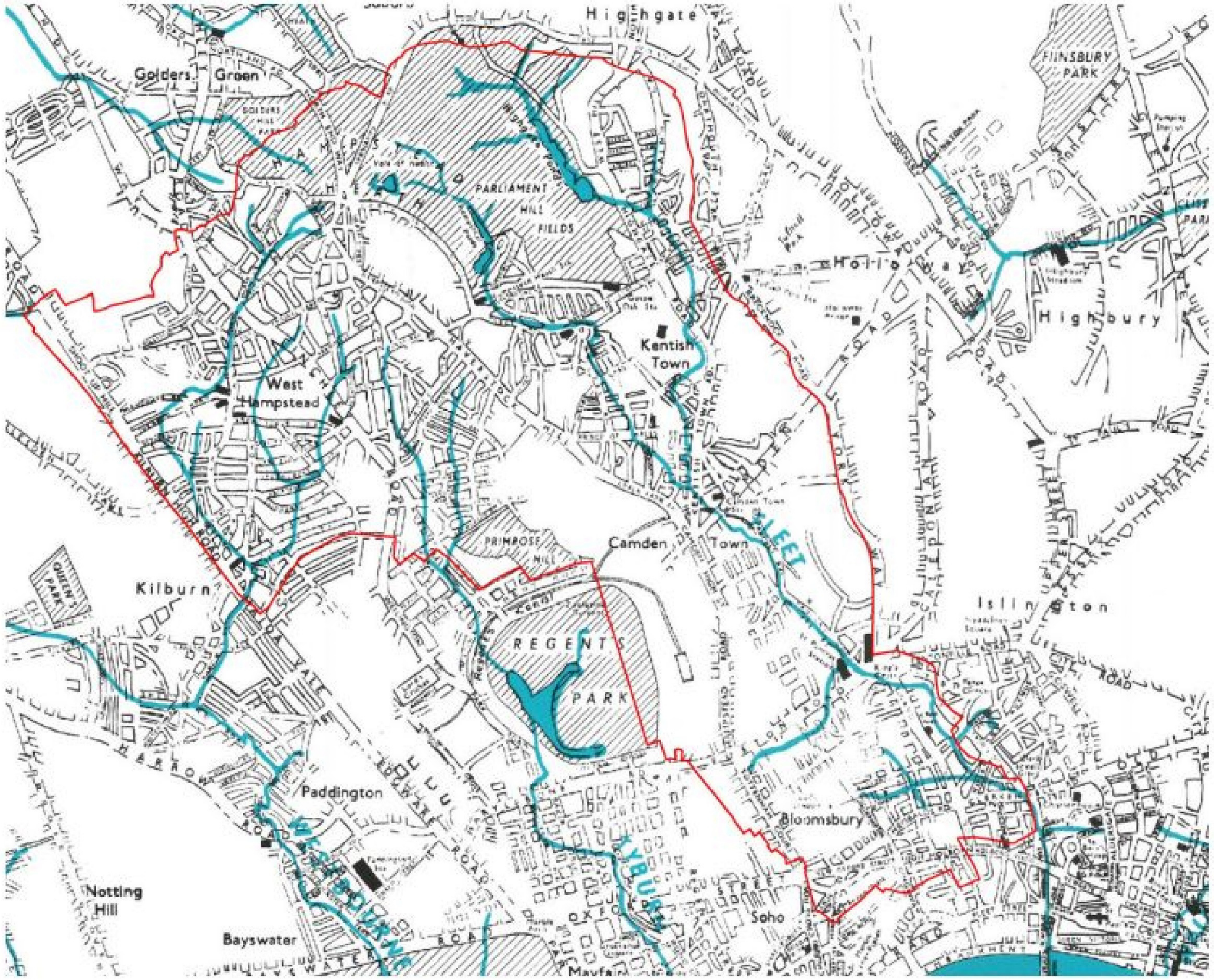
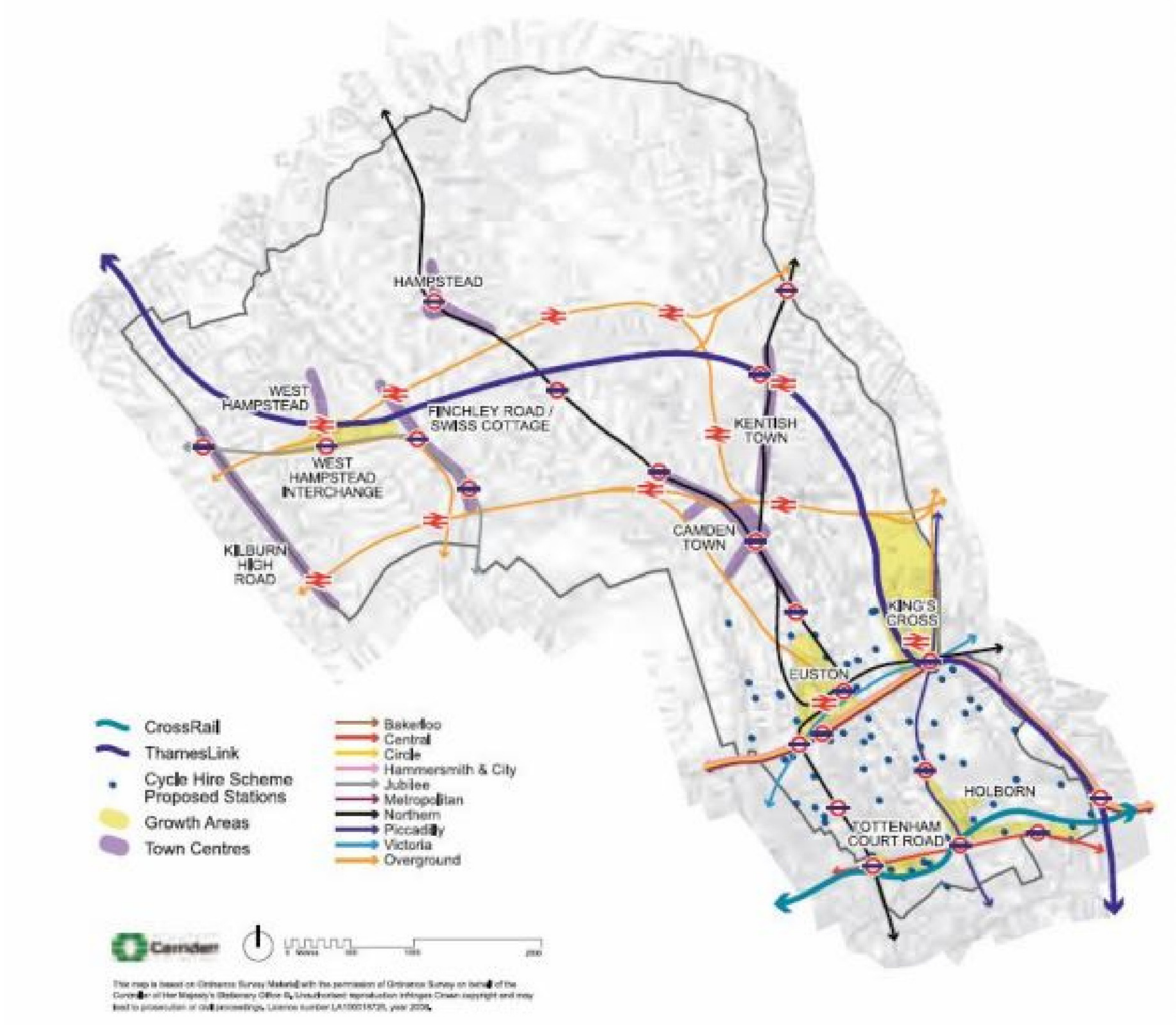


