

CIVIL / STRUCTURAL DESIGN RISK MANAGEMENT				
or unusual residual risks associated with the design outcomes shown on this are:-				
LTD has followed its Design Risk Management process for Hazard Elimination reduction in developing the designs shown on this drawing. or unusual residual risks may be shown above where it is considered that such not normally be expected by competent persons engaged on work of this nature				
es:-				
This drawing is to be read in conjunction with all architects, engineers and specialists drawings along with all relevant specifications.				
Refer to RSK's drawing no E/1002 to E/1005 for general arrangement of pile and ground beam.				
Do not scale from this drawing.				
Date	Amendment	Drawn	Chkd.	Appd.
Title				
GROUND BEAM				
KEY PLAN FOR PLOTS 137-139, 40-149, 170-184, 185-202 & 223-238				
Date	Checked	Date	Approved	Date
	Orig Size		Dimensions	
o.		Drawing File		
No.				Rev.

Abnormal or unusual residual risks associated with the design outcomes shown on this drawing are:-

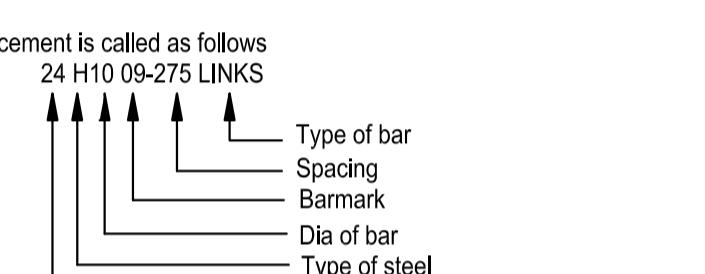
RSK LDE LTD has followed its Design Risk Management process for Hazard Elimination and Risk reduction in developing the designs shown on this drawing.
Abnormal or unusual residual risks may be shown above where it is considered that such risk may not normally be expected by competent persons engaged on work of this nature or type.

Notes:-

- This drawing is to be read in conjunction with all architects, engineers and specialists drawings along with all relevant specifications.
- Refer to RSK's drawing no E/1004 for general arrangement of pile and ground beam.
- Do not scale from this drawing.
- Concrete grade to be RC28/35.
- Reinforcement is to be high yield strength reinforcement ($f_y = 500\text{N/mm}^2$) of deformed type 2 bond classification.
- Bars listed in this drawing are as shown on bar bending schedule E/1054 sheet 1 to 8.
- Nominal cover to beam reinforcement to be 50mm.
- Minimum lap length to be 40 x bar dia

B10 = 400mm B12 = 500mm
B16 = 650mm B20 = 800mm
B25 = 1000mm B32 = 1300mm

9. Reinforcement listed on the bar bending schedule complies with BS 8666:2005.

Reinforcement is called as follows


Abbreviations used:-

DIA:-	Diameter	TBC:-	To be confirmed
REINF:-	Reinforcement	TOC:-	Top of concrete
T:-	Top	TOB:-	Top of beam
B:-	Bottom	ALT:-	Alternate
Typ:-	Typical	D:-	Depth
UNO:-	Unless noted otherwise	W:-	Width
DWG:-	Drawing		

Legend:-



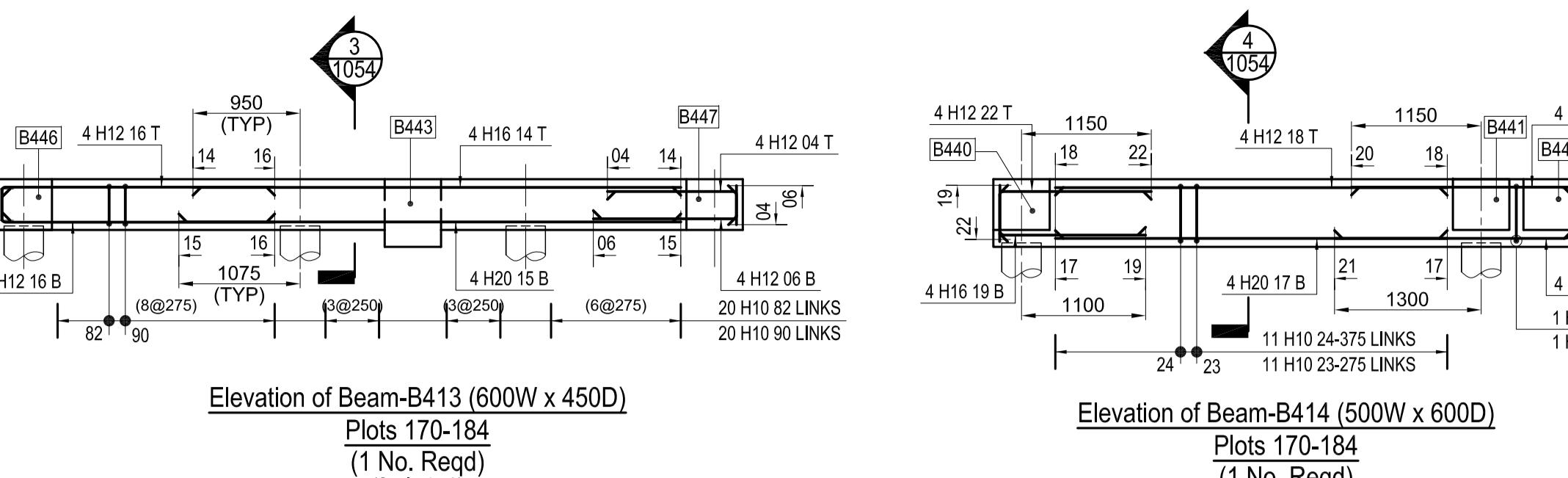
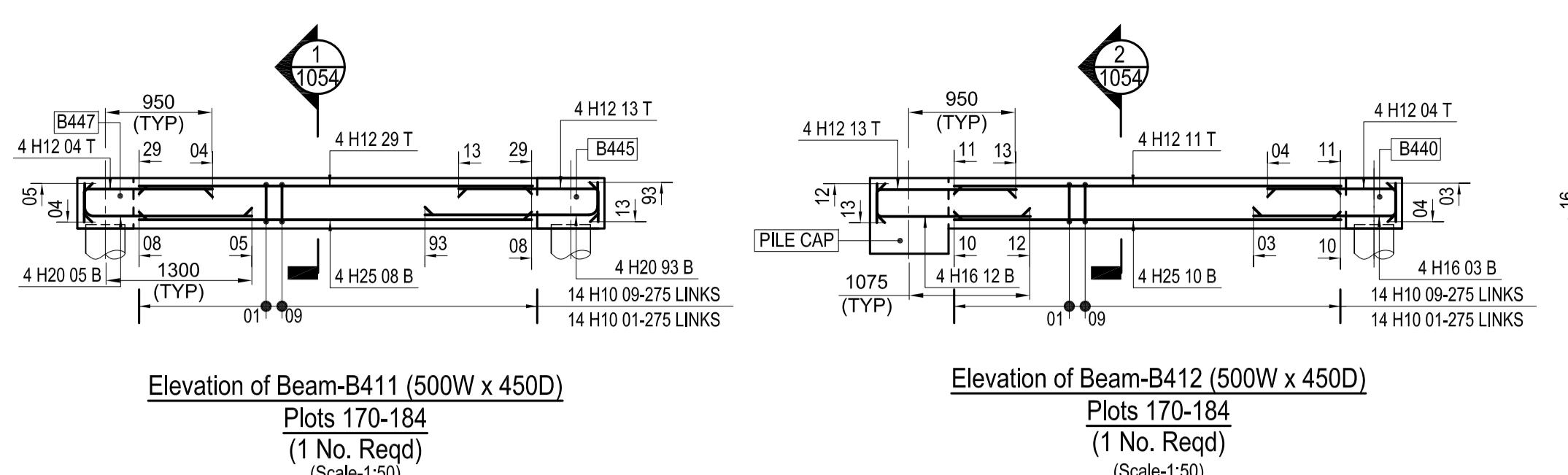
B	06.08.15	TIE BEAM -TB17 ADDED	VVS	ADM	RAK
A	03.07.15	Issued for CONSTRUCTION	PBK	ADM	RAK
Rev.	Date	Amendment	Drawn	Chkd.	Appd.

Client

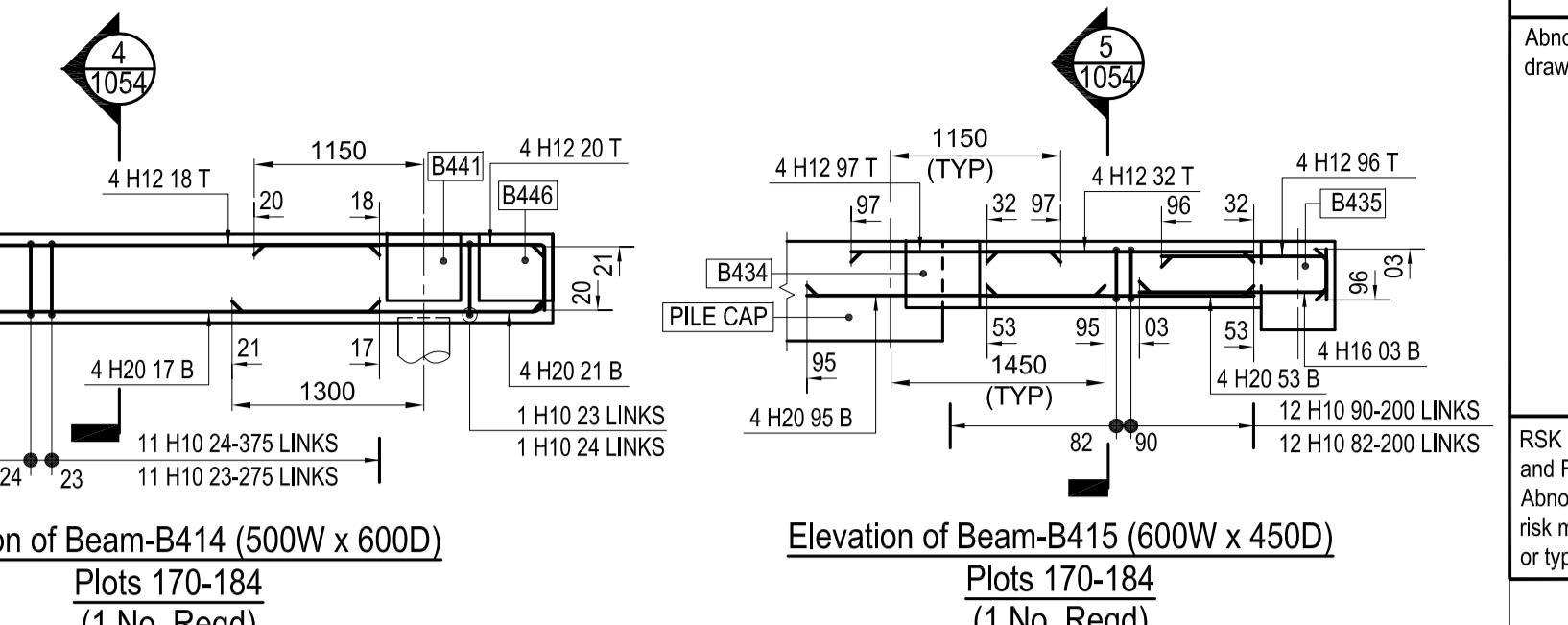
Project Title

Drawing Title

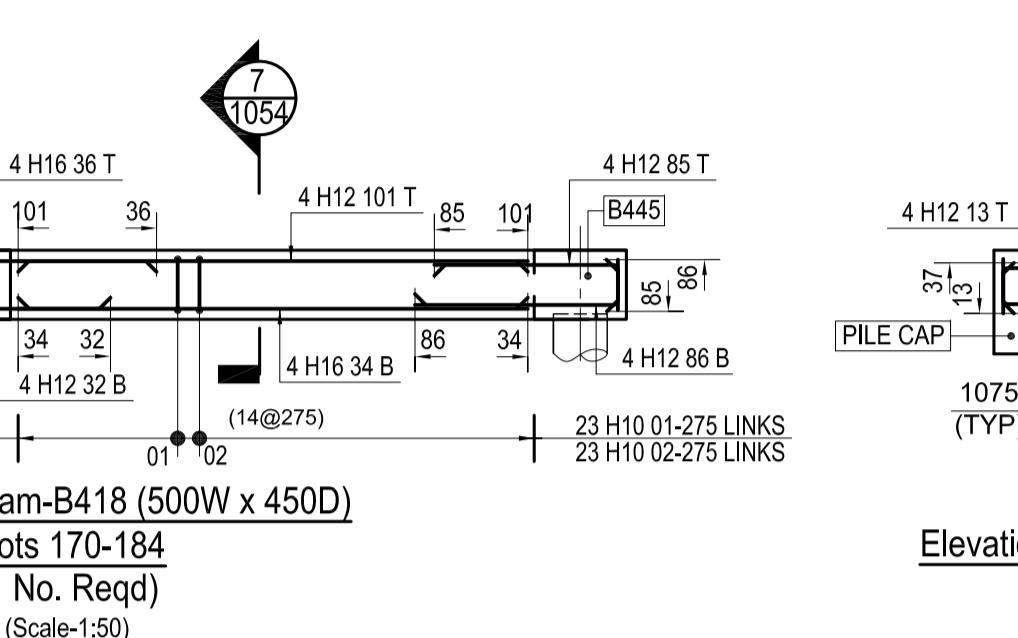
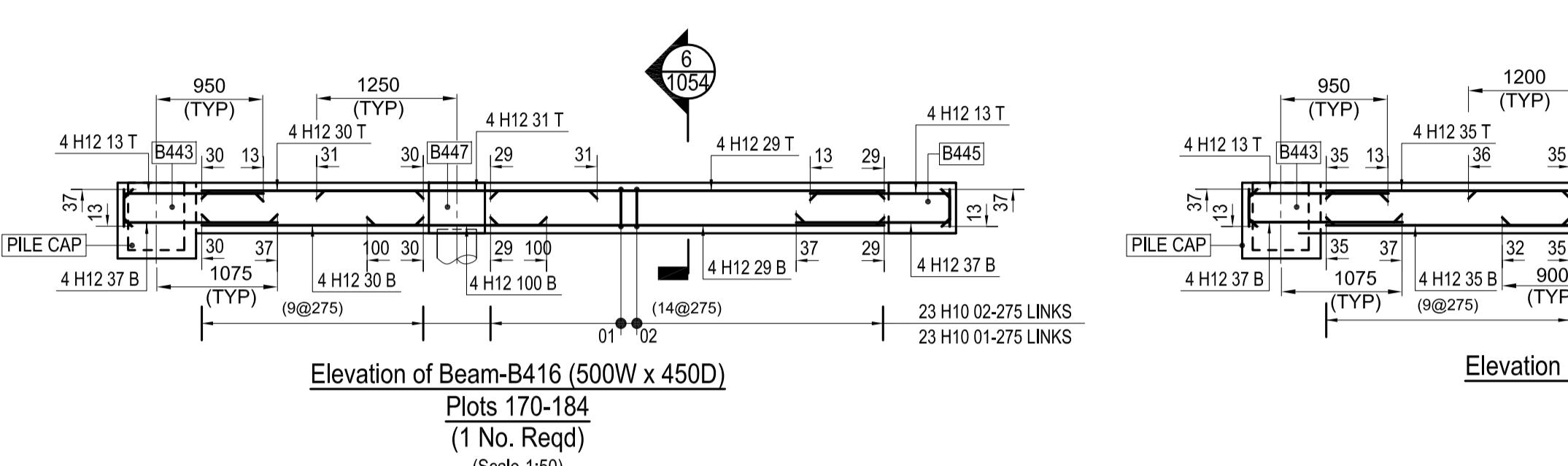
Drawn	Date	Checked	Date	Approved	Date				
Scale	Orig Size	Dimensions							
Project No.	Drawing File								
Drawing No.	Rev.								



