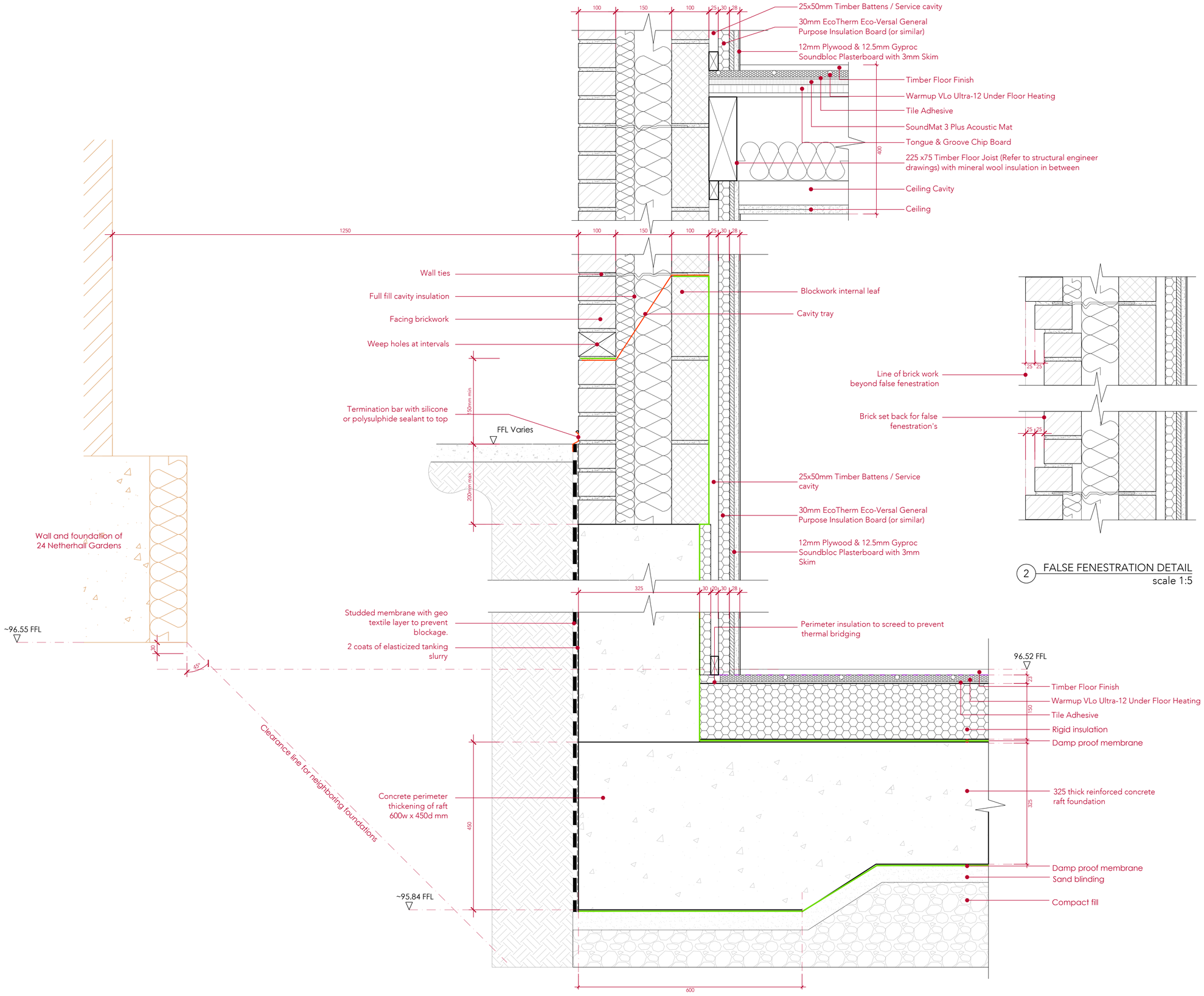
Project: 26 NETHERHALL GARDENS NW3 5TL

Date: 30.11.2023 | Scale @ A1: 1:5

Drawing: DETAIL DRAWINGS CONSTRUCTION DETAILS

Drawn by: RV | Checked by: TG

Job No.: 263 | Dwg No.: A-700 | Rev: A



2 FALSE FENESTRATION DETAIL
scale 1:5