Source – Barton, Lost Rivers of London

Camden Geological, Hydrogeological and Hydrological Study
Watercourses

213923

FIGURE **11**



Source - London Borough of Camden, January 2010. *Camden Core Strategy Proposed Submission.*

Camden Geological, Hydrogeological and Hydrological Study
Transport Infrastructure

213923 **FIGURE 18**

TZG PARTNERSHIP
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APPENDIX II

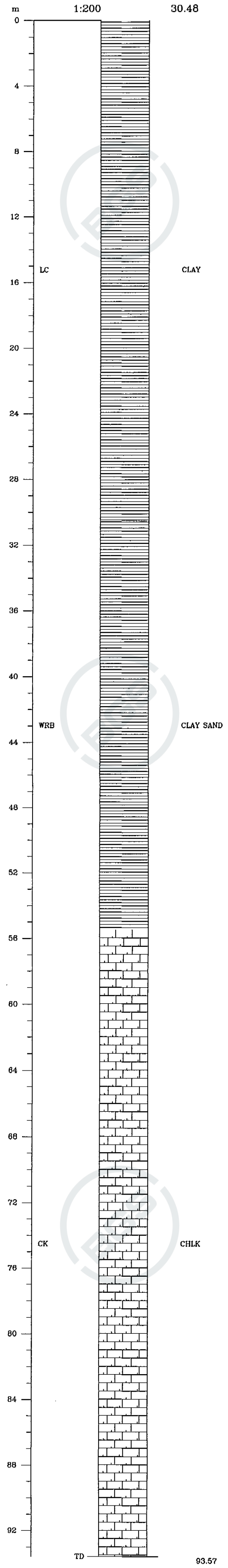
British Geological Survey – Borehole Log

13 TQ28SE 13

N-GRUMBLE & CO DISTILLARY

Grid Reference: 28849 82850

Scale: 1:200 Ordnance Datum: 30.48



GEOLOGICAL SURVEY OF GREAT BRITAIN

RECORD OF SHAFT OR BORE FOR MINERALS

(For Survey use only)

6-inch Map Registered No. TQ28SE/13

Name of Shaft or Bore given by Geological Survey:

Name and Number given by owner: Grumble and Co.s distillery, Albany Street

Nat. Grid Reference 28849 82850

For whom made

Town or Village St Pancras County London.

Exact site (Attach a tracing from a map, or a sketch-map, if possible.)

1" N.S.Map No.	1" O.S.Map No.	Confidential or not
256		

Purpose for which made Water

Ground Level at shaft/bore relative to O.D. If not ground level give O.D. of beginning of shaft/bore

Made by Date of sinking

Information from Date received

Examined by

SPECIMEN NUMBERS AND ADDITIONAL NOTES

(For Survey use only) Geological Classification	Description of Strata	Thickness Ft.	Thickness In.	Depth Ft.	Depth In.
	London Memoir II p 79 full (1889)			307	93.57 m

ALBANY STREET. (E. of Regent's Park.) Grimble and Co.'s Distillery.

MYLNE'S "*Sections of the London Strata.*"

About 100 feet above Ordnance Datum. (30.48)

	Thickness.	Depth.
London Clay	(30.48) 100	100 (30.48)
Reading and Thanet Beds	(24.99) 82	182 (55.47)
Chalk	(38.10) 125	307 (93.57)

(5412) Wt.32837/PS.154 2m 10/64 G.W.B.Ltd. Gp.863

256/400

G TQ 28/60
8

R 8.

NGR TQ. 288 828

William Stewart & Co. Ltd. Elec. Engin.

Site visited 12th July 1946.
No actual knowledge of well.
But building put up in 1818.
All buildings in this area to
be demolished under new Euston
Scheme.

R. July 1946.

Ref L.M. p. 79.

not in Kelly's Directory or 'phone directory. Dec. 1964

ALBANY STREET. (E. of Regent's Park.) Grimble and Co.'s Distillery.

MYLNE'S "*Sections of the London Strata.*"

About 100 feet above Ordnance Datum.

	Thickness	Depth
London Clay	100	100
Reading and Thanet Beds	82	182
Chalk	125	307

256/400
TQ28/60

		ft.	ins.
256/400	London Clay	100	0
	Woolwich + Reading Beds	82	0
	Thanet Sand		
	Upper Chalk	125	0