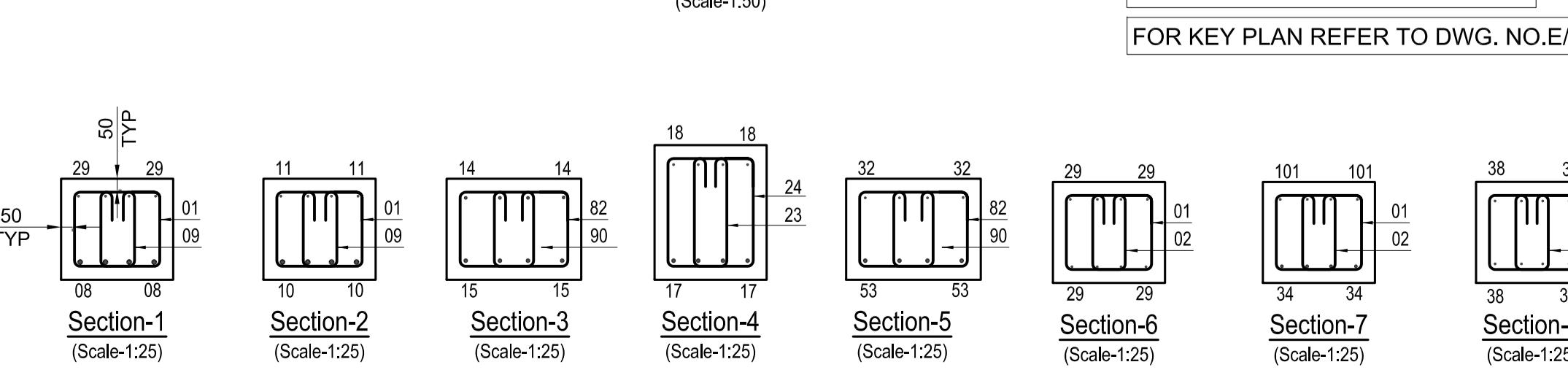
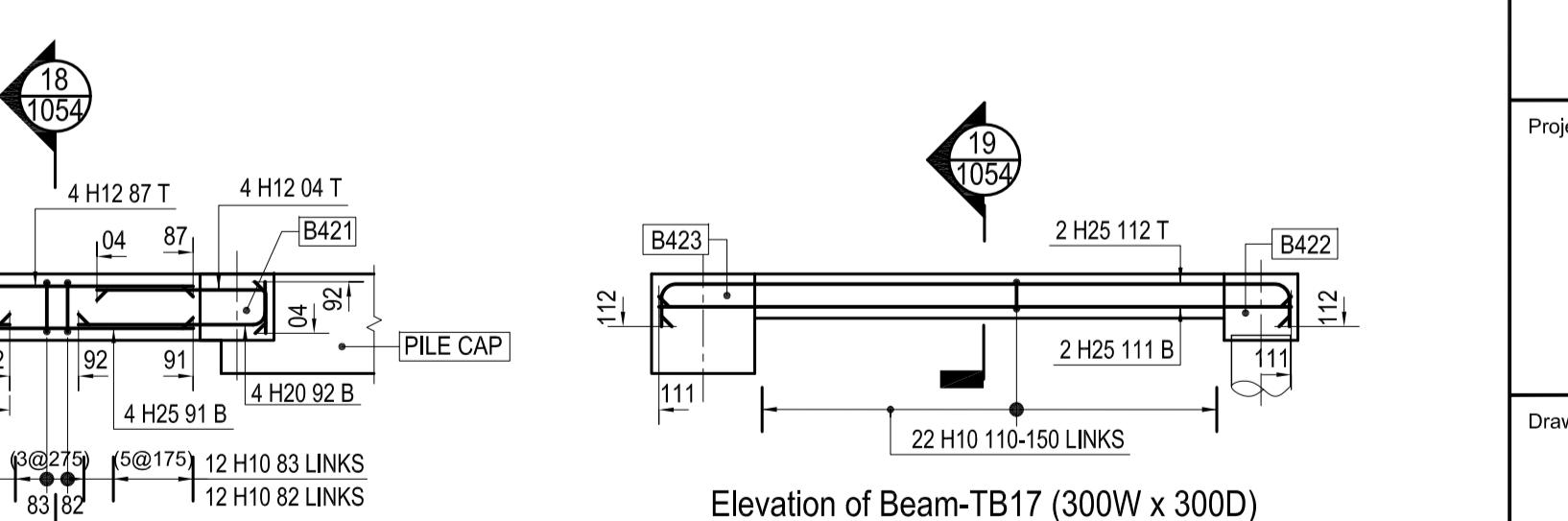
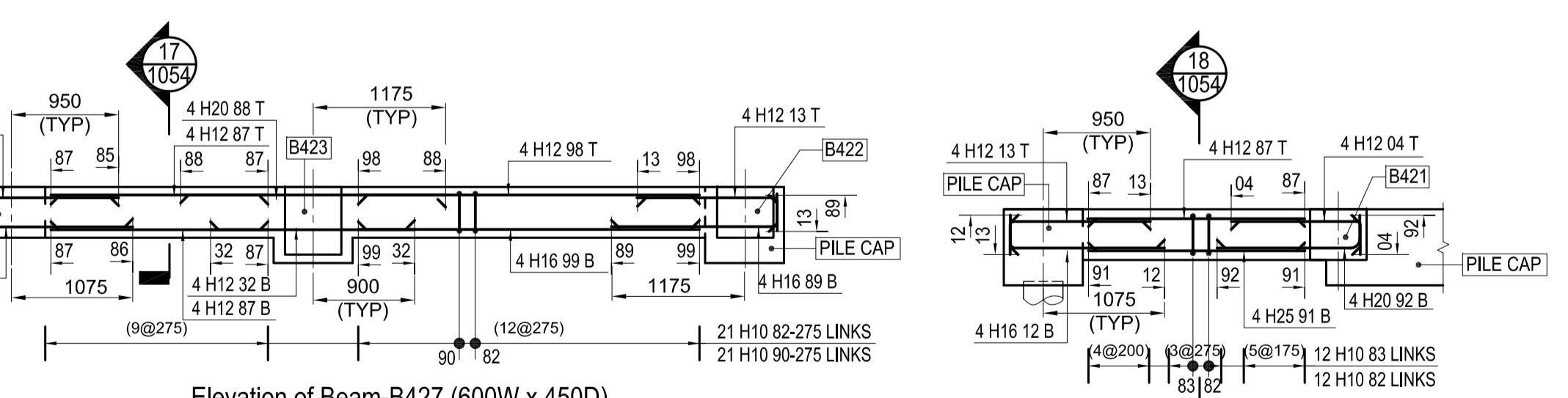
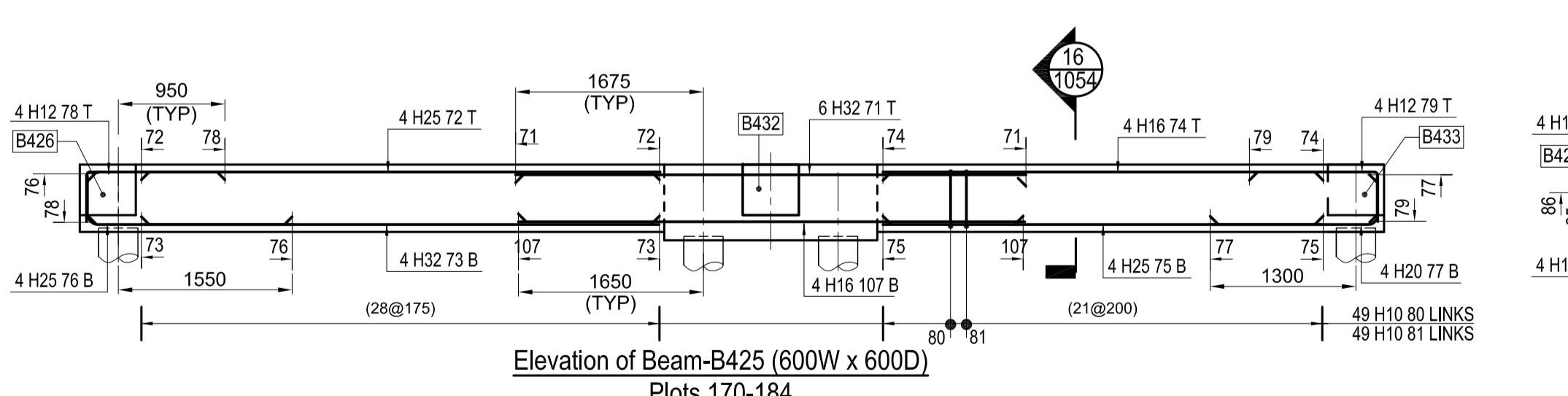
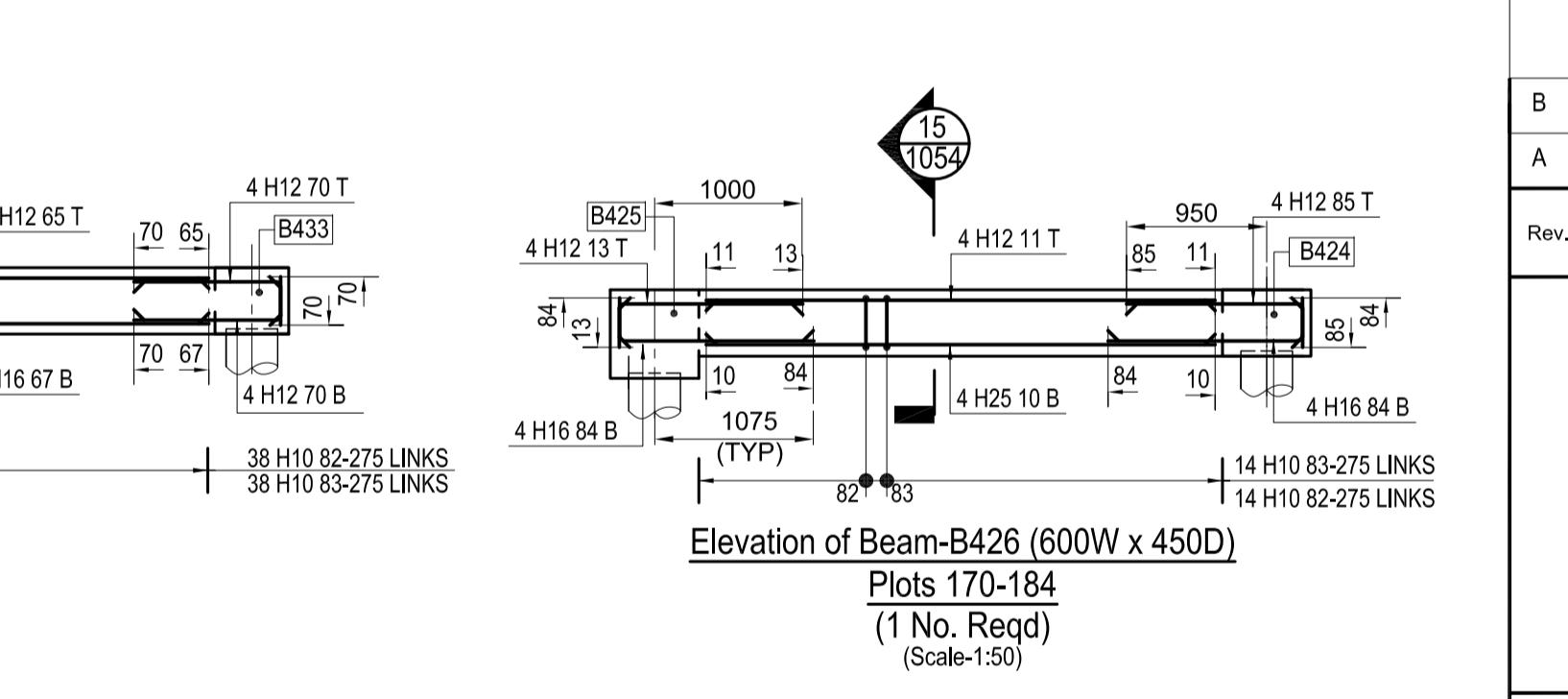
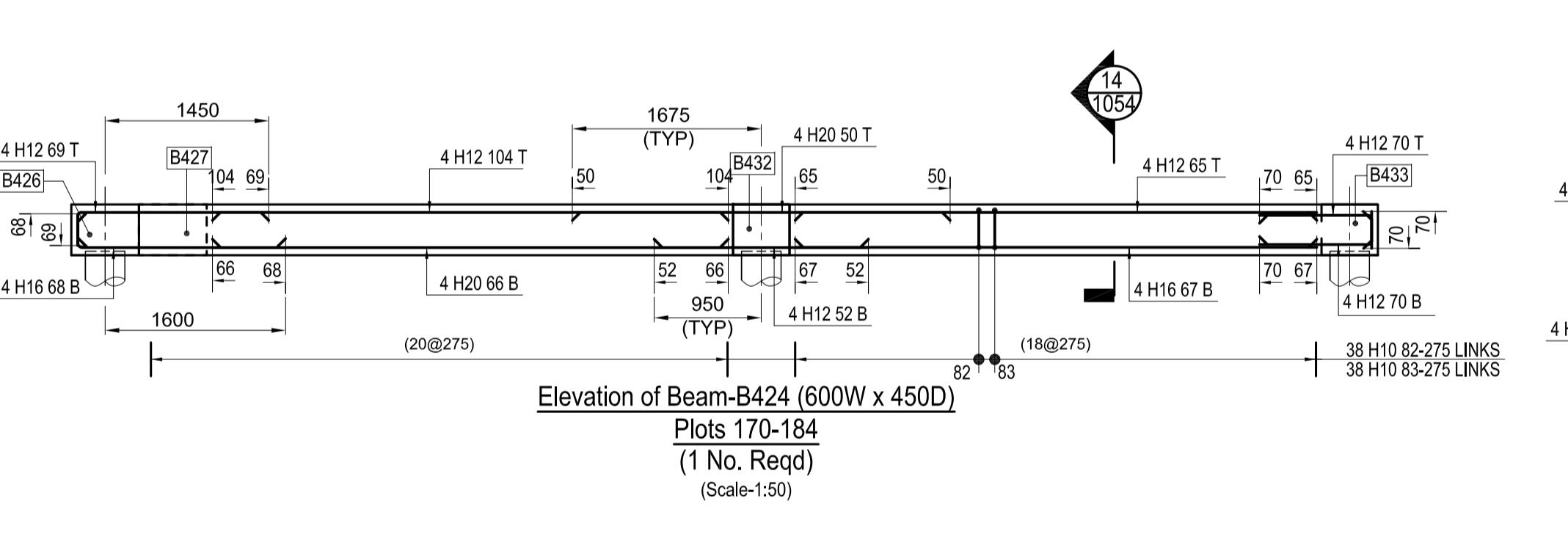
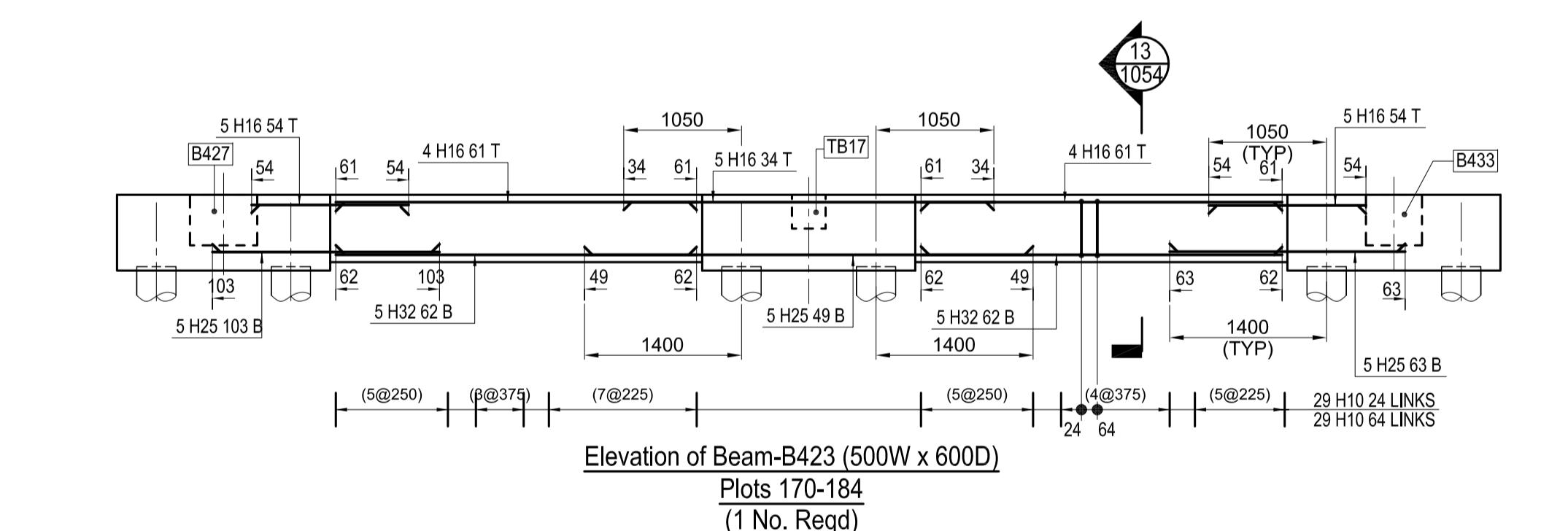
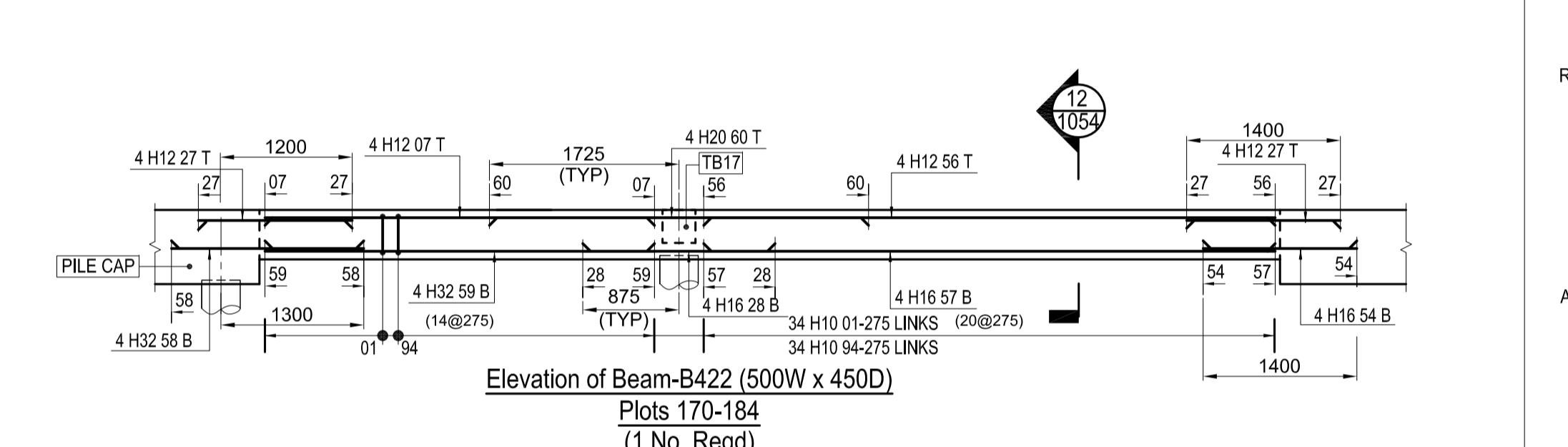
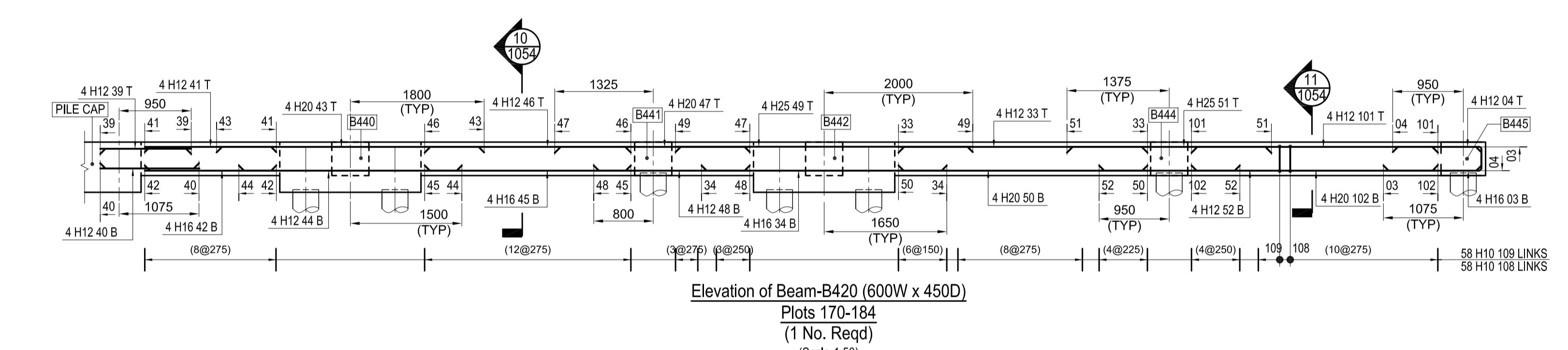
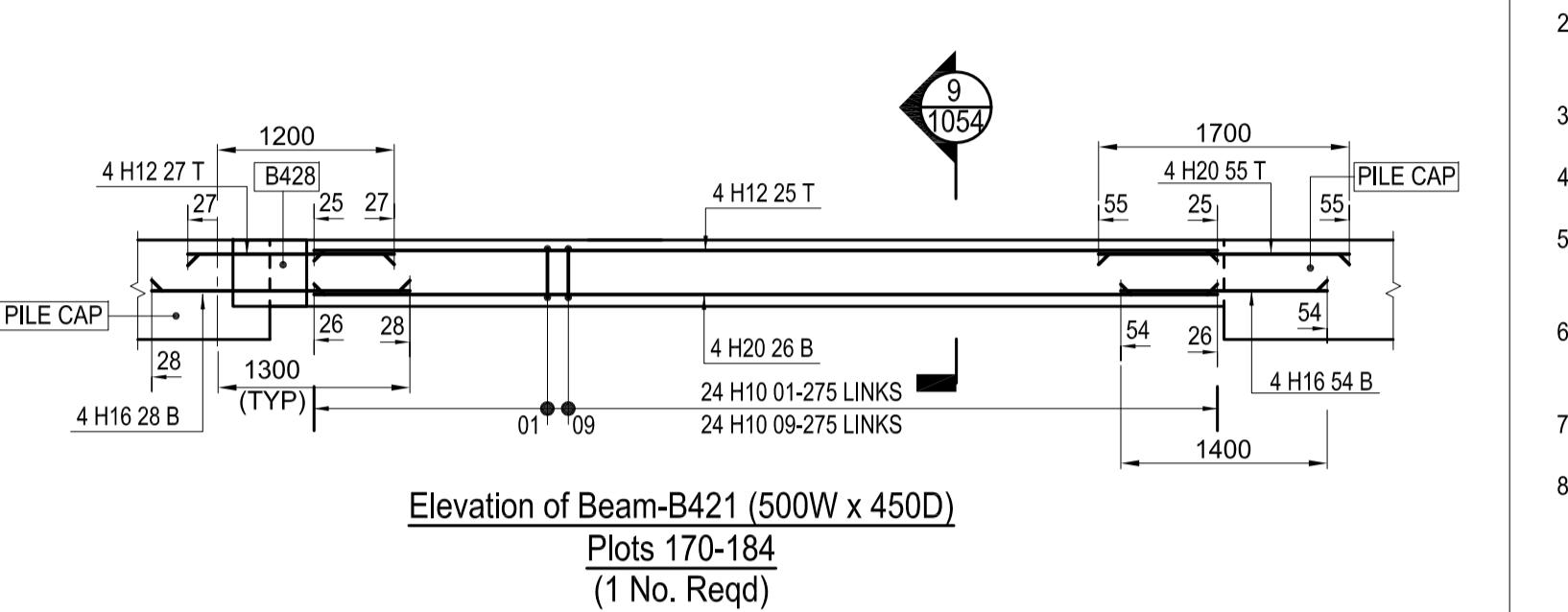
Elevation of Beam-B413 (600W x 450D)
Plots 170-184
(1 No. Reqd)
(Scale-1:50)