1 SIDE FOUNDATION DETAIL & CLEARANCE TO NEIGHBORING FOUNDATION
scale 1:5

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Notes

No Rev		Date
B	INFORMATION	10.04.2024
A	INFORMATION	05.12.2023
-	INFORMATION	30.11.2023

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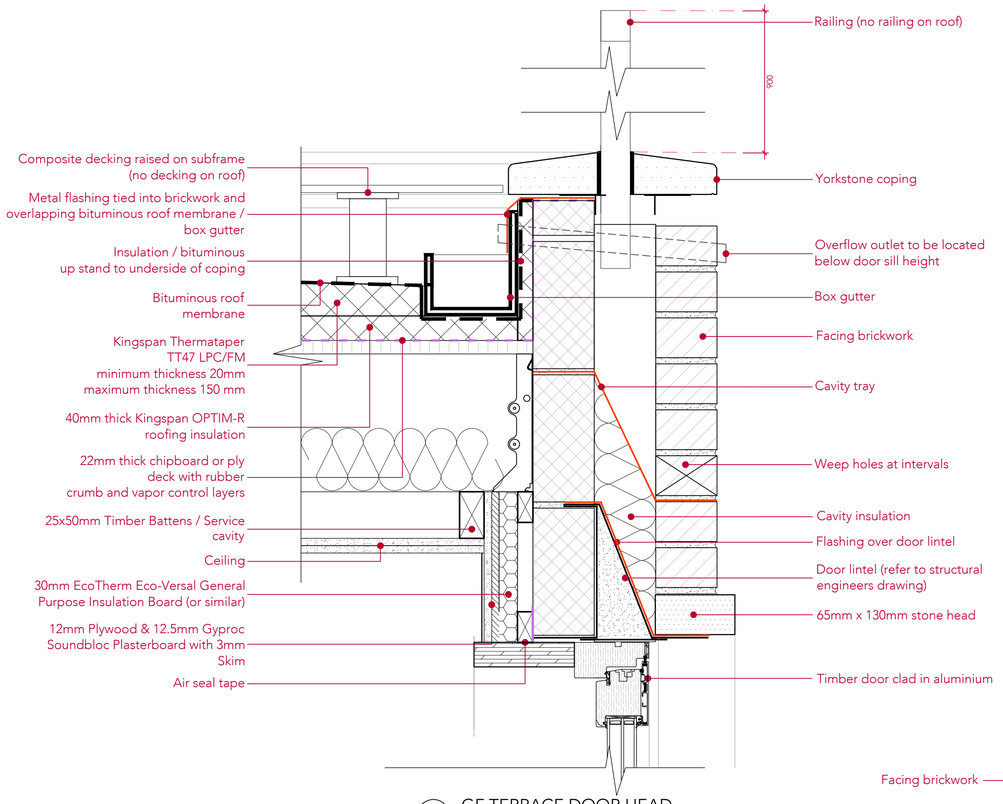