Sewstation 1976

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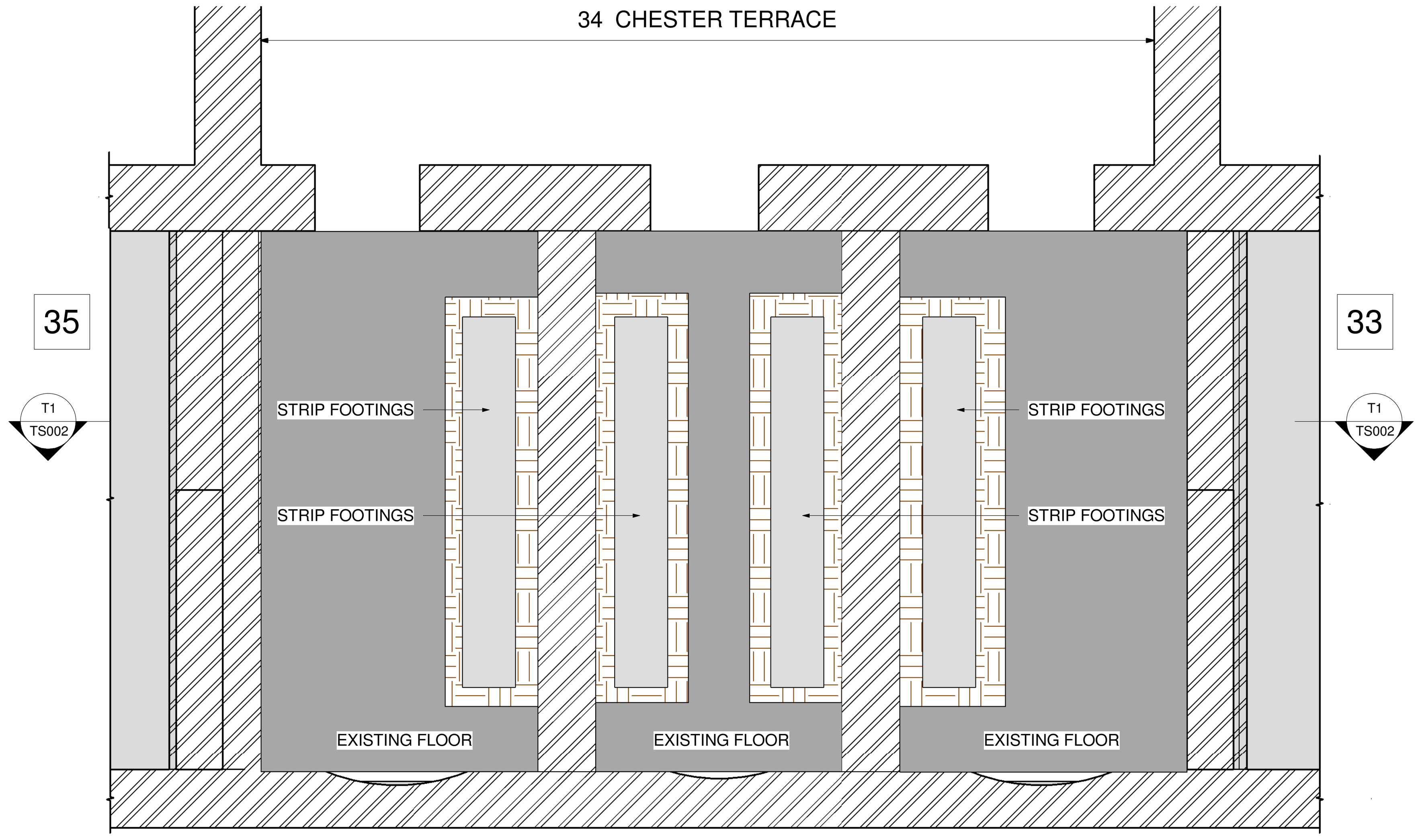
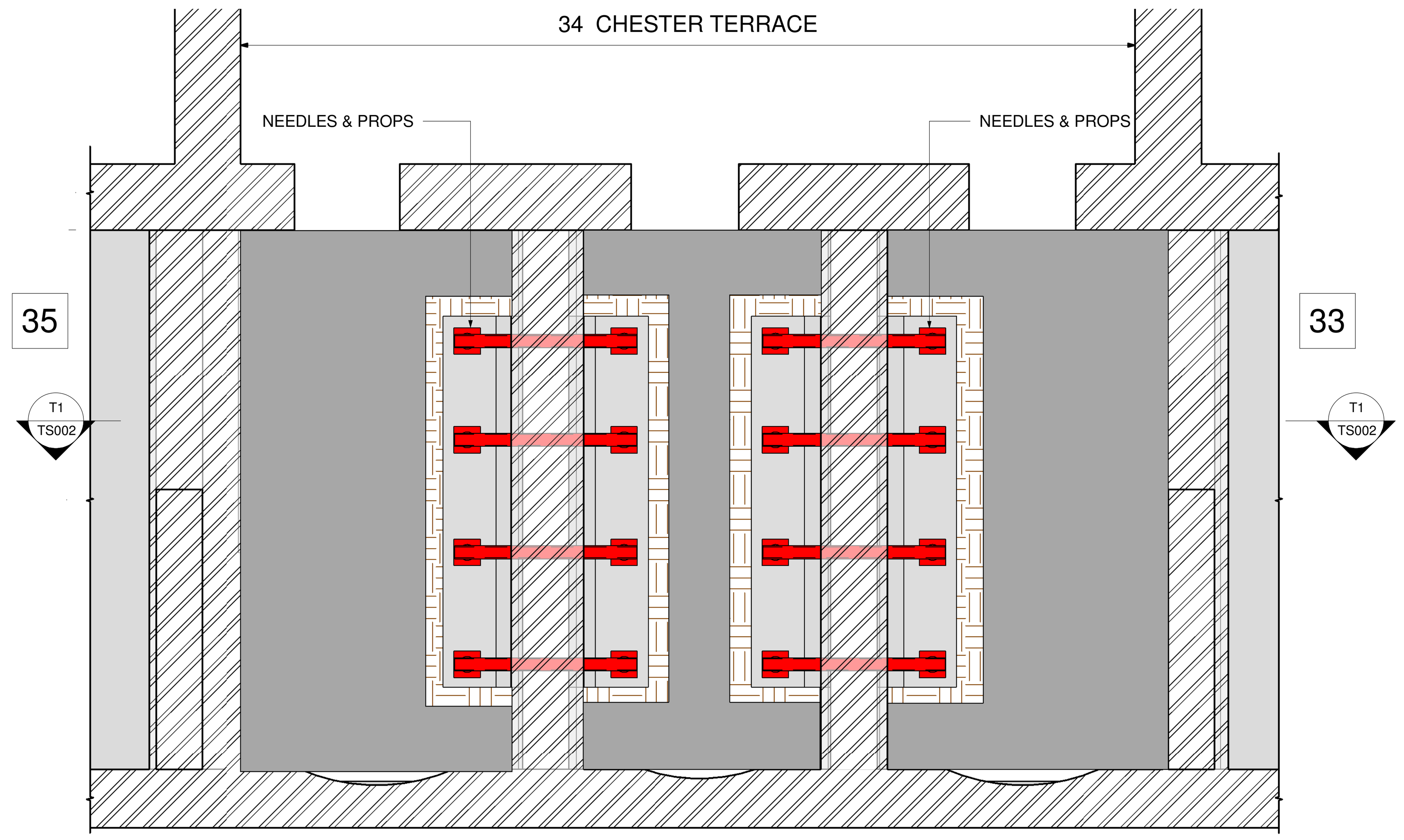
APPENDIX III