Elevation of Beam-B415 (600W x 450D)
Plots 170-184
(1 No. Reqd)
(Scale-1:50)



Elevation of Beam-B419 (500W x 450D)
Plots 170-184
(1 No. Reqd)
(Scale-1:50)



Based on Architects Drg No.
Structural Drg No.
Survey Drg No.
Other Drg No.
Other Drg No.

Rev
Rev
Rev
Rev
Rev

DO NOT SCALE FROM THIS DRAWING

- Notes**
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ALL ENGINEERS DRAWINGS AND SPECIFICATIONS.
 2. CONCRETE TO BE GRADE C32/40.
 3. REFER TO SCHEDULE: SC-S-3601 FOR BAR BENDING SCHEDULE.
 4. COVER TO REINFORCEMENT TO BE
 - PILECAP : BOTTOM = 100mm, TOP & SIDES = 40mm.

ABBREVIATIONS:

B:	BOTTOM
B1:	BOTTOM FIRST LAYER
B2:	BOTTOM SECOND LAYER
T:	TOP
T1:	TOP FIRST LAYER
T2:	TOP SECOND LAYER
NF:	NEAR FACE
FF:	FAR FACE
EF:	EACH FACE
AP:	ALTERNATELY PLACED
ABR:	ALTERNATE BARS REVERSED
STGD:	STAGGERED
DWLS:	DOEWL BARS
SF:	SIDE FACE
TYP:	TYPE
TOC:	TOP OF CONCRETE
TOF:	TOP OF FOOTING
DP:	DEPTH

6. MINIMUM LAPs / ANCHORAGE TO REINFORCEMENT TO BE
40 X BAR Dia - UNI.O.
H8 - 325mm
H10 - 400mm
H12 - 500mm
H16 - 650mm
H20 - 800mm
H25 - 1000mm
H32 - 1300mm
H40 - 1600mm

BOTTOM BARS : _____
TOP BARS : _____

Issue	Date	Description	By	Chkd	Verfd
-------	------	-------------	----	------	-------