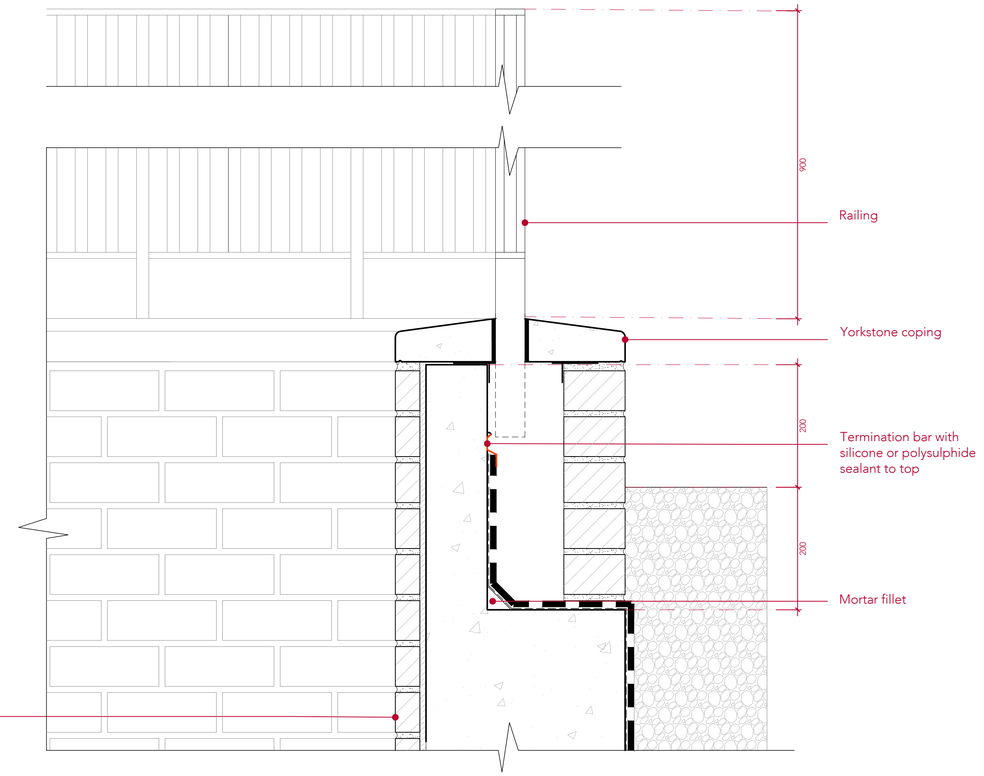
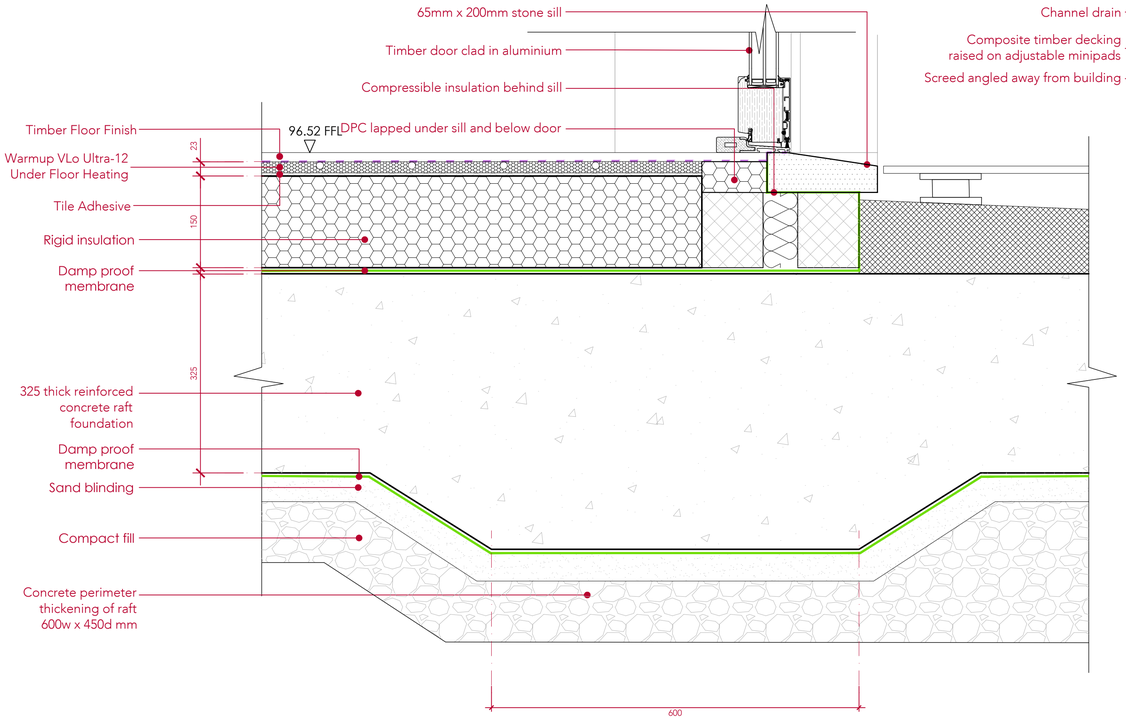
Project	26 NETHERHALL GARDENS NW3 5TL		
Date	05.12.2023	Scale @ A1	1:5
Drawing	DETAIL DRAWINGS CONSTRUCTION DETAILS		
Drawn by	RV	Checked by	TG
Job No.	263	Dwg No.	A-701
Rev	B		