Construction Sequence TS001_A, TS002_A



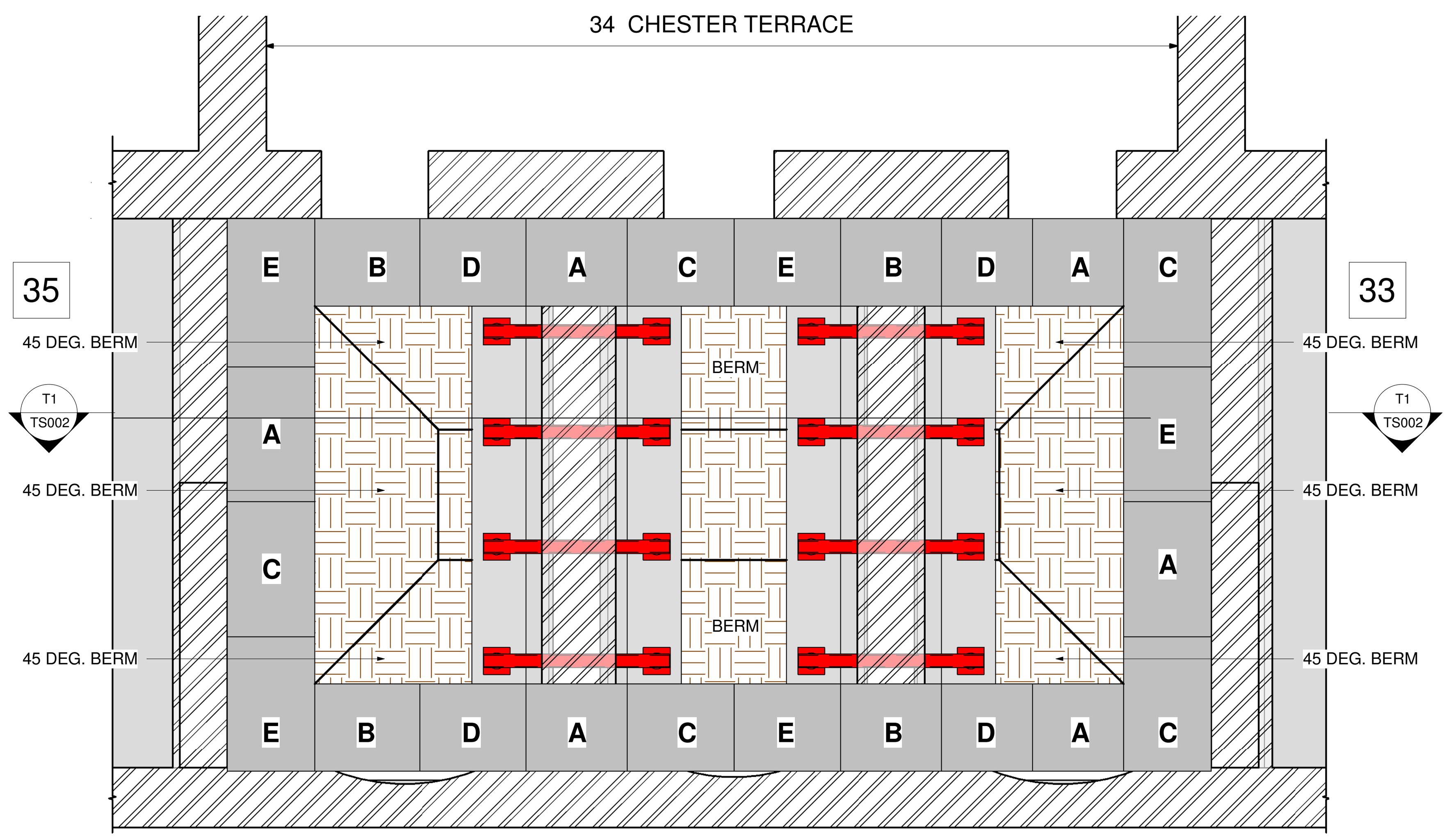
STAGE 1

1. REMOVE EXISTING SLAB TO ALLOW FOR TEMPORARY STRIP FOOTING
2. ALLOW FOR SHORING AND STRUTING.
3. CAST STRIP FOOTING AT PROPOSED SLAB LEVEL FOR PROP SUPPORT



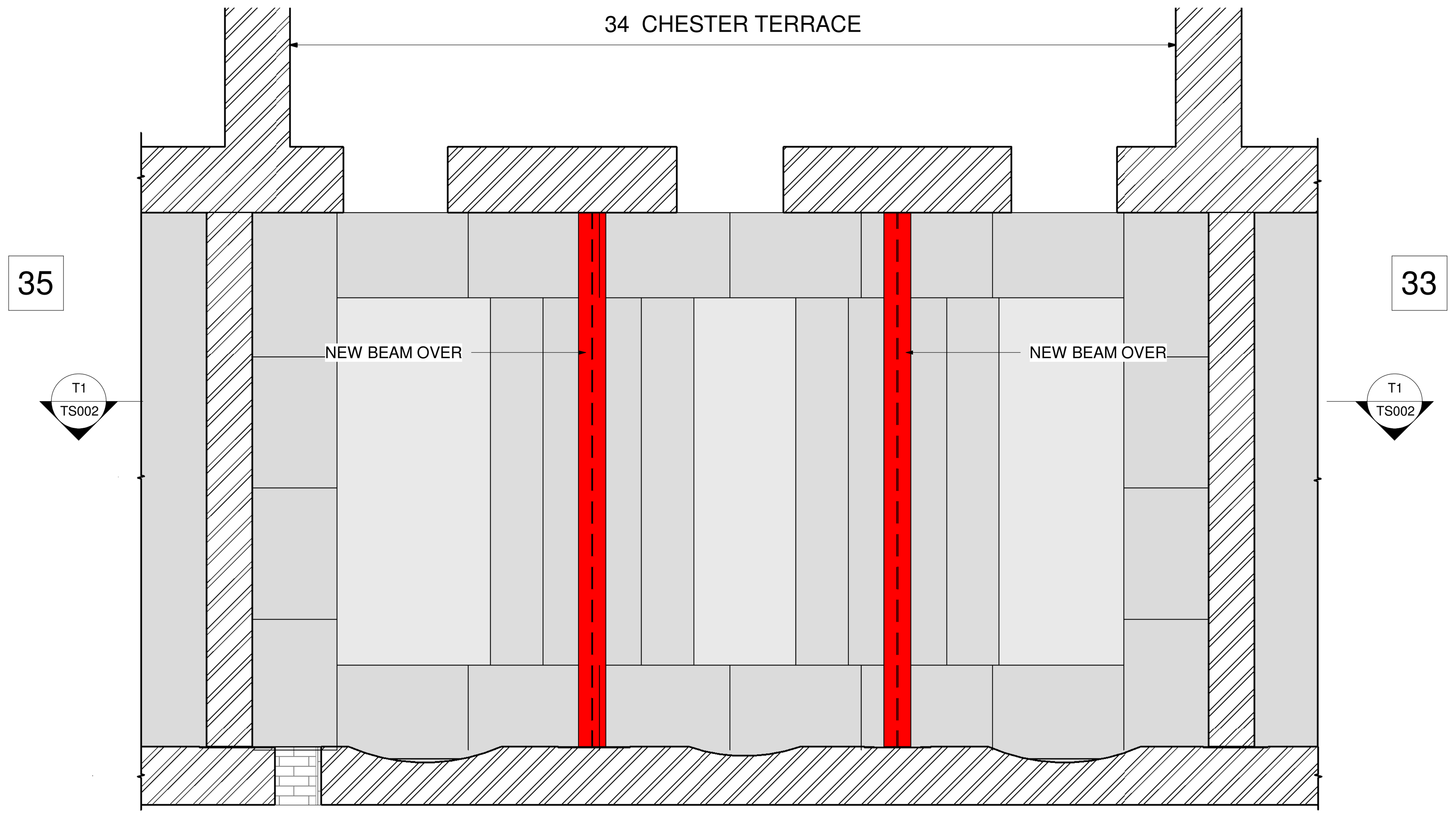
STAGE 2

1. INSTALL NEEDLES THROUGH EXISTING WALLS TO BE REMOVED
2. INSTALL PROPS.
3. REMOVE INTERNAL WALLS TO ARCHITECTUAL SPECIFICATION.



STAGE 3

1. DIG PINS WHERE PROPOSED COLUMNS ARE TO BE INSTALLED.
2. INSTALL PERMANENT STEEL BOXED FRAME (BEAMS AND COLUMNS).
3. REMOVE PROPS WHEN STEEL FRAME IS IN FINAL POSITION.