Project **NEWCASTLE UNIVERSITY SPORTS CENTRE**

Client _____

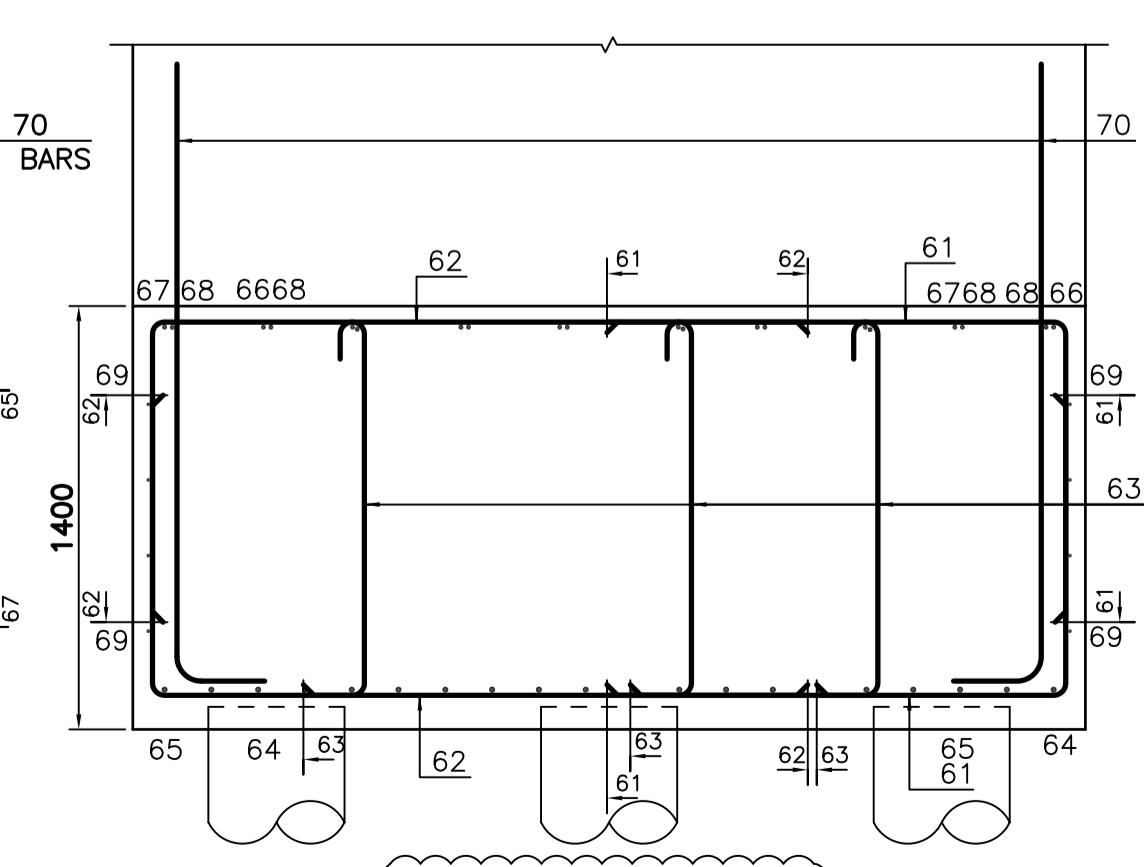
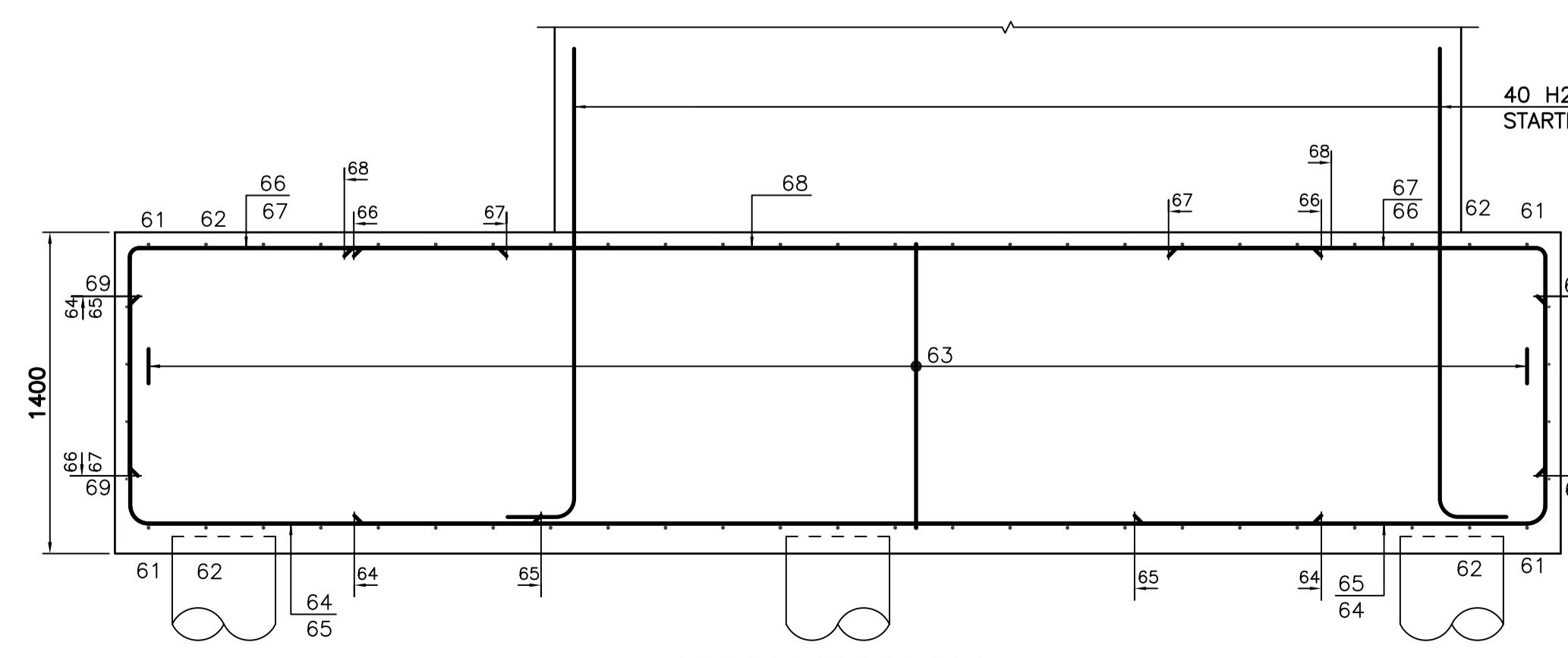
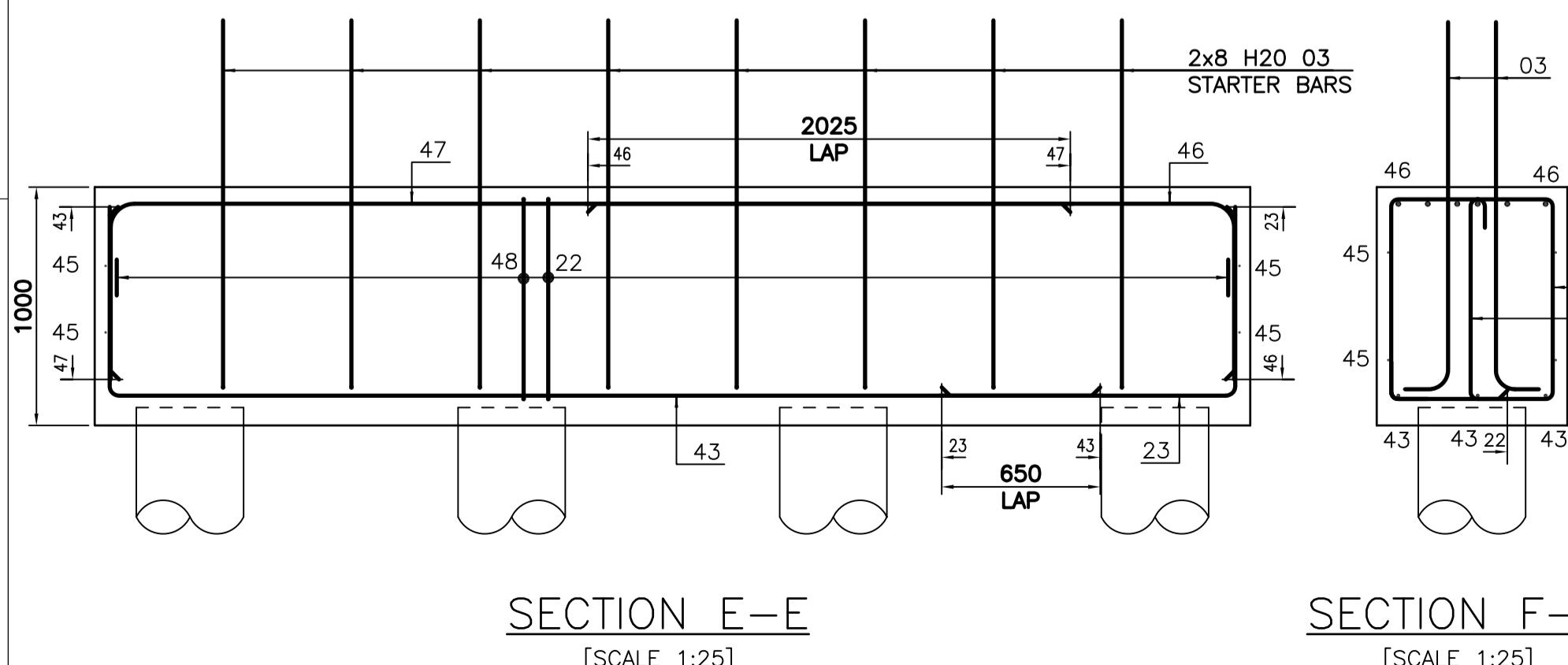
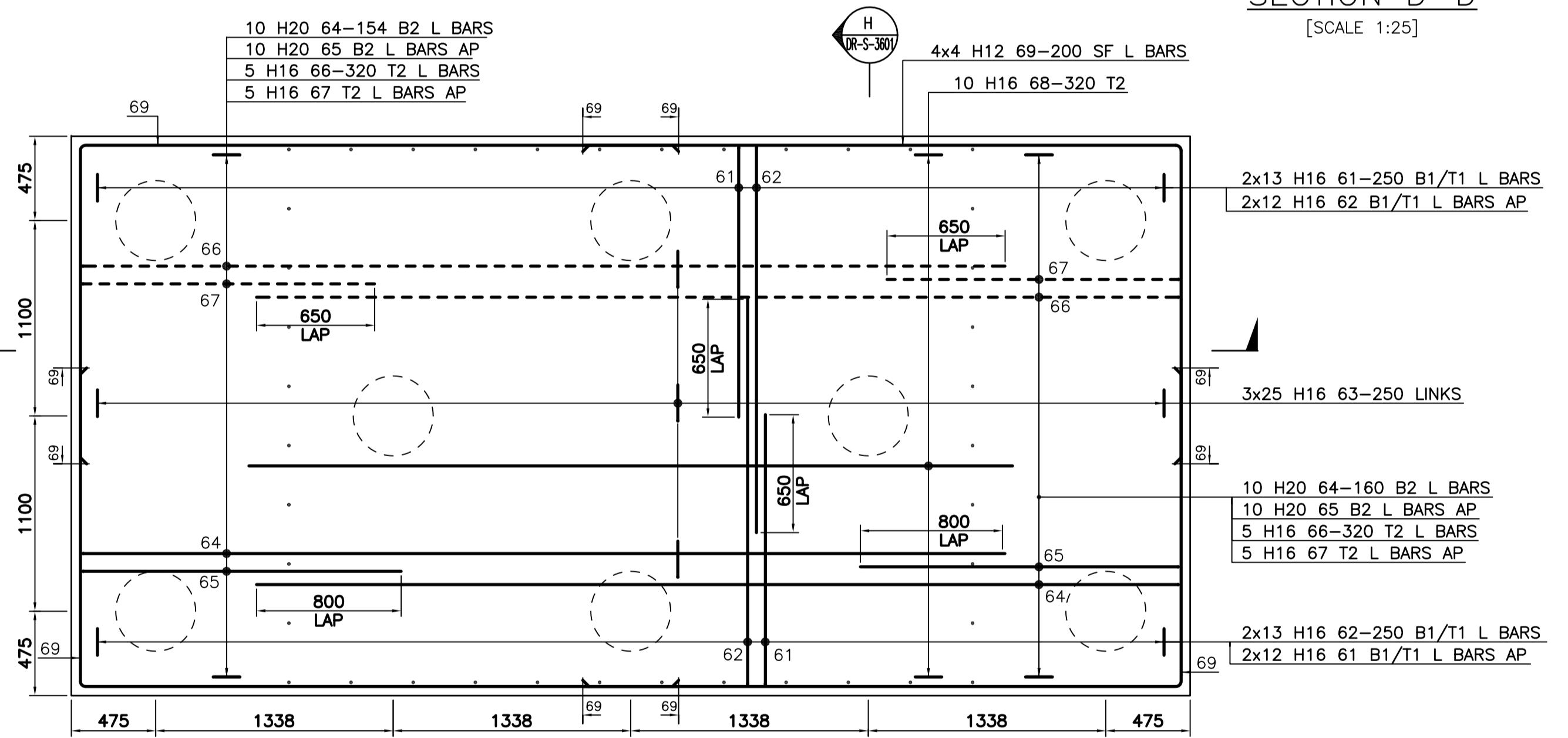
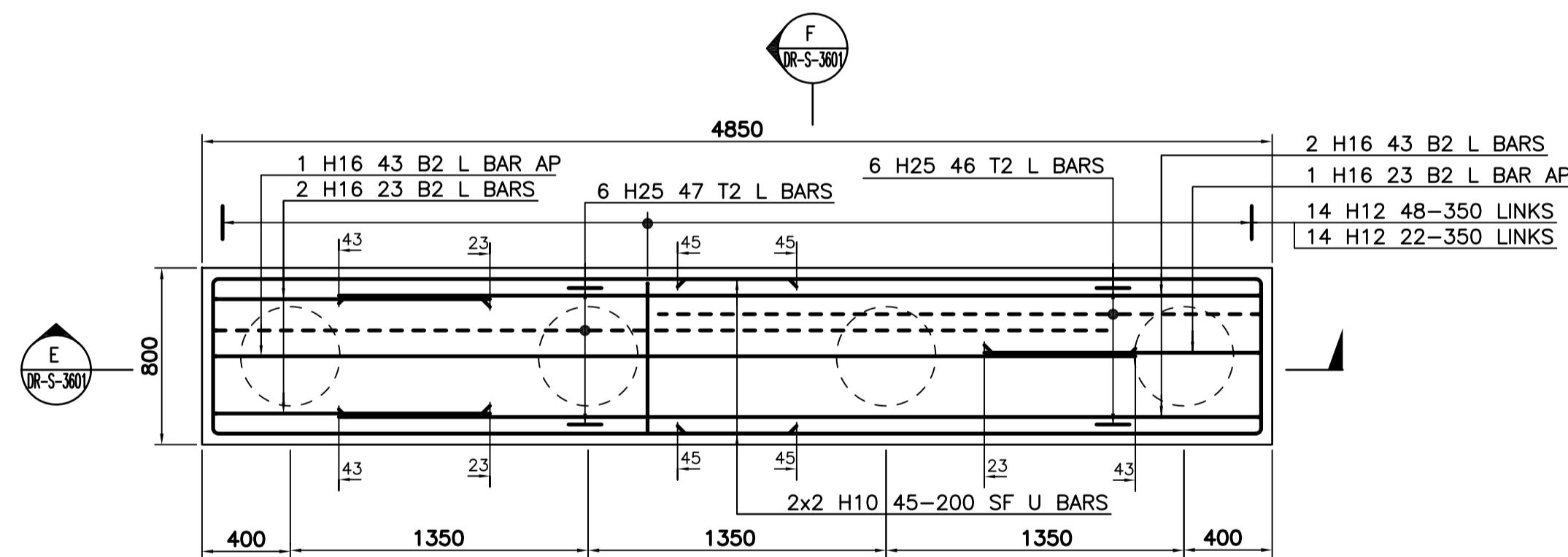
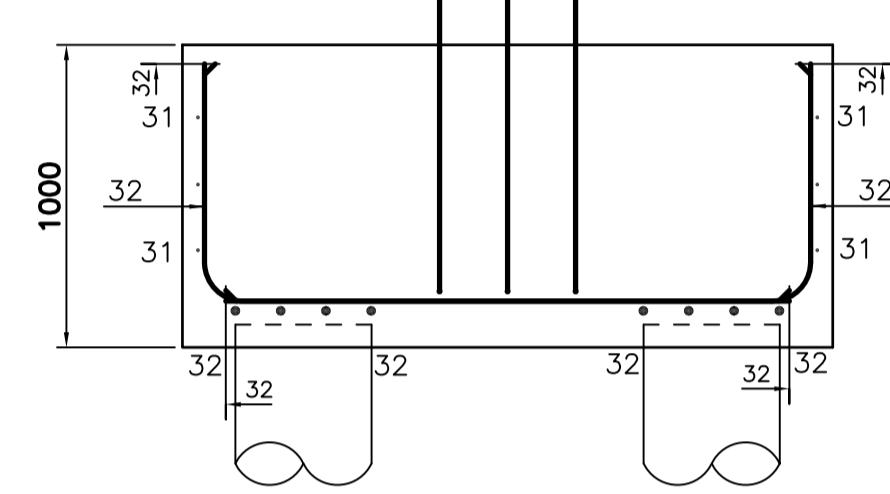
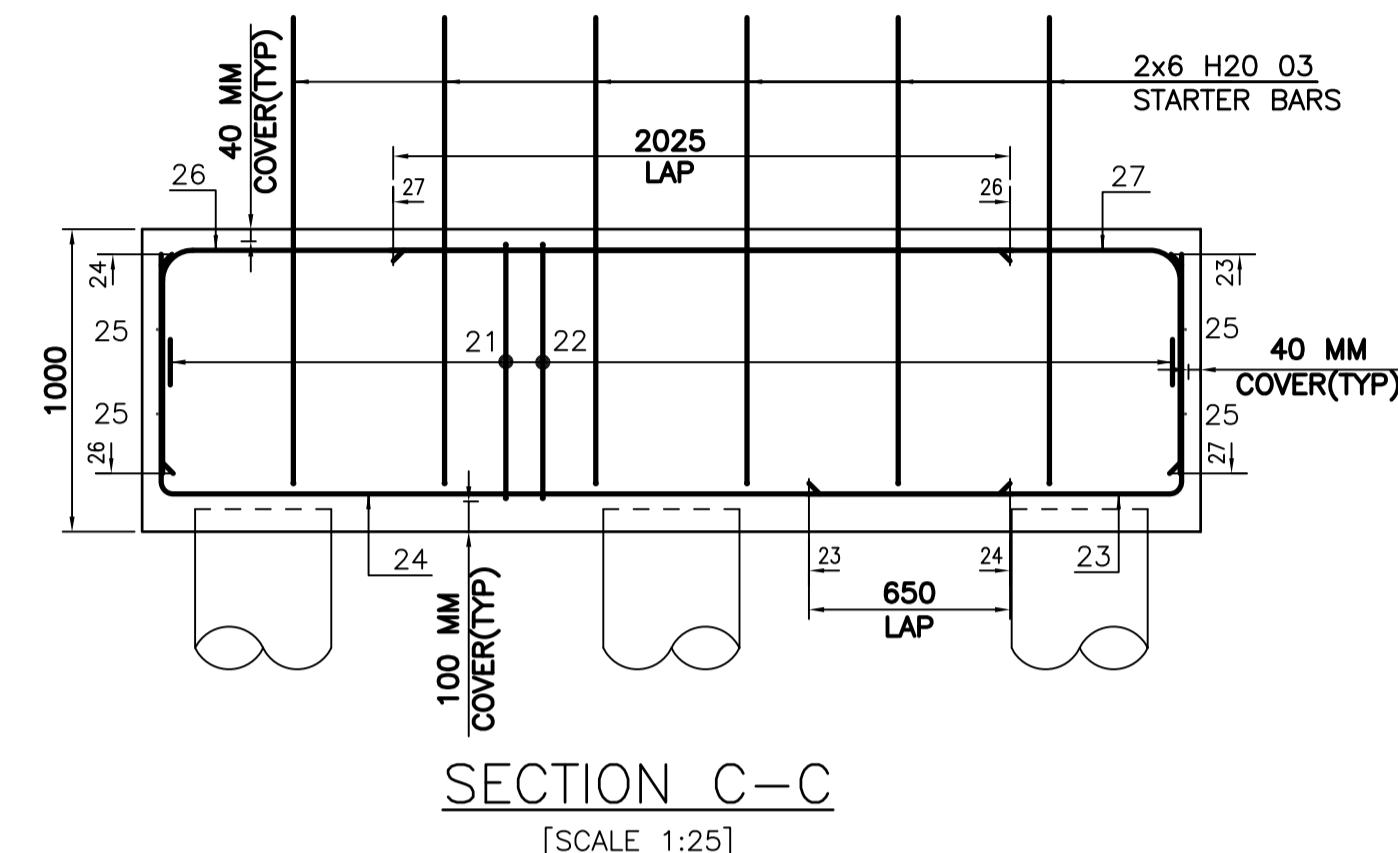
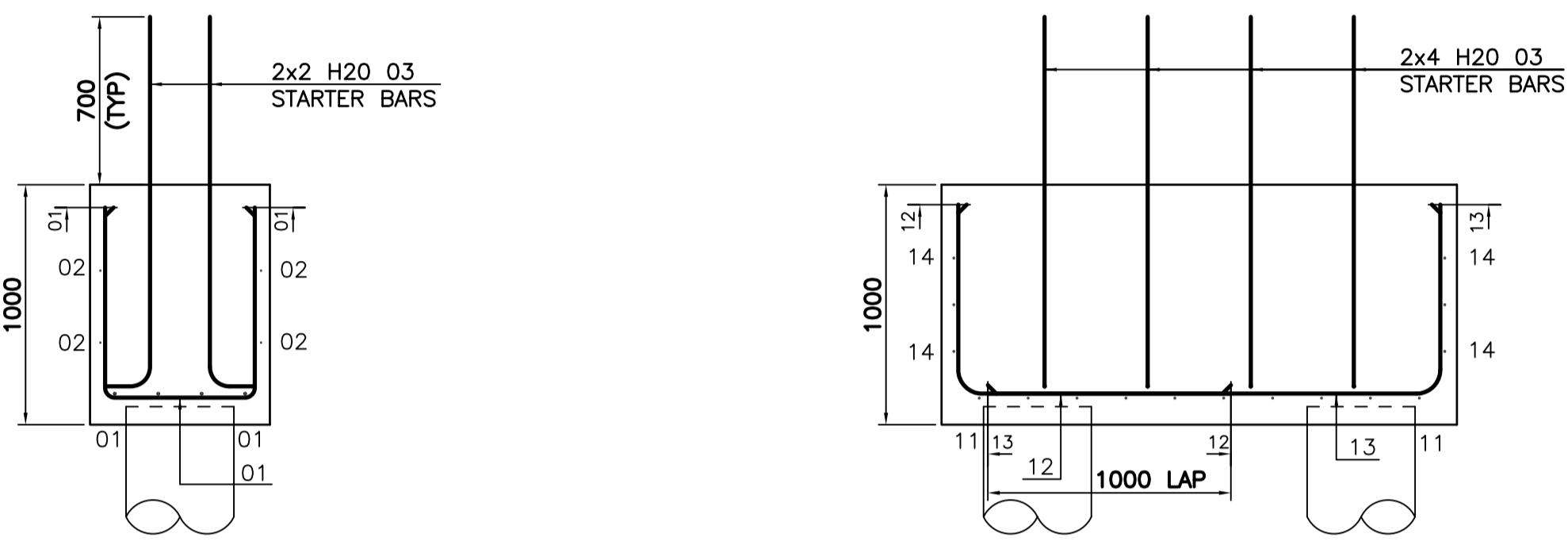
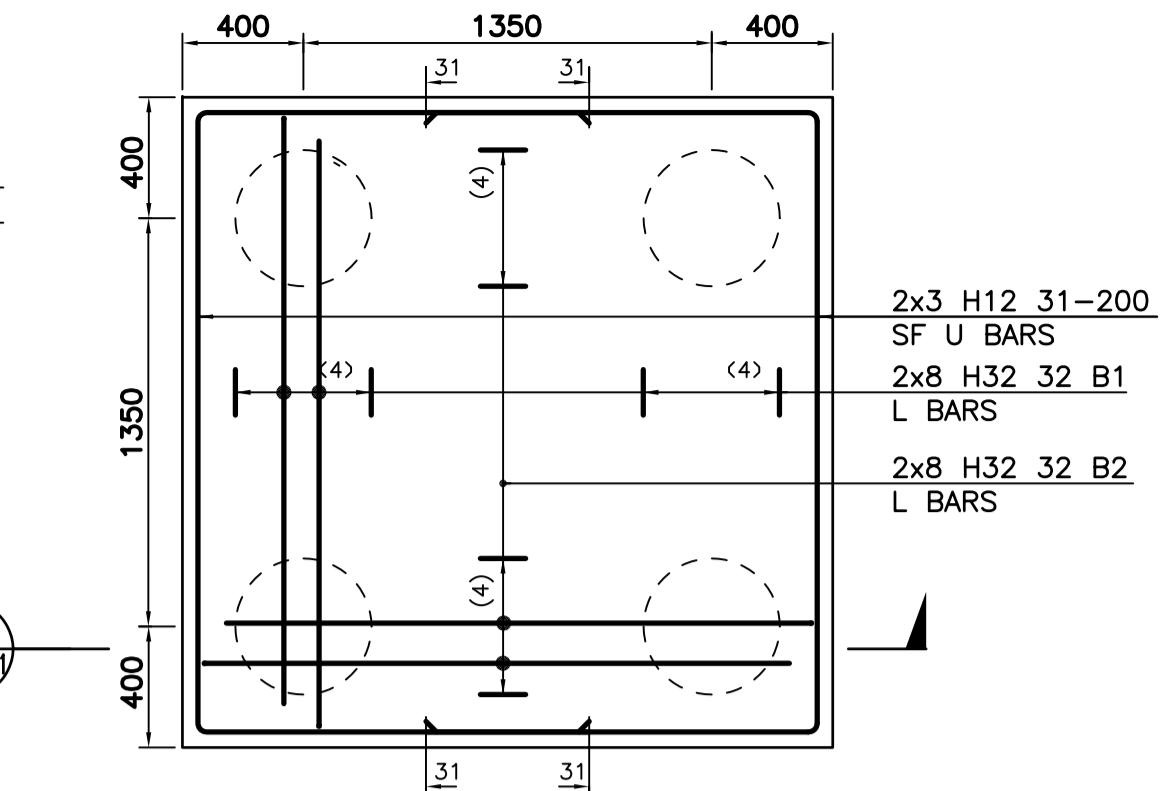
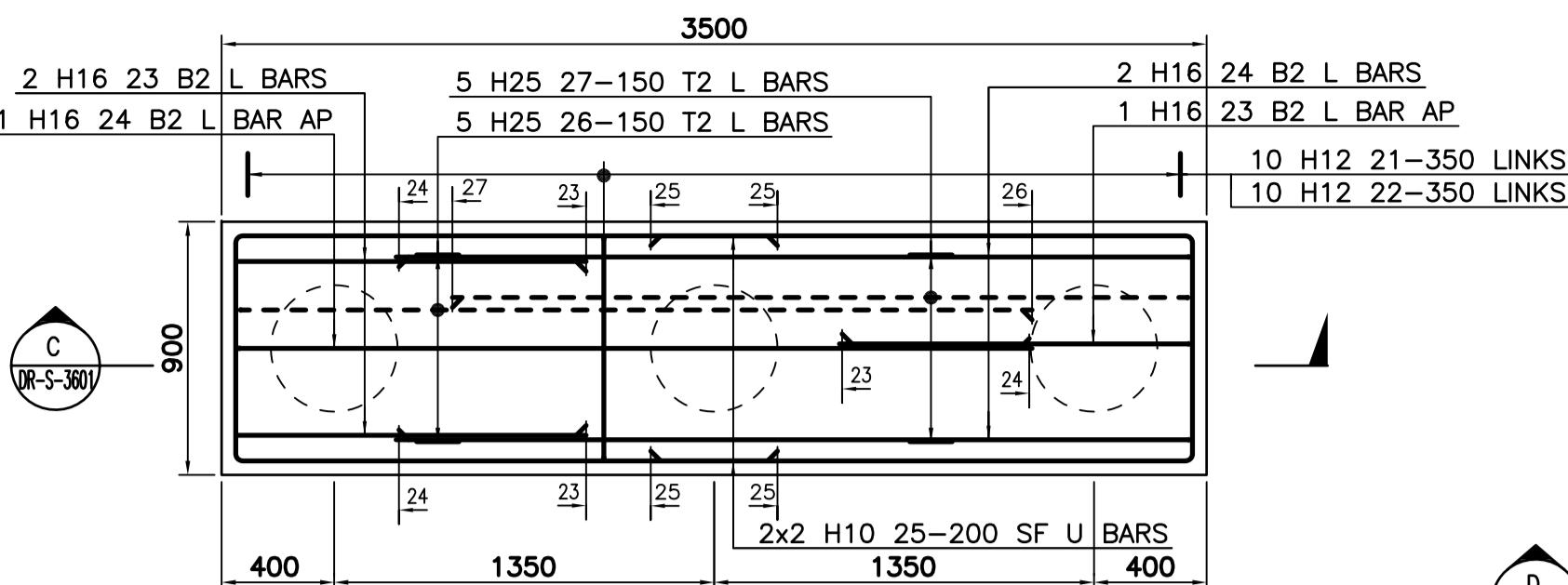
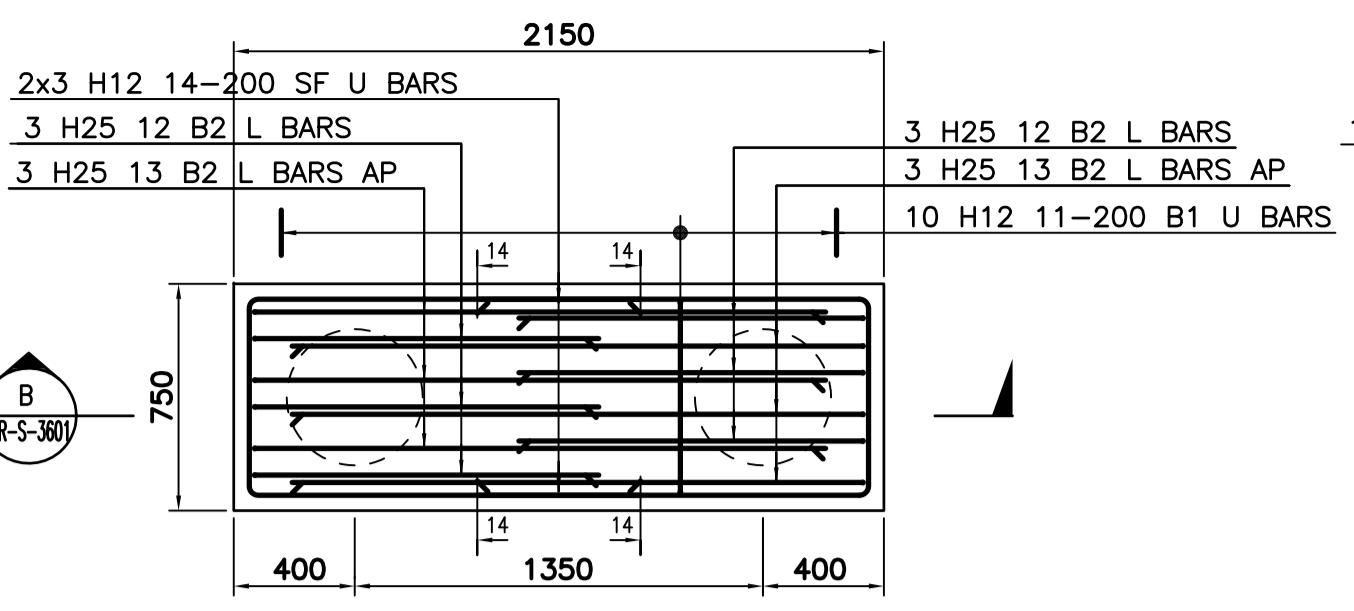
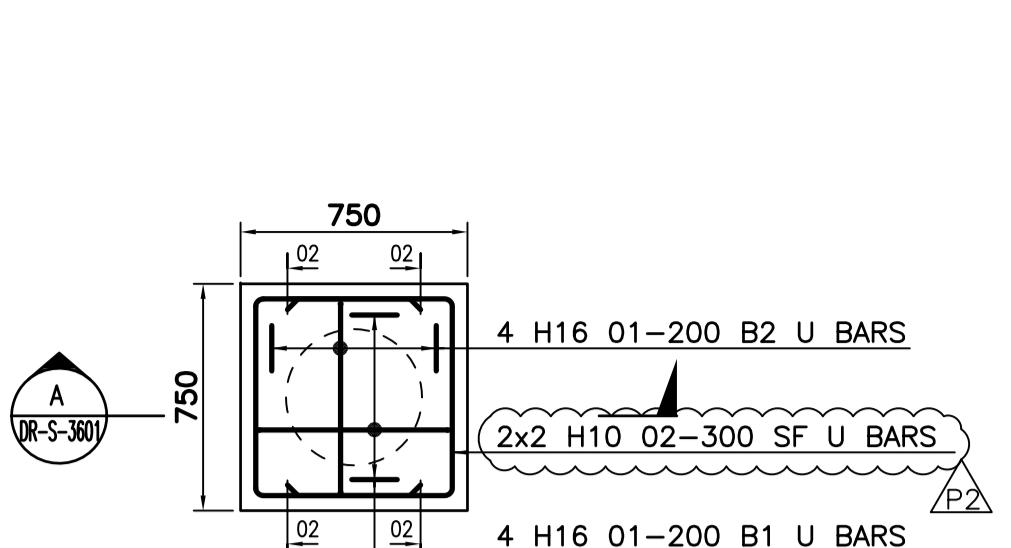
Architect _____