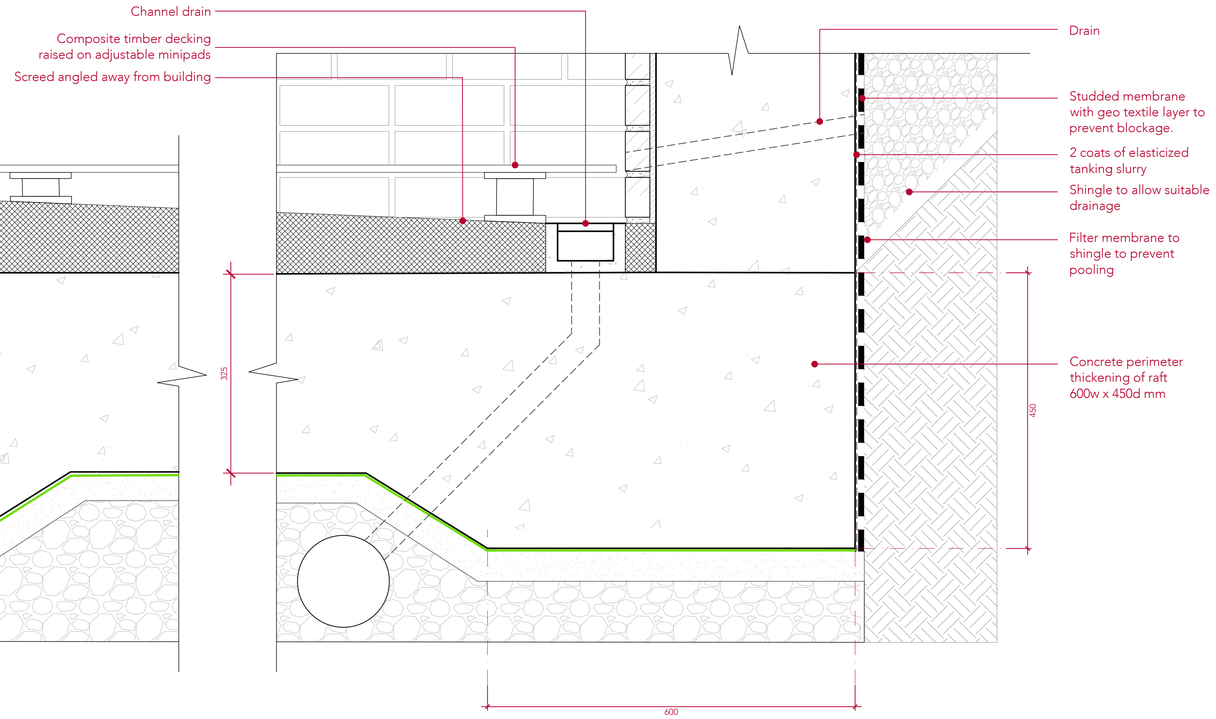


1 GF TERRACE DOOR HEAD
scale 1:5





2 PATIO DOOR SILL
scale 1:5



3 PATIO RETAINING WALL DETAIL
scale 1:5

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B	INFORMATION	10.04.2024
A	INFORMATION	05.12.2023
-	INFORMATION	30.11.2023