STAGE 4

1. EXCAVATE TO BASEMENT LEVEL WITH 45 DEG. BERMS ALL ROUND.
2. UNDERPIN EXISTING WALLS AND CAST TOES IN MAX.1m SECTIONS FOLLOWING CADBE SEQUENCE AS SHOWN.
3. CAST REMAINING SLAB CONNECTING TO TOES, STRIP FOOTINGS AND GROUND BEAMS.

SCALE 1:50

SCALE 1:100

PRELIMINARY

NOTES

1. IT IS RECOMMENDED THAT NO WORK IS CARRIED OUT UNTIL BUILDING REGULATIONS APPROVAL HAS BEEN OBTAINED.
2. IT IS ESSENTIAL THAT TZG ARE NOTIFIED OF ANY DISCREPANCIES OR SUBSEQUENT CHANGES PRIOR TO THEM BEING IMPLEMENTED.
3. DO NOT SCALE FROM THIS DRAWING.
4. THIS DRG IS TO BE READ IN CONJUNCTION WITH THE SPECIFICATION AND ARCHITECTS DRAWINGS.
5. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
6. A CONTRACTOR USED TO WORKING WITH THE MATERIALS SHOWN ON THIS DRAWING SHOULD FIND NO UNEXPECTED HAZARDS. ANY ADDITIONAL RISKS ARE NOTED ON THE DRAWING.

REV.	DATE	DESCRIPTION
A	06.10.23	DRAWING UPDATED AS SHOWN CLOUDED.

CLIENT: ANTONIO SIMEOS

CONTRACT: 34 CHESTER TERRACE,

TITLE: TEMPORARY WORKS STAGES

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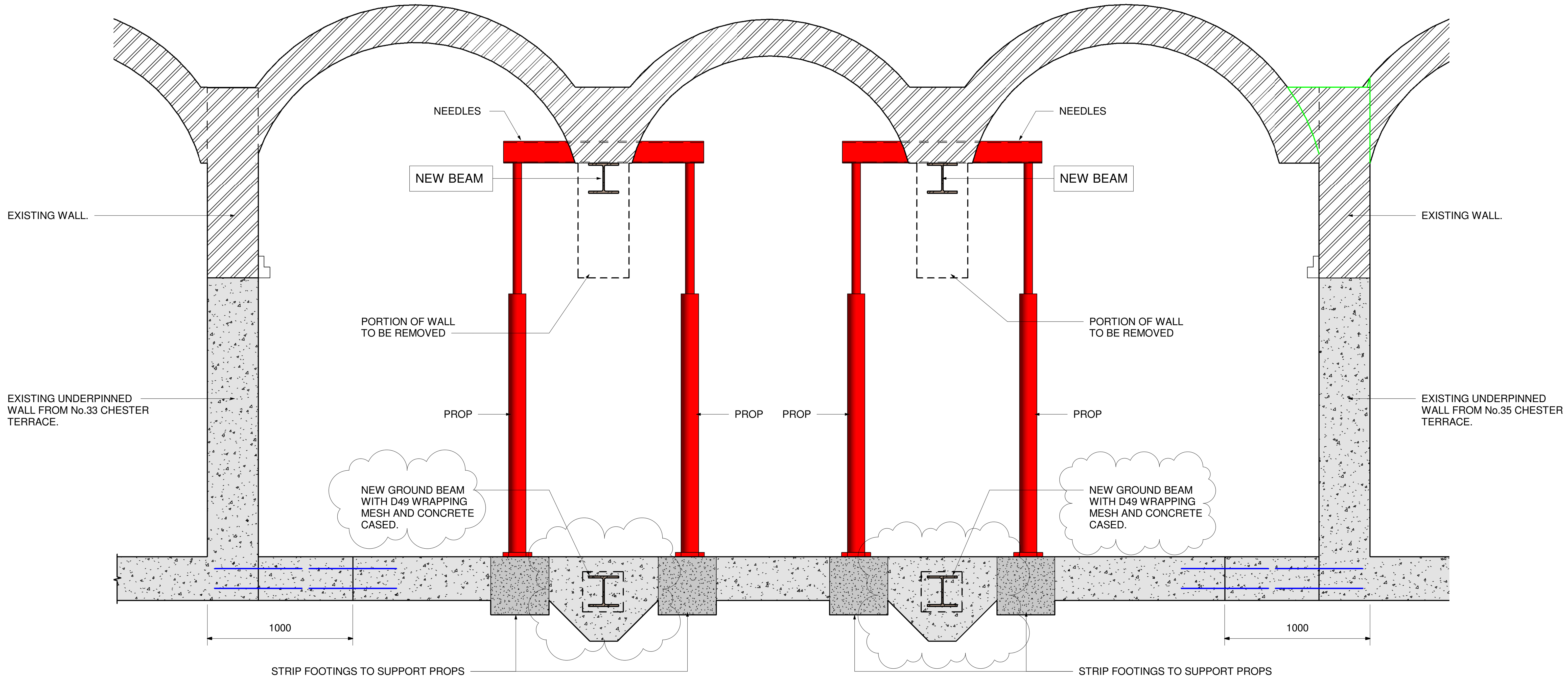
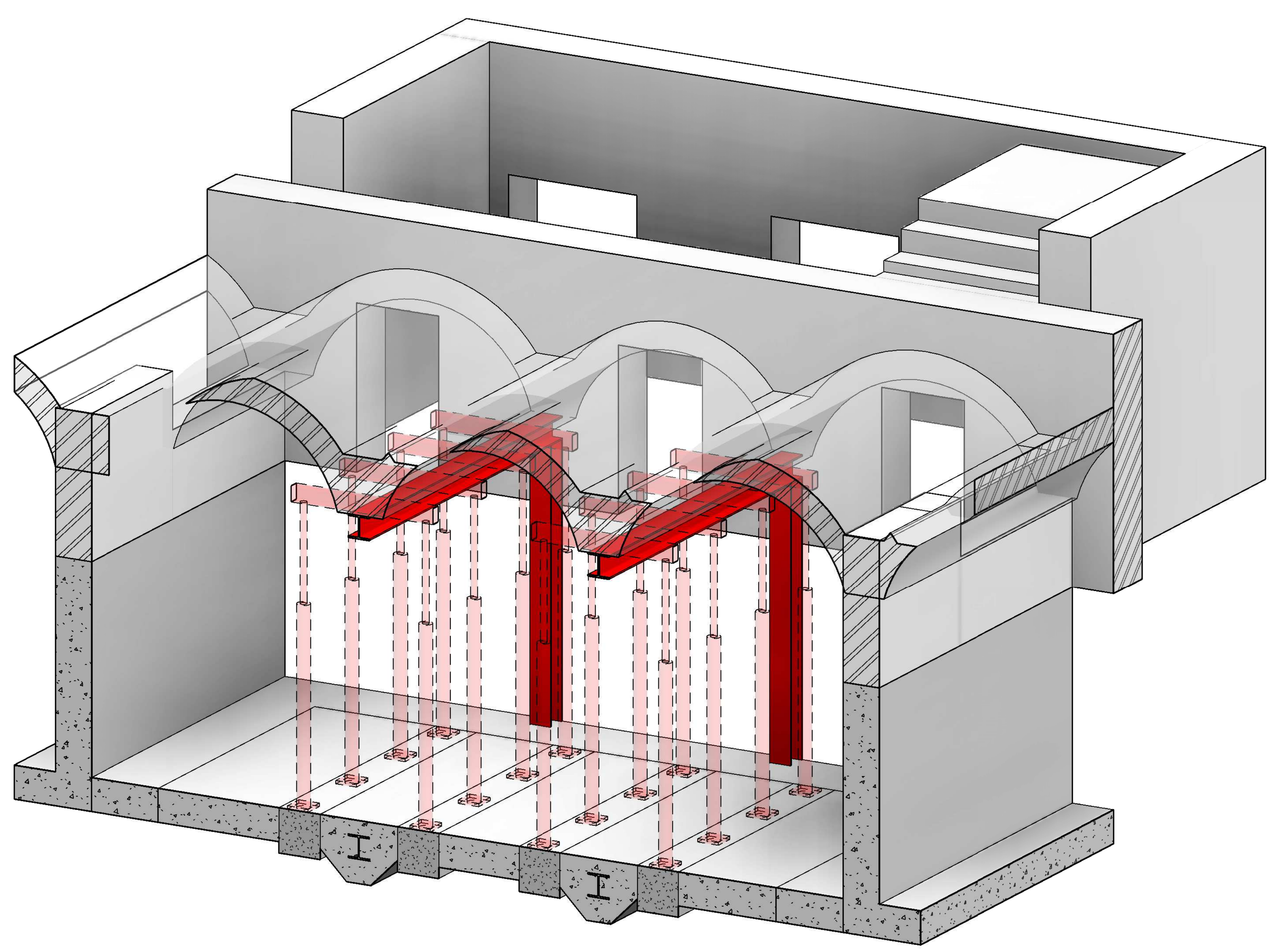
SCALE	DRAWN	DATE
AS SHOWN	SGA	05.09.23
CONTRACT No.	**DRG. No.**	**REVISION**
7722	TS001	A.