Title**RC DETAIL OF PILE CAPS**

Drawing No.	Drawing Status
-------------	----------------

Job No.	Scale @A1
---------	-----------

Originator	Checked	Verified	Issue
------------	---------	----------	-------



Based on Architects Drg No.
Structural Drg No.
Survey Drg No.
Other Drg No.
Other Drg No.

Rev
Rev
Rev
Rev
Rev

DO NOT SCALE FROM THIS DRAWING

Notes

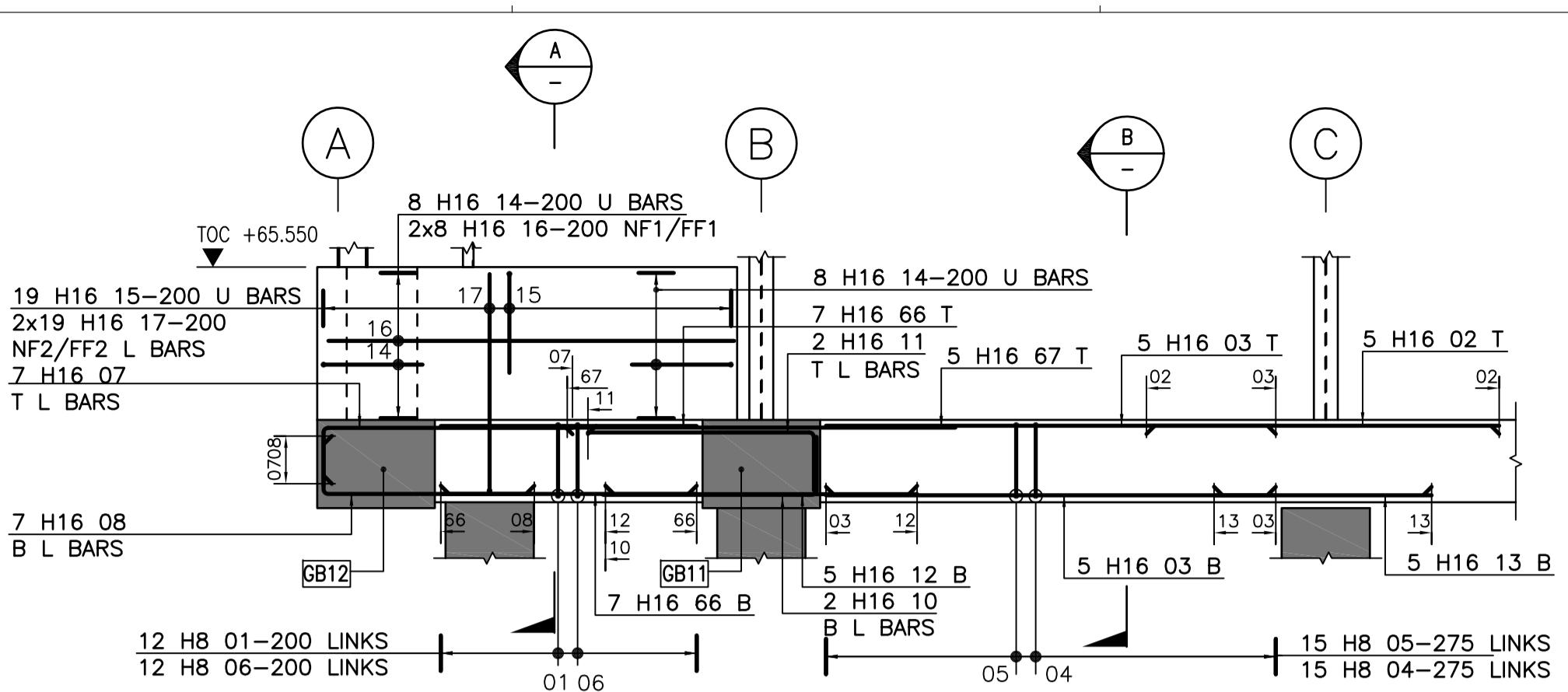
- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ALL ENGINEERS DRAWINGS AND SPECIFICATIONS.
- CONCRETE TO BE GRADE C32/40.
- REFER TO SCHEDULE: SC-S-3601 FOR BAR BENDING SCHEDULE.
- COVER TO REINFORCEMENT TO BE
- BEAM : BOTTOM = 50mm, TOP= 30 & SIDES = 40mm.
WALL : ALL SIDE = 40mm.

5. ABBREVIATIONS:

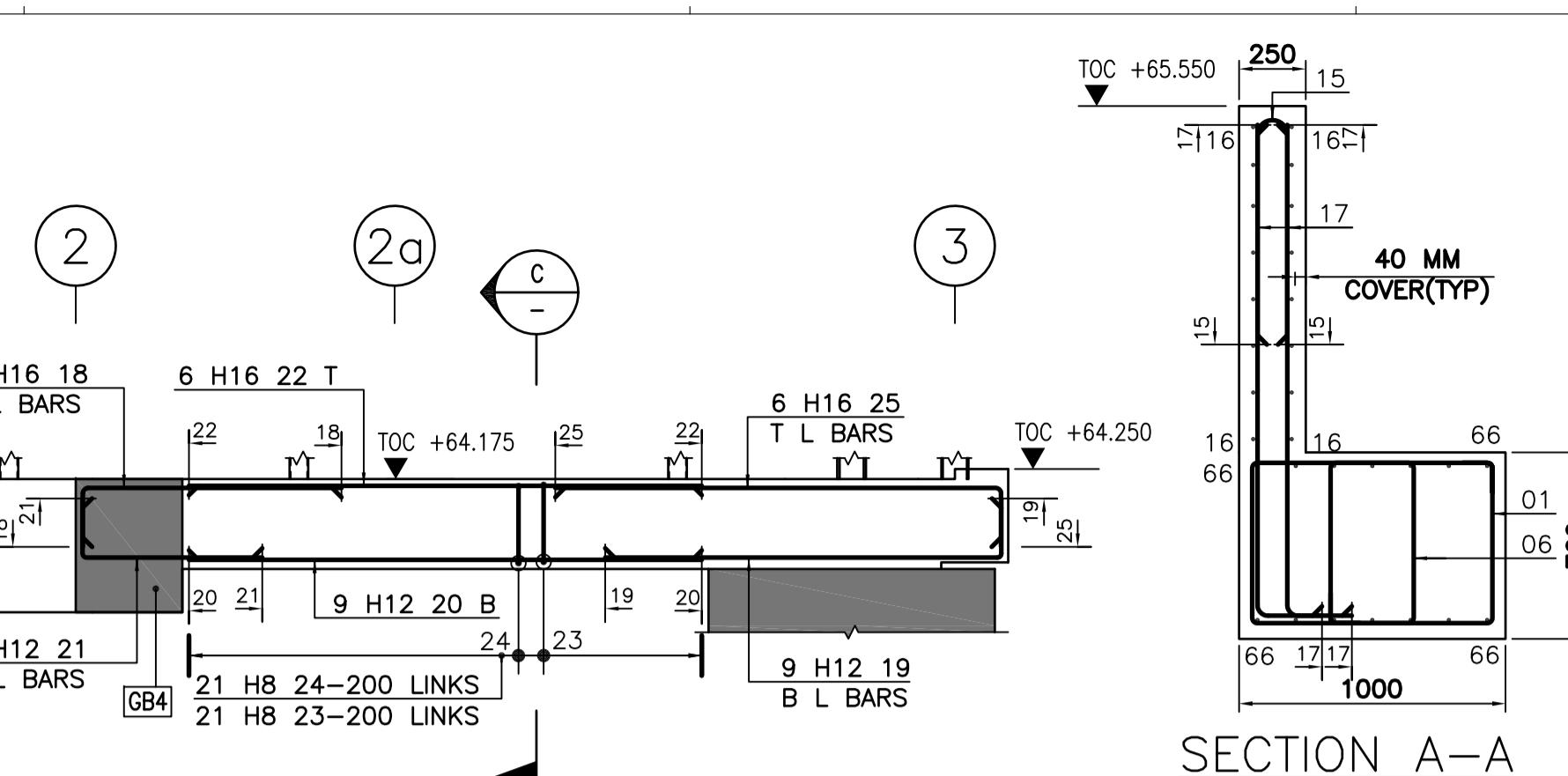
B :-	BOTTOM
B1 :-	BOTTOM FIRST LAYER
B2 :-	BOTTOM SECOND LAYER
T :-	TOP
T1 :-	TOP FIRST LAYER
T2 :-	TOP SECOND LAYER
NF :-	NEUTRAL AXIS
FF :-	FAR FACE
EF :-	EACH FACE
AP :-	ALTERNATE PLACED
ABR :-	ALTERNATE BARS REVERSED
STGD :-	STAGGERED
DWLS :-	DOWEL BARS
SF :-	SIDE FACE
TYP :-	Typical
TOC :-	TOP OF CONCRETE
TOF :-	TOP OF FOOTING
DP :-	DEPTH