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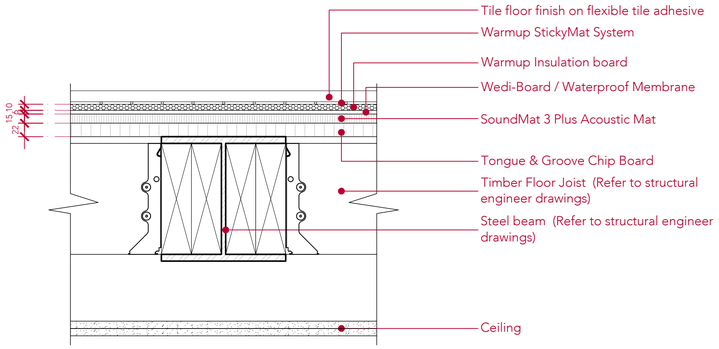
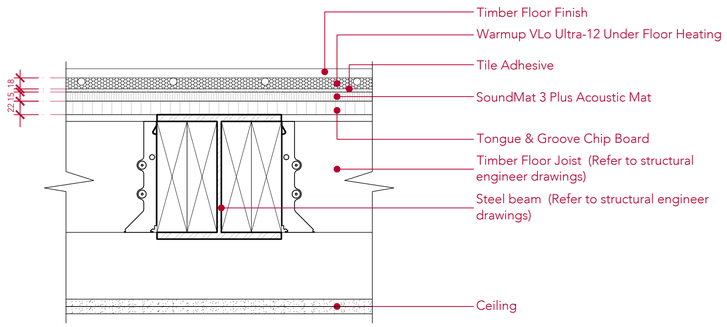
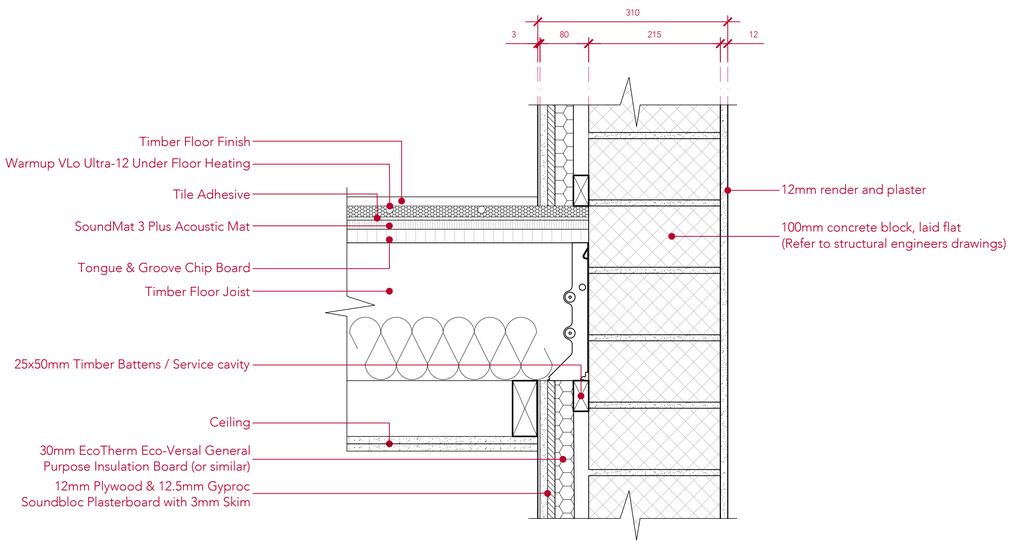
Project	26 NETHERHALL GARDENS NW3 5TL		
Date	05.12.2023	Scale @ A1	1:5
Drawing	DETAIL DRAWINGS CONSTRUCTION DETAILS		
Drawn by	RV	Checked by	TG
Job No.	263	Dwg No. A-702	Rev B



1 TILE FLOOR BUILD UP
scale 1:5



2 TIMBER FLOOR BUILD UP
scale 1:5



3 STAIR WALL BUILD UP
scale 1:5

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Project	26 NETHERHALL GARDENS NW3 5TL		
Date	30.11.2023	Scale @ A1	1:5
Drawing	DETAIL DRAWINGS CONSTRUCTION DETAILS BALUSTRADES		
Drawn by	RV	Checked by	TG
Job No.	263	Dwg No. A-707	Rev A