Original size A1



T1 SECTION T1
1 : 20



NOTES

1. IT IS RECOMMENDED THAT NO WORK IS CARRIED OUT UNTIL BUILDING REGULATIONS APPROVAL HAS BEEN OBTAINED.
2. IT IS ESSENTIAL THAT TZG ARE NOTIFIED OF ANY DISCREPANCIES OR SUBSEQUENT CHANGES PRIOR TO THEM BEING IMPLEMENTED.
3. DO NOT SCALE FROM THIS DRAWING.
4. THIS DRG IS TO BE READ IN CONJUNCTION WITH THE SPECIFICATION AND ARCHITECTS DRAWINGS.
5. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
6. A CONTRACTOR USED TO WORKING WITH THE MATERIALS SHOWN ON THIS DRAWING SHOULD FIND NO UNEXPECTED HAZARDS. ANY ADDITIONAL RISKS ARE NOTED ON THE DRAWING.

REV.	DATE	DESCRIPTION
A	06.10.23	DRAWING UPDATED AS SHOWN CLOUDED.

CLIENT: ANTONIO SIMEOS

CONTRACT: 34 CHESTER TERRACE,

TITLE: TEMPORARY SECTION & 3D VIEW

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PRELIMINARY

Original size A1

SCALE	DRAWN	DATE
AS SHOWN	SGA	05.09.23
CONTRACT No. 7722	DRG. No. TS002	REVISION A.

APPENDIX IV

Damage Prediction Calculations

DAMAGE ASSESMENT CALCULATIONS

CIRIA REF.

$L/H = \frac{7520}{18000} = 0.418$

TABLE 2.2.

- POTENTIAL MOVEMENT DUE TO WALL INSTALLATION

- HORIZONTAL SURFACE MOVEMENT = 0,05%

$\Delta H = 0{,}05 \times 3680/100 = 1.84$ mm

- VERTICAL SURFACE MOVEMENT = 0.05%

$\Delta V = 0.05 \times 3680/100 = 1.84$ mm

- DISTANCE BEHIND WALL TO NEGLIGIBLE MOVEMENT:

$L_0 = 3680 \times 1.5 = 5520$ mm

$\Rightarrow 0.33$ mm/m

TABLE 2.4. • POTENTIAL MOVEMENT DUE TO EXCAVATION

- HORIZONTAL SURFACE MOVEMENT = 0.15%

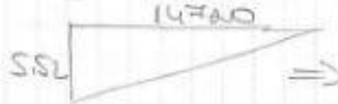
$\Delta H = 0.15 \times 3680 / 100 = 5.52$ mm

- VERTICAL SURFACE MOVEMENT = 0.10%

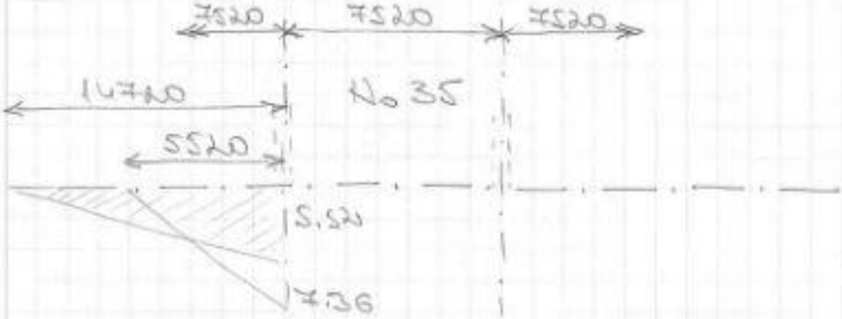
$\Delta V = 0.10 \times 3680 / 100 = 3.68$ mm

- DISTANCE BEHIND WALL TO NEGLIGIBLE MOVEMENT

$l_\Delta = 3680 \times 4.0 = 14720$ mm



$\Rightarrow 0.38$ mm/m



• DETERMINE HORIZONTAL MOVEMENT

$\delta h = 7.36$ mm @ PARTY WALL

BOX 2.5 $\varepsilon h = \delta h / L = 7.36 \times 100 / 14720 = 0.05\%$

LIMITING TENSILE STRAIN FOR CATEGORY 0 (NEGLIGIBLE) IS 0.05%

ANTICIPATED DAMAGE MAY BE CATEGORIZED AS "NEGLIGIBLE" TO "VERY SLIGHT"

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APPENDIX V

Basement Structure Calculations

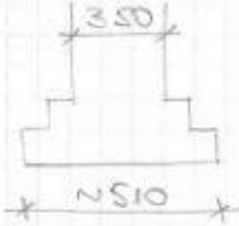
FOUNDATION STRESSES

• EXISTING FOUNDATION STRESS
(BELOW INTERNAL WALLS)

LOADS:

	DL	LL
- DEAD LOAD FROM MASONRY ARCH AND STREET 0.9×22×2.6	51.5	
- LIVE LOAD FROM TRAFFIC 5.0×2.6		13.0
- WALL 0,35 × 20 × 1,0	7.0	
	58.5	13.0

EXISTING FOUNDATION WIDTH:



$q = 58,5 + 13,0 = 71.5$ kN/m

$\sigma = 71,5 / 0,51 = 140$ kN/m²

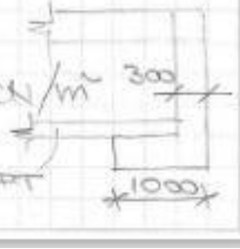
• NEW FOUNDATION STRESS
(BELOW NEW RC WALL)

LOADS:

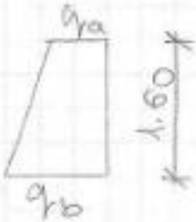
	DL	LL
- DEAD - FROM STEEL BEAM 0.9 × 22 × 4,5 /2	44.6	
- LIVE - FROM STEEL BEAM 5,0×4,5/2		11.3
- WALL 0,30 × 25 × (2,60 + 1,0)	27.0	
	71.6	11.3

$q = 71.6 + 11.3 = 82.9$ kN/m

$\sigma = 82.9 / 1,00 = 82.9$ kN/m² < 140 kN/m²



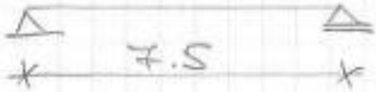
RETAINING WALL - REAR



$$K_a = \frac{1-\sin 20^\circ}{1+\sin 20^\circ} = 0.49$$ LONDON CLAY

$q_a = 1.5 \times 0.49 \times 5.0 = 3.68$ kN/m

$q_b = 3.68 + 1.35 \times 0.49 \times 20 \times 1.6 = 24.85$ kN/m



C30/37

$h = 300$ mm $\quad d = 300 - 20 - 16/2 = 272$ mm

$M_{ed} = 24{,}85 \times 7{,}5^2 / 8 = 174.7$ kNm

$$\xi_c = 1 - \sqrt{1 - 2 \times \frac{M_{ed}}{f_{cd} \times b \times d^2}}$$

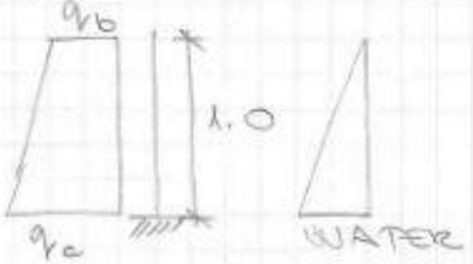
$$= 1 - \sqrt{1 - 2 \times \frac{174.7 \times 10^6}{20 \times 1000 \times 272^2}} = 0.126$$

$x_c = \xi_c \times d = 0.126 \times 272 = 34{,}27$ mm

$$A_s = \frac{M_{ed}}{(d - x_c/2) \times f_{yd}} = \frac{174.7 \times 10^6}{(272 - 34{,}27/2) \times 435} = 1576 \text{ mm}^2$$

H16 - 125 $\quad A_s = 1608$ mm²

RETAINING WALL – UNDER PINNING



$q_b = 24.85$ kN/m

$q_c = q_b + 1.35 \times (20-10) \times 0.49 \times 1.0 + 1.0 \times 10$

$= q_b + 16.62 = 41.47$ kN/m

$M_{Ed} = 24.85 \times 1.0^2/2 + 16.62 \times \frac{1}{2} \times \frac{1}{3}$

$= 15.20$ kNm

$h = 300$ mm $d = 300 - 75 - 16/2 = 217$ mm

C30/37

$\xi_c = 1 - \sqrt{1 - 2 \times \frac{15.20 \times 10^6}{20 \times 1000 \times 217^2}} = 0.021$

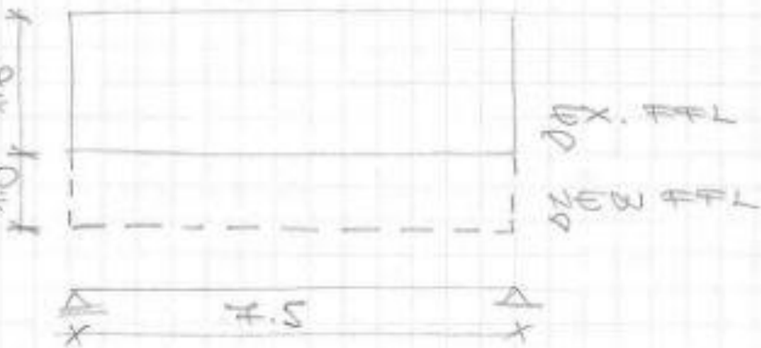
$x_c = 1.1 \times \xi_c \times d = 1.1 \times 0.021 \times 217 = 5.02$ mm

↑ DUE TO AXIAL LOADING

$A_s = \frac{15.20 \times 10^6}{(217 - 5.02/2) \times 435} = 208\ mm^2$

H12 – 200 $A_s = 565\ mm^2$

RAFT



ACCORDING TO OUR INFORMATION NO FLOOD WAS IN THE BASEMENT.
AS A SAFETY MEASURE FOR THE DESIGN OF THE BASE SLAB WATER TABLE LEVEL AT THE ORIGINAL BASEMENT FFL IS ASSUMED

$q = 0.9 \times 0.20 \times 25 - 1.0 \times 10 \times 1.0 = -5.5$ kN/m

$M_{Ed} = 5.5 \times 7.5^2/8 = 38.67$ kNm

$h = 200$ mm $\quad d = 200 - 20 - 12/2 = 174$ mm

$$\xi_c = 1 - \sqrt{1 - 2 \times \frac{M_{Ed}}{f_{cd} \times b \times d^2}}$$

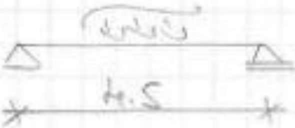
$$= 1 - \sqrt{1 - 2 \times \frac{38.67 \times 10^6}{20 \times 1000 \times 174^2}} = 0.066$$

$x_c = \xi_c \times d = 0.066 \times 174 = 11.49$ mm

$$A_s = \frac{M_{Ed}}{(d - x_c/2) \times f_{yd}} = \frac{38.67 \times 10^6}{(174 - 11.49/2) \times 435} = 528 \text{ mm}^2$$

H12−150 $\quad A_s = 754$ mm²

STEEL BEAMS

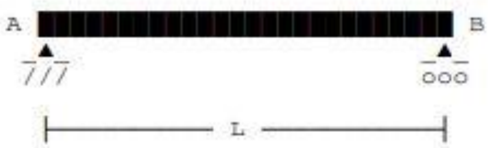


LOADS:

	DL	LL
- DEAD LOAD FROM MASONRY ARCH AND STREET 0,9×22×2,6	51,5	
- LIVE LOAD FROM TRAFFIC 5,0×2,6		13,0
- STEEL BEAM SELF W. 1,0	1,0	
	52.5	13.0

254×254×132 UKC

Location: beam



Simply supported steel beam

Calculations in accordance with BS EN 1993-1-1:2005.

Beam span	L=4.5 m

Steel section properties

254 x 254 x 132 UKC
Dimensions (mm): h=276.3 b=261.3 tw=15.3 tf=25.3 r=12.7
Properties (cm): Iy=22500 Iz=7530 Wply=1870 Wplz=878 It=319
A=168 iy=11.573 iz=6.6949

Strength of steel - Table 3.1 (amended by N.A.)