6. MINIMUM LAPs / ANCHORAGE TO REINFORCEMENT TO BE AS FOLLOWS:

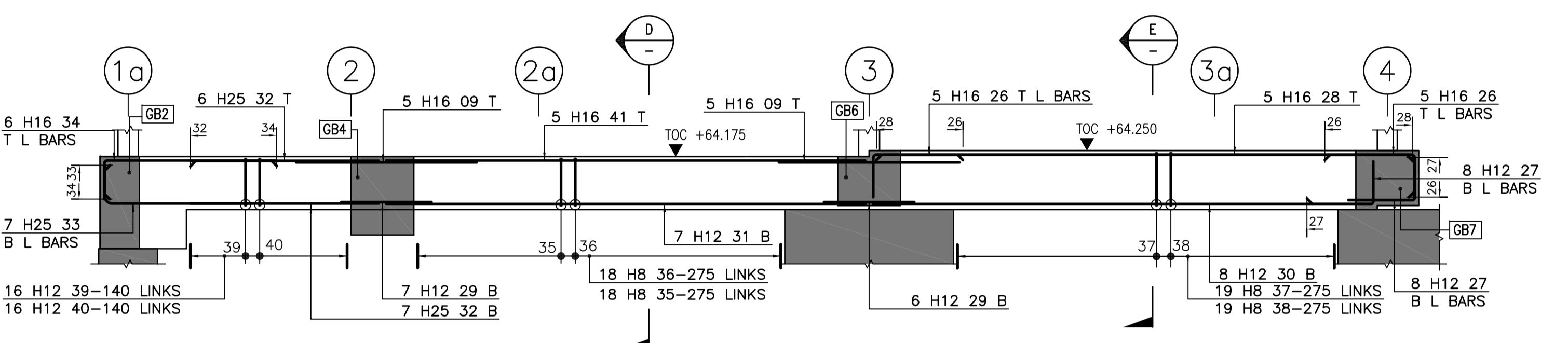
BAR DIAMETER	LAP LENGTHS		ANCHORAGE LENGTHS	
	GOOD BOND	POOR BOND	GOOD BOND	POOR BOND
8	300	425	200	275
10	400	575	275	400
12	525	750	350	500
14	675	1000	525	750
20	1000	1425	675	950
25	1300	1850	875	1250
32	1650	2350	1100	1575
40	2250	3200	1500	2150



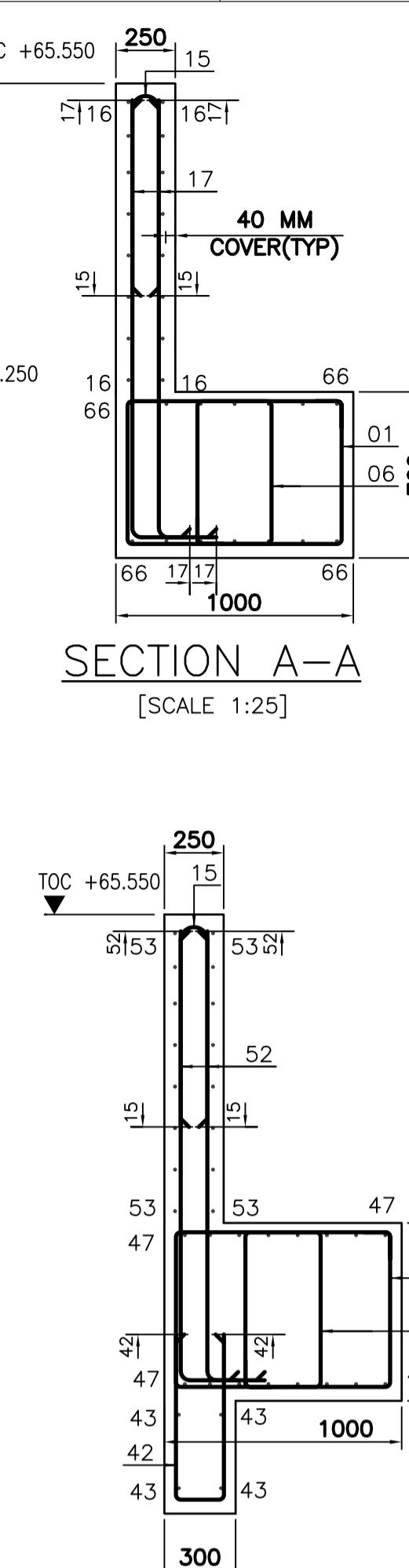
RC DETAILS OF GROUND BEAM GB8
(1000/800X700DP)
(1 NO. THUS)
[SCALE 1:50]



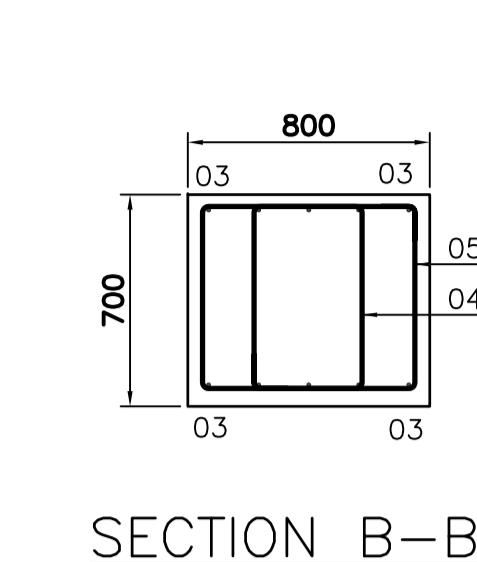
RC DETAILS OF GROUND BEAM GB9
(1000X675DP)
(1 NO. THUS)
[SCALE 1:50]



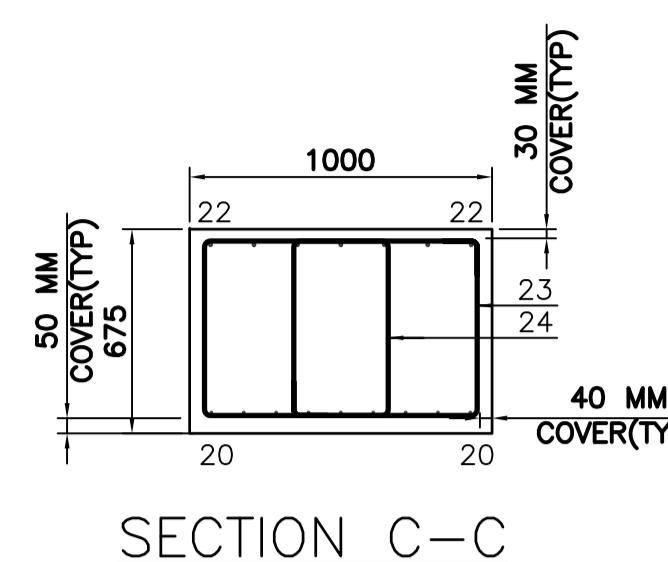
RC DETAILS OF GROUND BEAM GB10
(800X675/750DP)
(1 NO. THUS)
[SCALE 1:50]



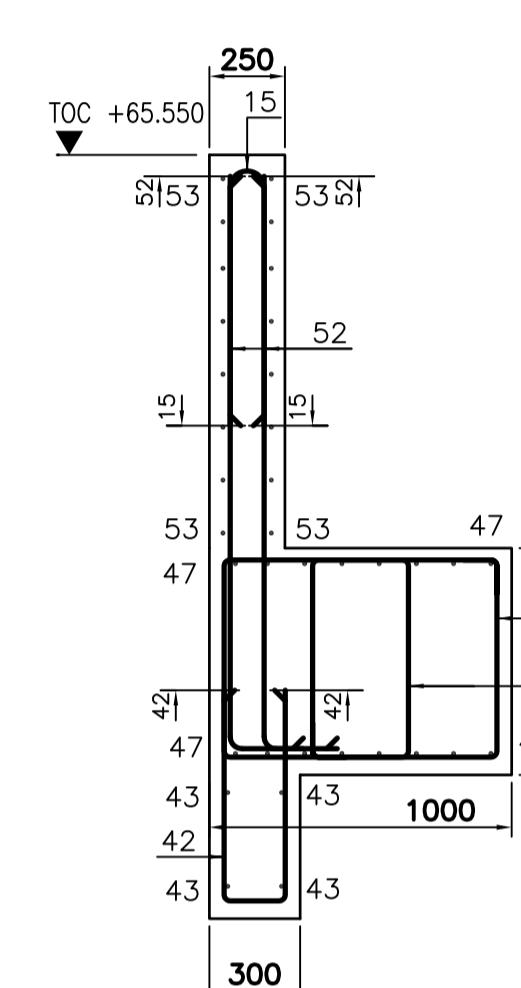
SECTION A-A
[SCALE 1:25]



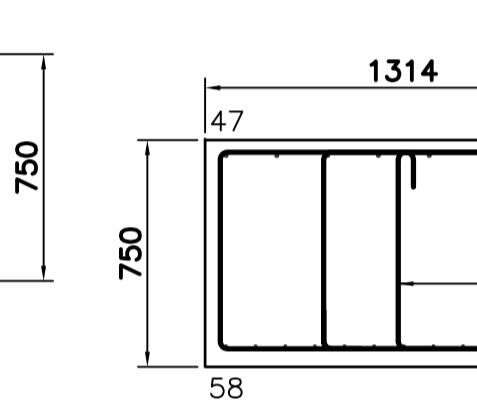
SECTION B-B
[SCALE 1:25]



SECTION C-C
[SCALE 1:25]



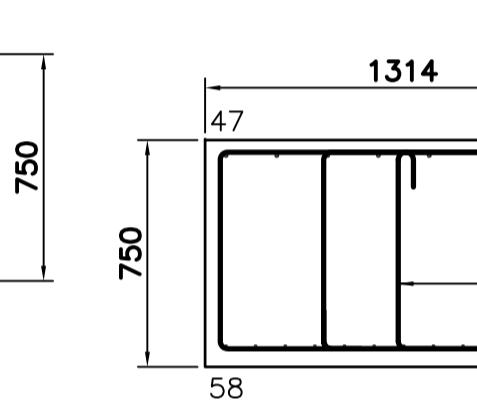
SECTION D-D
[SCALE 1:25]



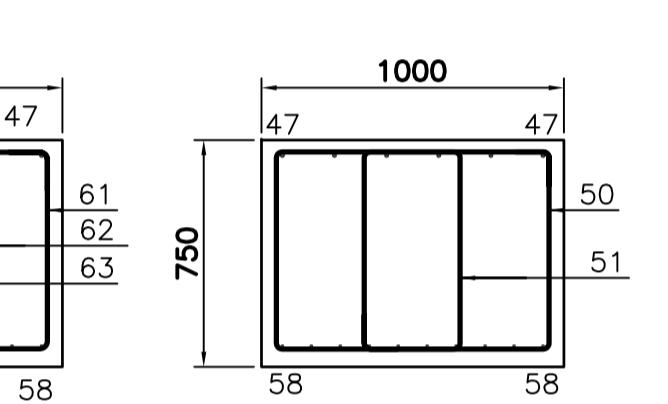
SECTION E-E
[SCALE 1:25]



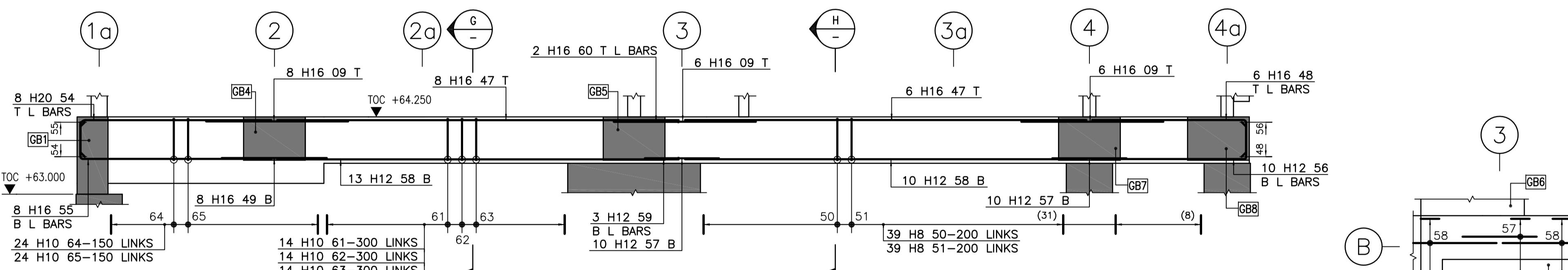
SECTION F-F
[SCALE 1:25]



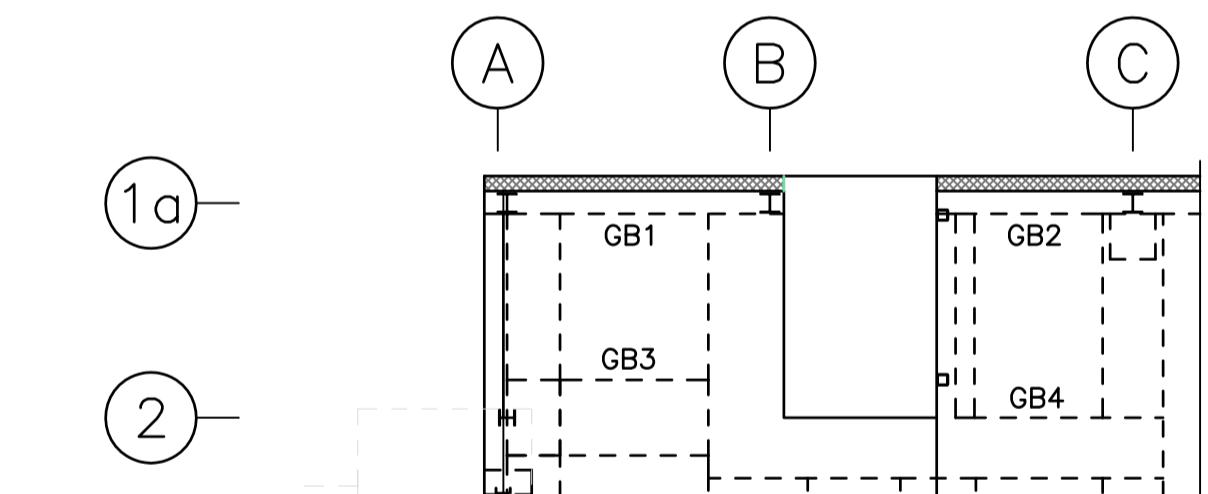
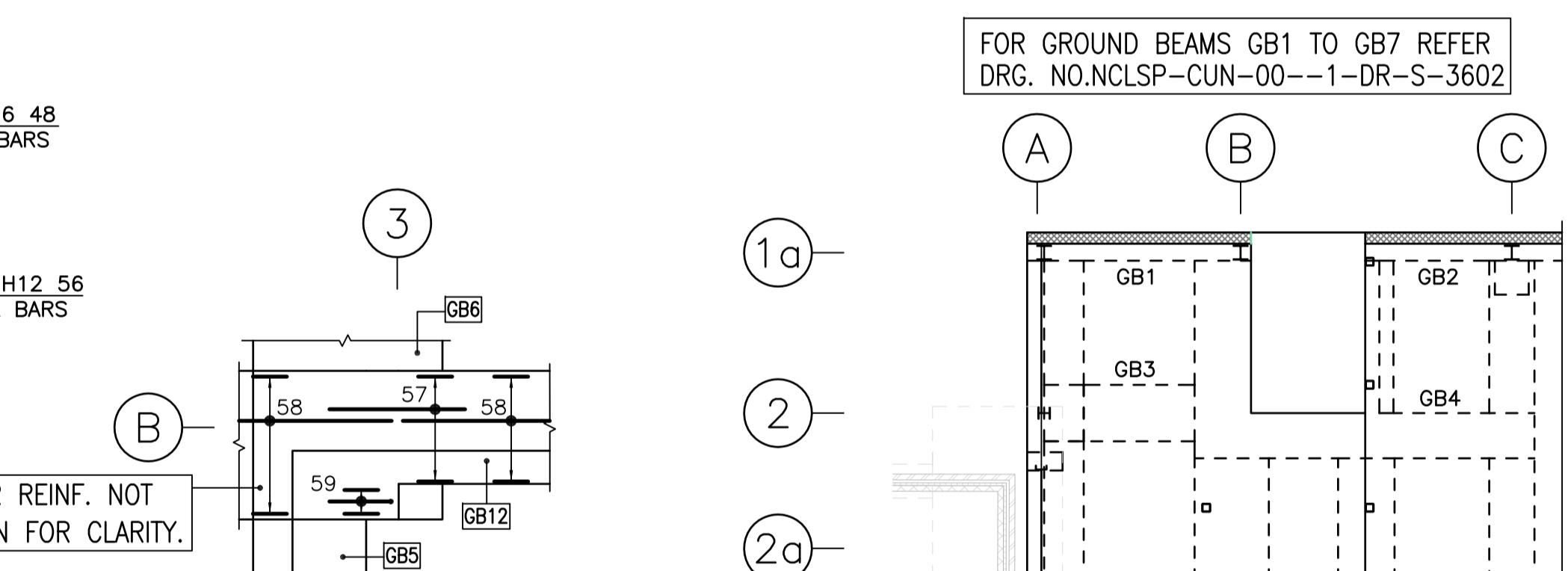
SECTION G-G
[SCALE 1:25]



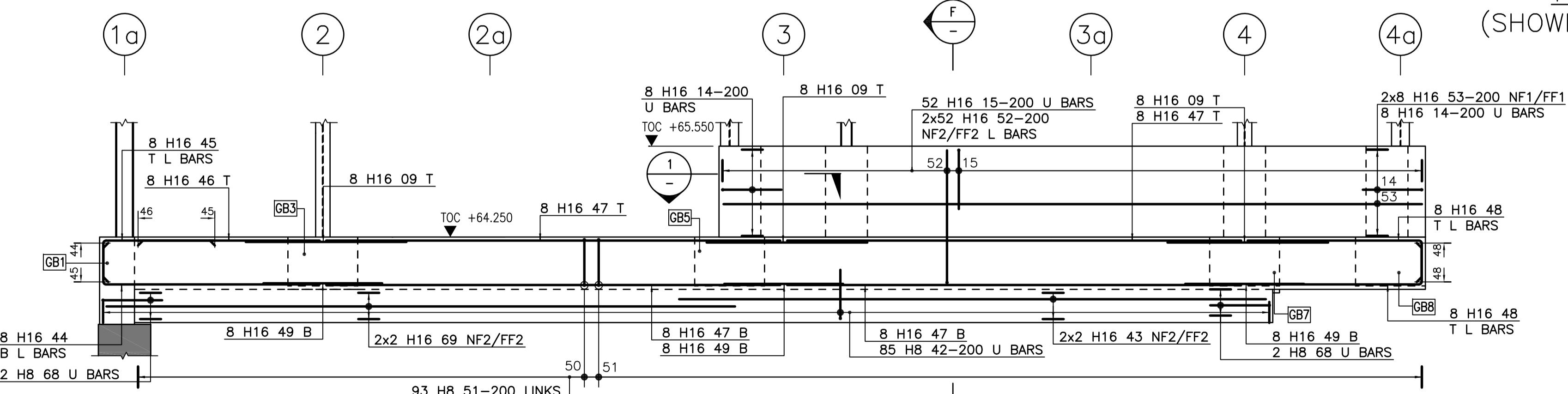
SECTION H-H
[SCALE 1:25]



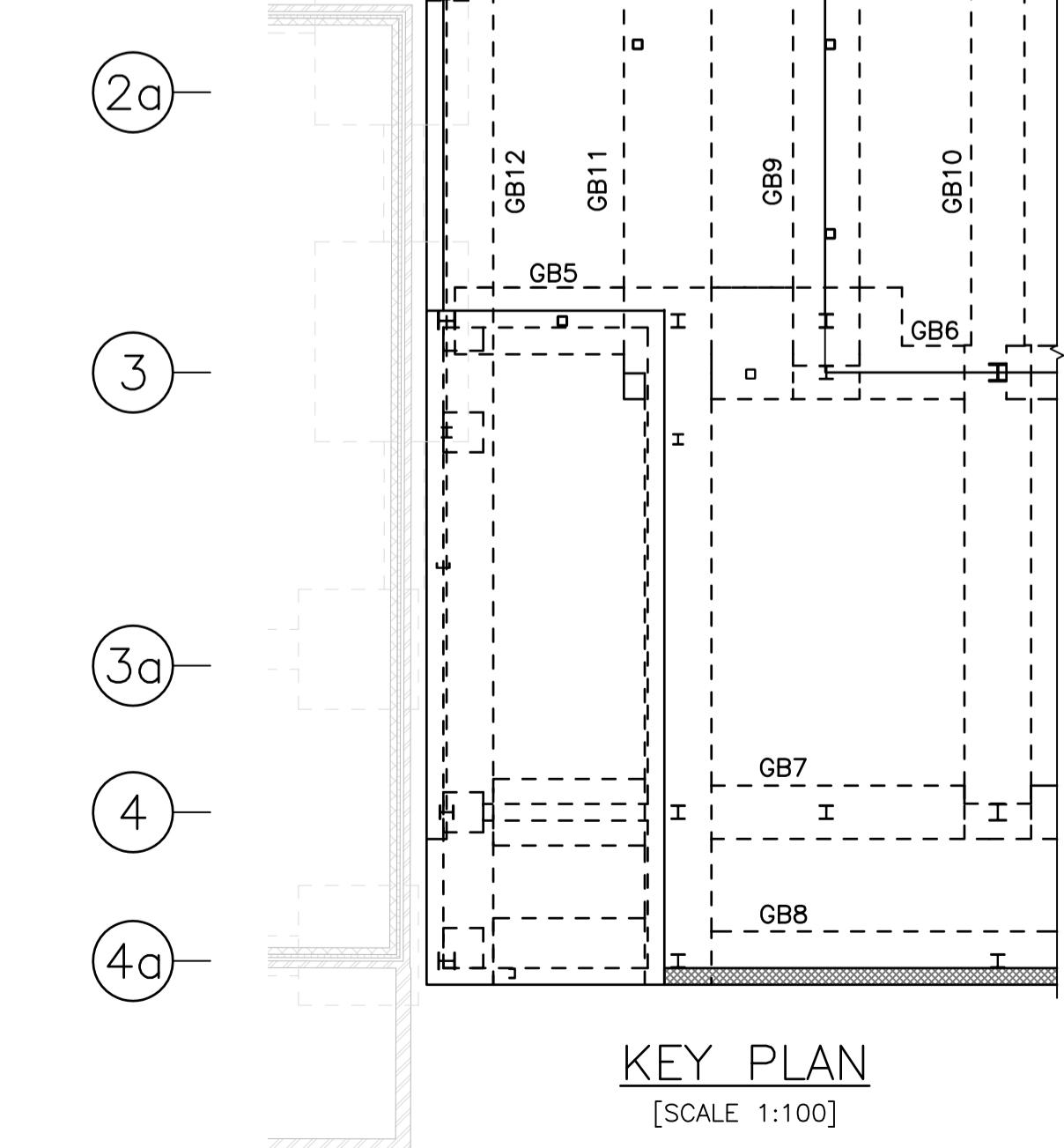
RC DETAILS OF GROUND BEAM GB11
(1000X1314/750DP)
(1 NO. THUS)
[SCALE 1:50]



PLAN VIEW 1-1
(SHOWING BOTTOM REINF.)
[SCALE 1:50]



RC DETAILS OF GROUND BEAM GB12
(1000X750DP)
(1 NO. THUS)
[SCALE 1:50]



KEY PLAN
[SCALE 1:100]

Issue	Date	Description	By	Chkd	Verfd
Project					
Client					
Architect					
Title RC DETAIL OF GROUND BEAMS (GB8 TO GB12)					
Drawing No.		Drawing Status			
Job No.		Scale @A1			
Originator	Checked	Verified	Issue		

Based on Architects Drg No.
Structural Drg No.
Survey Drg No.
Other Drg No.
Other Drg No.