The material thickness is 25.3 mm and steel grade is S 275.

Yield strength	fy=265 N/mm²
Ultimate strength	fu=410 N/mm²
Young's modulus	E=210000 N/mm²
Shear modulus	G=81000 N/mm²

Loading (unfactored)

Permanent UDL (including S.W)	wd=52.5 kN/m
Variable UDL	wi=13.0 kN/m

Factored loads

Distributed load	w'=wd*gamG+wi*gamQ=52.5*1.35+13*1.5 =90.375 kN/m

Factored shear force

At end B	Vb=w'*L/2=90.375*4.5/2=203.34 kN
At end A	Va=w'*L-Vb=90.375*4.5-203.34 =203.34 kN
Max shear is same at both ends	Ve=Va=203.34 kN

Factored moment

Maximum bending moment at centre	M=w'*L^2/8=90.375*4.5^2/8 =228.76 kNm
Corresponding shear force	V=0 kN
Maximum moment	MyEd=M=228.76 kNm
Maximum shear force	VzEd=Vb=203.34 kN

Deflection

UDL for deflection calculation	wu=wd+wi=52.5+13=65.5 kN/m
Central UDL deflection	DEL=5*wu*L^4/(384*E*Iy)*10^8 =5*65.5*4.5^4/(384*210000*22500) *10^8 =7.4016 mm
Deflection to span ratio	1: 608
Limiting deflection (brittle)	DELlim=L*1000/360=4.5*1000/360 =12.5 mm

As DEL ≤ DELlim (7.4016 mm ≤ 12.5 mm), the deflection is within the limiting value.

Section classification

Classify outstand element of compression flange:

Parameter (Table 5.2)	e=(235/fy)^0.5=(235/265)^0.5 =0.9417
Outstand	c=(b-tw-2*r)/2=(261.3-15.3-2*12.7)/2 =110.3 mm
Ratio	c't=c/tf=110.3/25.3=4.3597

As c/tf ≤ 9e (4.3597 ≤ 8.4753), outstand element of compression flange is classified as Class 1 plastic.

Classify web element of section:

Depth between fillets	C=h-2*(tf+r)=276.3-2*(25.3+12.7) =200.3 mm
Ratio	C't=C/tw=200.3/15.3=13.092

As C/tw ≤ 72e (13.092 ≤ 67.802), web element in bending is classified as Class 1 plastic.

Hence, the overall section classification is Class 1.

Moment resistance - Clause 6.2.5

Moment resistance	McRd=Wply*fy/10^3=1870*265/10^3 =495.55 kNm
Unity factor	unity=MyEd/McRd=228.76/495.55 =0.46163

Section chosen is considered suitable.

Shear plastic resistance - Clause 6.2.6

In the absence of torsion the shear plastic resistance depends on:

Shear area	Avz=A*100-2*b*tf+(tw+2*r)*tf =168*100-2*261.3*25.3+(15.3+2 *12.7)*25.3 =4607.9 mm2
Shear plastic resistance	VplRd=Avz*fy/SQR(3)/1000 =4607.9*265/SQR(3)/1000 =705 kN
Unity factor	Unity=VzEd/VplRd=203.34/705 =0.28843

Section chosen is considered suitable.

Note: No M-V interaction has to be considered as since the maximum moment occurs near the mid-span and the maximum shear force is obtained at the supports.

Shear buckling - Clause 6.2.6(6)

```
Depth between the flanges          hw=h-2*tf=276.3-2*25.3=225.7 mm
Buckling ratio                     hw't=hw/tw=225.7/15.3=14.752
As hw/tw ≤ 72e ( 67.802 ), no check for shear buckling is required.
```

Coefficient C1

```
Eff.length between restraints      LT=6.9 m
Coefficient C1                     C1=1.0 (conservative)
Hence, a revised ψ factor psi=1.0 will be adopted as C1=1.0.
```

Lateral torsional buckling

```
Warping constant                   Iw=Iz/4*((h-tf)/10)^2
                                     =7530/4*((276.3-25.3)/10)^2
                                     =1.186E6 cm^6
Terms for Critical moment Mcr:
Euler term                         Et=PI^2*E*Iz/(LT^2*100)
                                     =3.1416^2*210000*7530/(6.9^2*100)
                                     =3.2781E6 N
Load to shear centre distance      zg=h/2=276.3/2=138.15 mm
Shear modulus term                 Gt=LT^2*G*It/(PI^2*E*Iz)*10^6
                                     =6.9^2*81000*319/(3.1416^2*210000
                                      *7530)*10^6
                                     =78824 mm^2
Square root term                   Sr=(Iw*100/Iz+Gt)^0.5
                                     =(1.186E6*100/7530+78824)^0.5
                                     =307.53 mm
Critical moment                    Mcr=C1*Et*Sr/10^6
                                      =1*3.2781E6*307.53/10^6
                                      =1008.1 kNm
Allowing for the effect of destabilizing load
Non-dimensional slenderness        lamLT=1.2*(Wply*fy/(Mcr*10^3))^0.5
                                          =1.2*(1870*265/(1008.1*10^3))^0.5
                                          =0.84134
Limiting slenderness value         lamLT0=0.4
Ratio                              h'b=h/b=276.3/261.3=1.0574
As h/b ≤ 2, imperfection value     aLT=0.34 (curve b)
compute                            comp1=aLT*(lamLT-lamLT0)
                                          =0.34*(0.84134-0.4)
                                          =0.15006
compute                            comp2=0.75*lamLT^2=0.75*0.84134^2
                                          =0.53089
Factor                             phiLT=0.5*(1+comp1+comp2)
                                          =0.5*(1+0.15006+0.53089)
                                          =0.84048
Modification factor       chiLT=1/(phiLT+(phiLT^2-0.75*lamLT^2)^0.5)
                               =1/(0.84048+(0.84048^2-0.75*0.84134^2)^0.5)
                               =0.79402
Factor                             kc=1/(C1)^0.5=1/(1)^0.5=1
Moment distribution factor         f=1-0.5*(1-kc)*(1-2*(lamLT-0.8)^2)
                                    =1-0.5*(1-1)*(1-2*(0.84134-0.8)^2)
                                    =1
```

```
Modified chiLT factor             ChiLT=chiLT/f=0.79402/1=0.79402
Design buckling resistance moment MbRd=ChiLT*Wply*fy/10^3
                                      =0.79402*1870*265/10^3
                                      =393.48 kNm
Unity factor                      unitb=MyEd/MbRd=228.76/393.48
                                       =0.58138
Section chosen is suitable.

  UNIVERSAL COLUMN                254 x 254 x 132 UC Grade S 275
  DESIGN SUMMARY                  Maximum shear force   203.34 kN
                                  Shear plastic resist. 705 kN
                                  Design moment         228.76 kNm
                                  Moment resistance     495.55 kNm
                                  Buckling resistance   393.48 kNm
                                  Central deflection    7.4016 mm
                                  Limiting deflection   12.5 mm

                      Factored   [ Factored shear at A   203.34 kN
                      end shears | Factored shear at B   203.34 kN
                                 L
```

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