Rev
Rev
Rev
Rev
Rev

DO NOT SCALE FROM THIS DRAWING

Notes

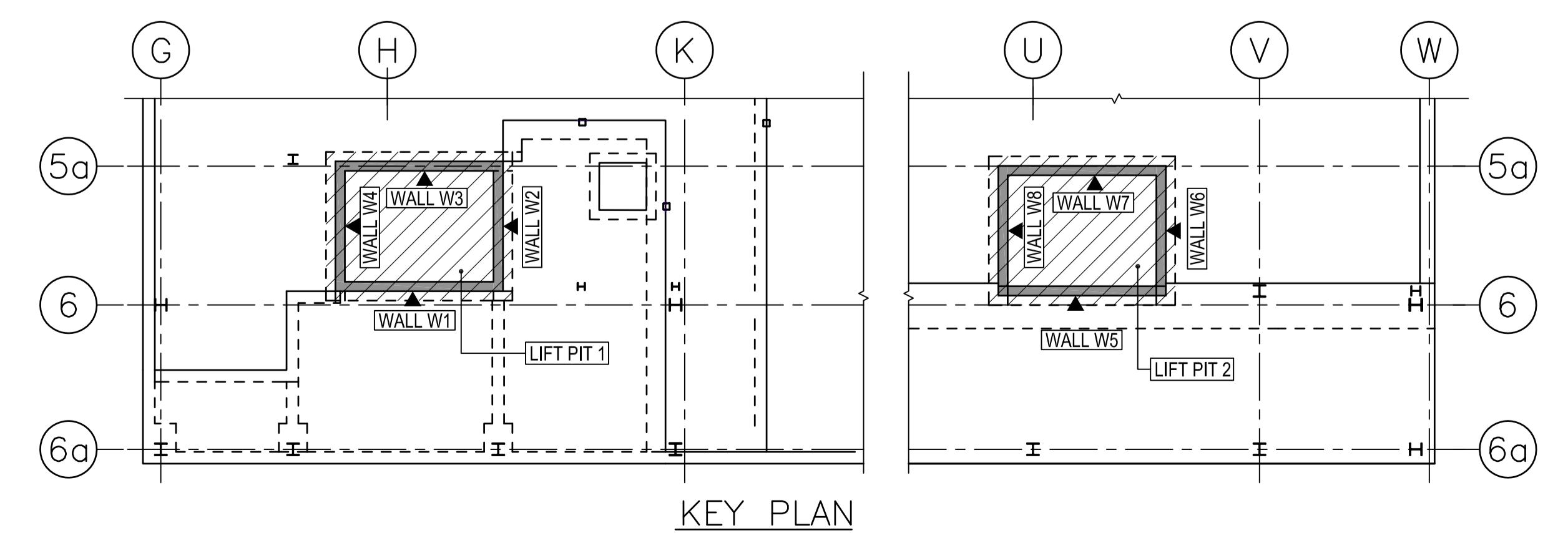
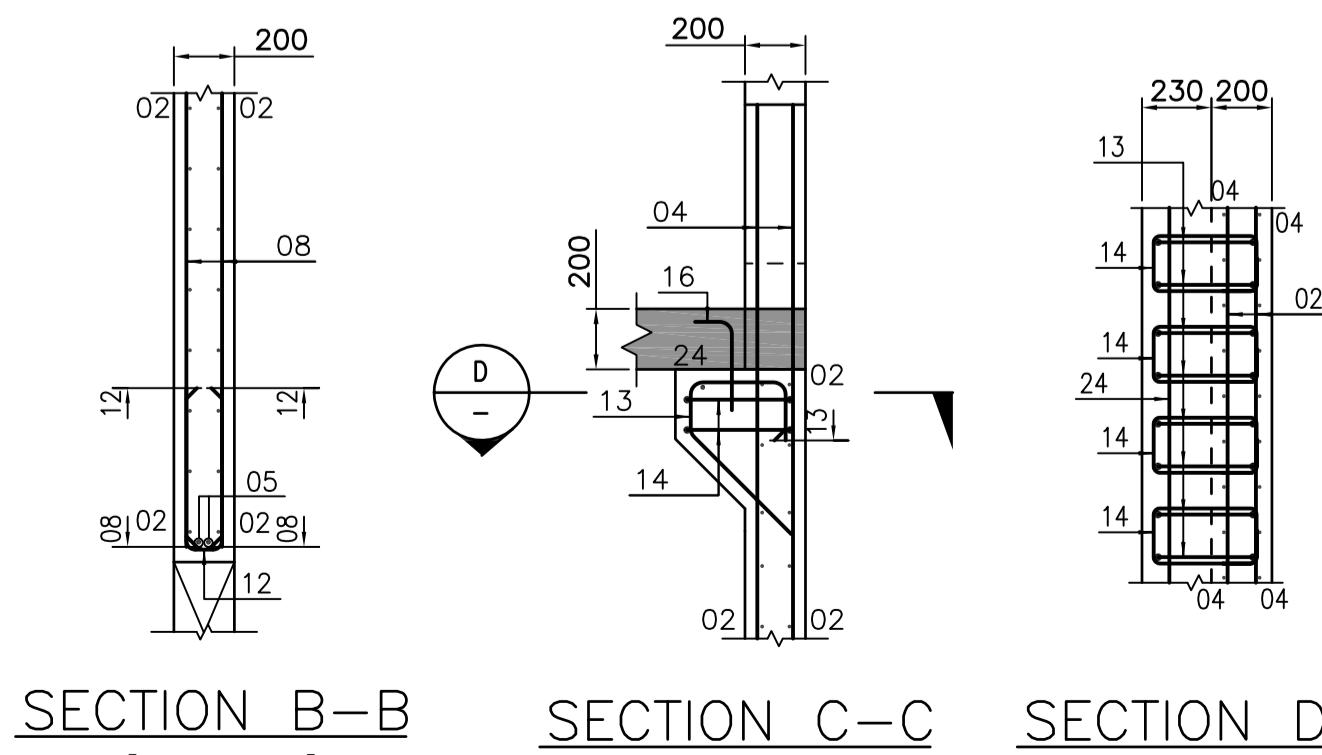
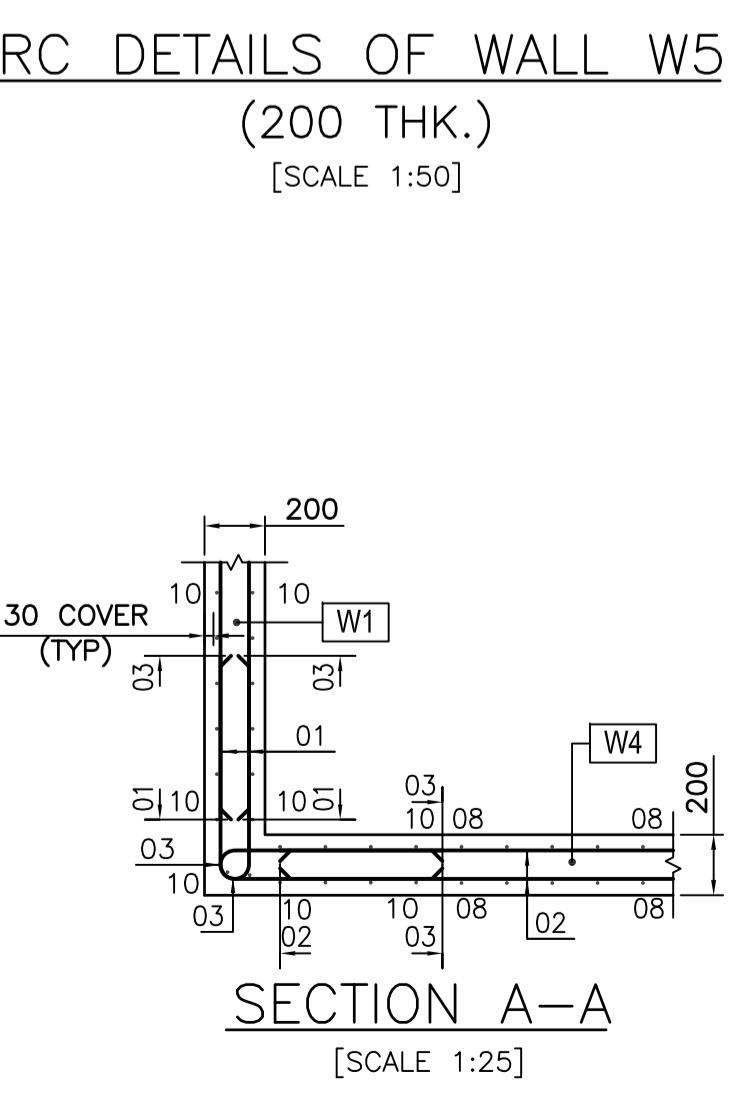
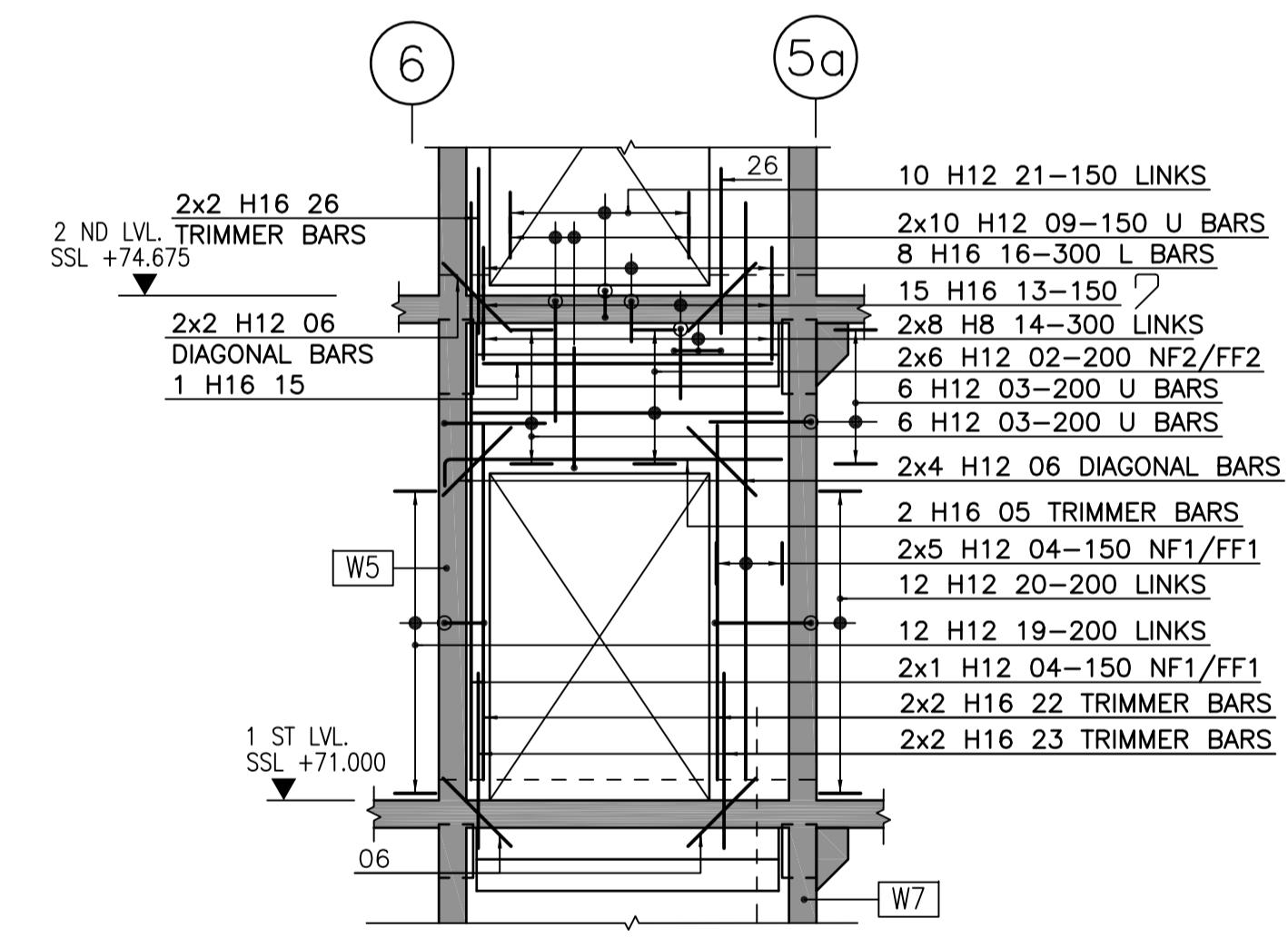
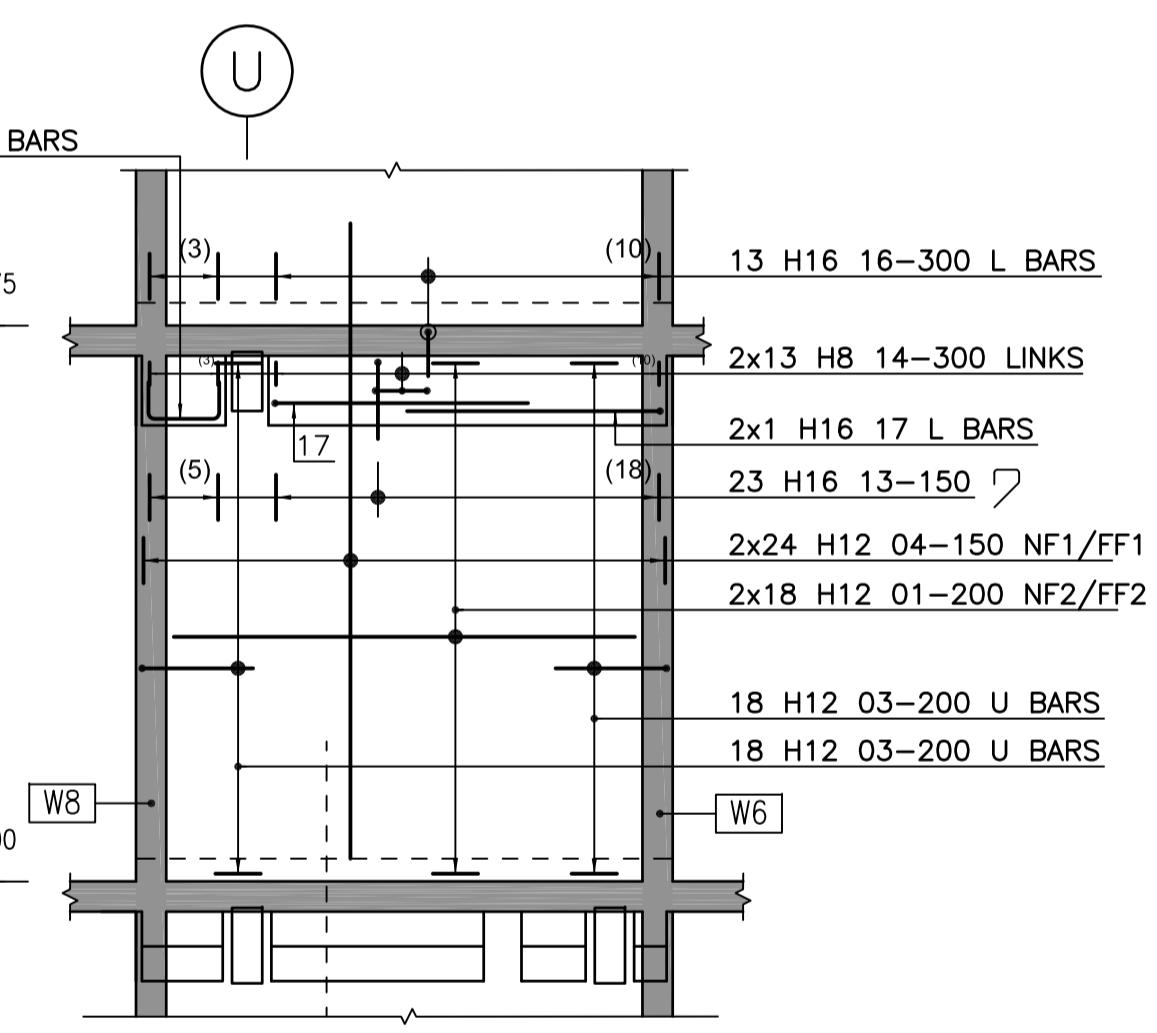
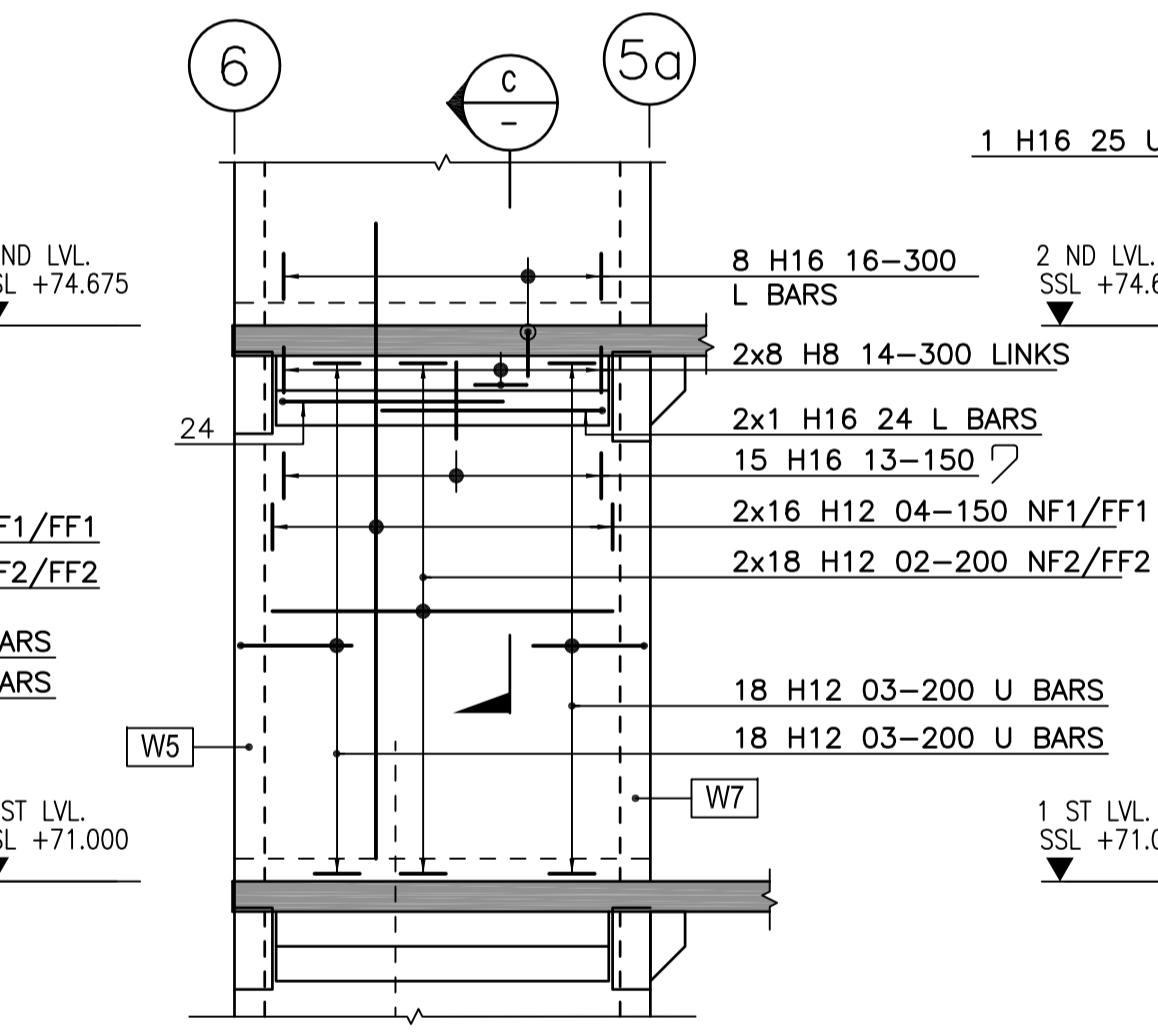
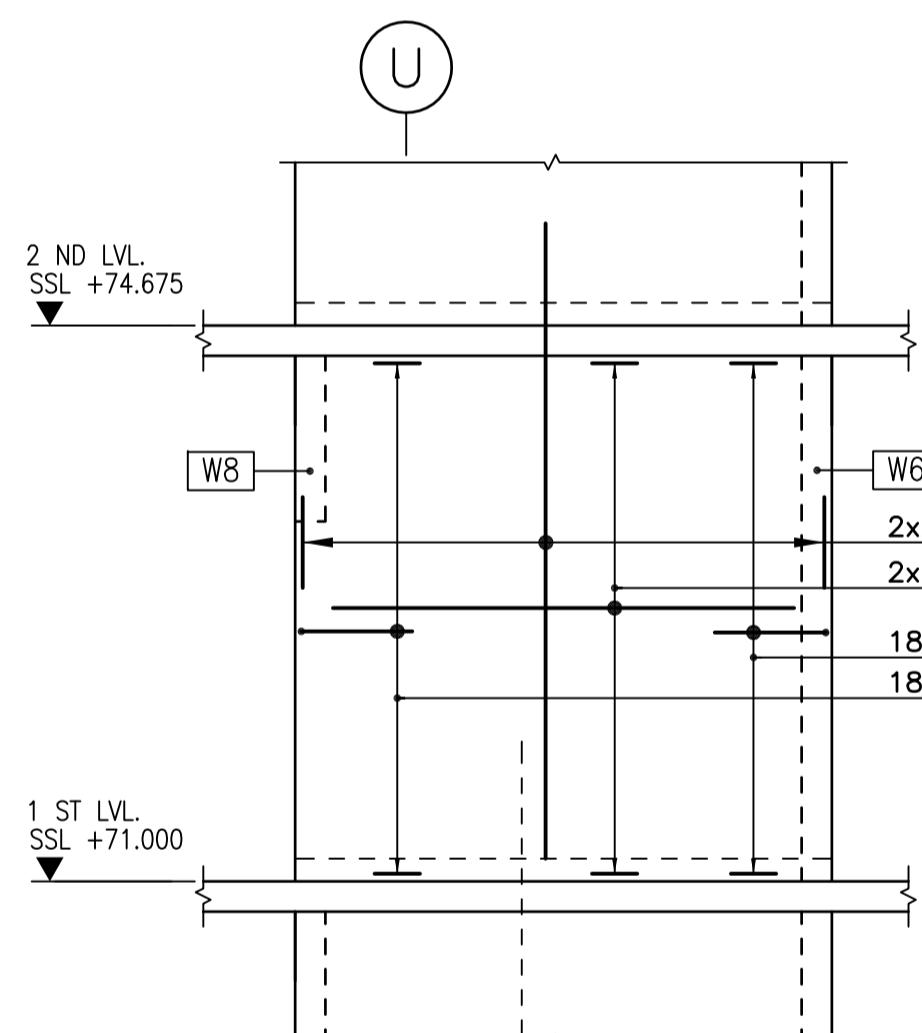
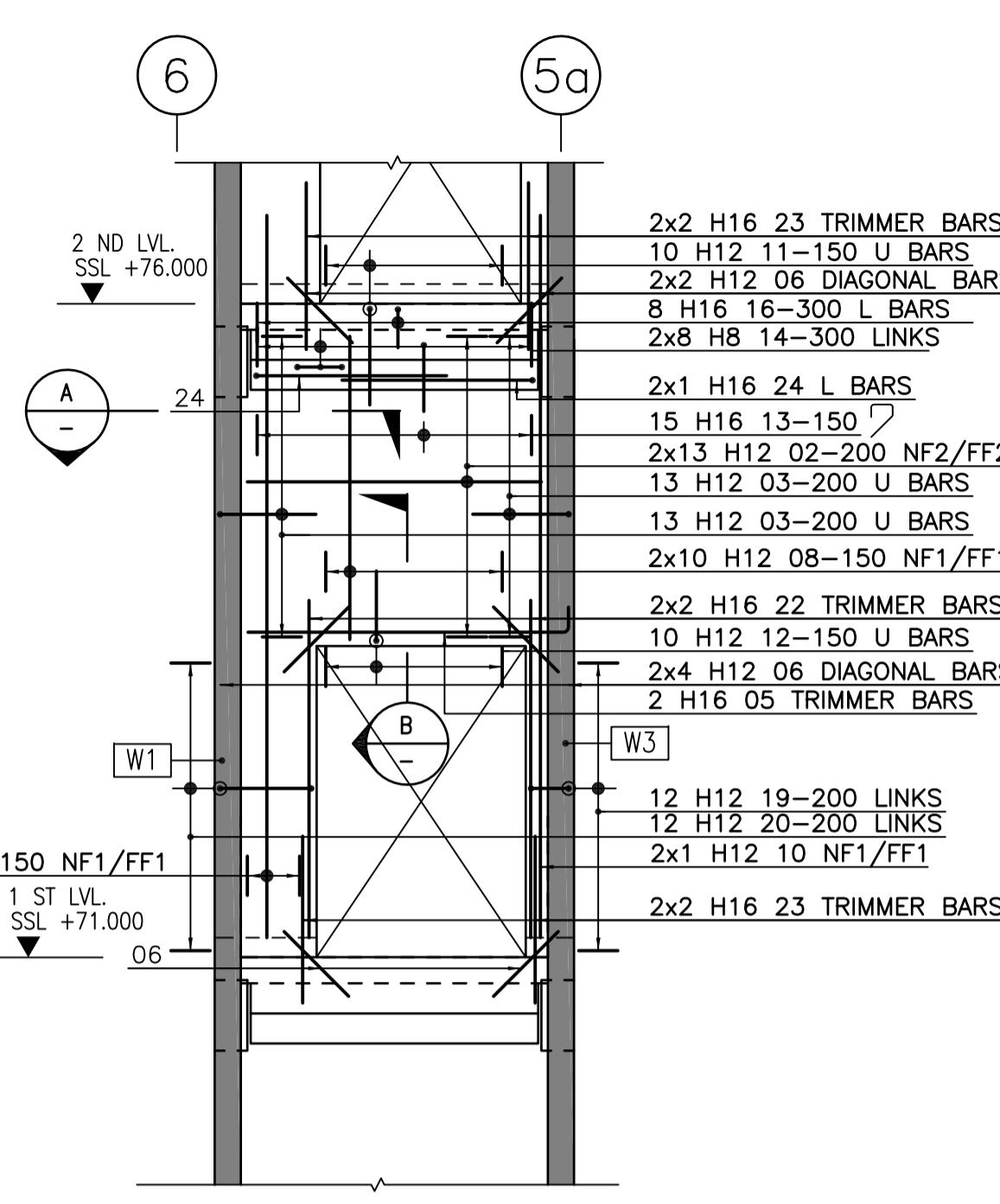
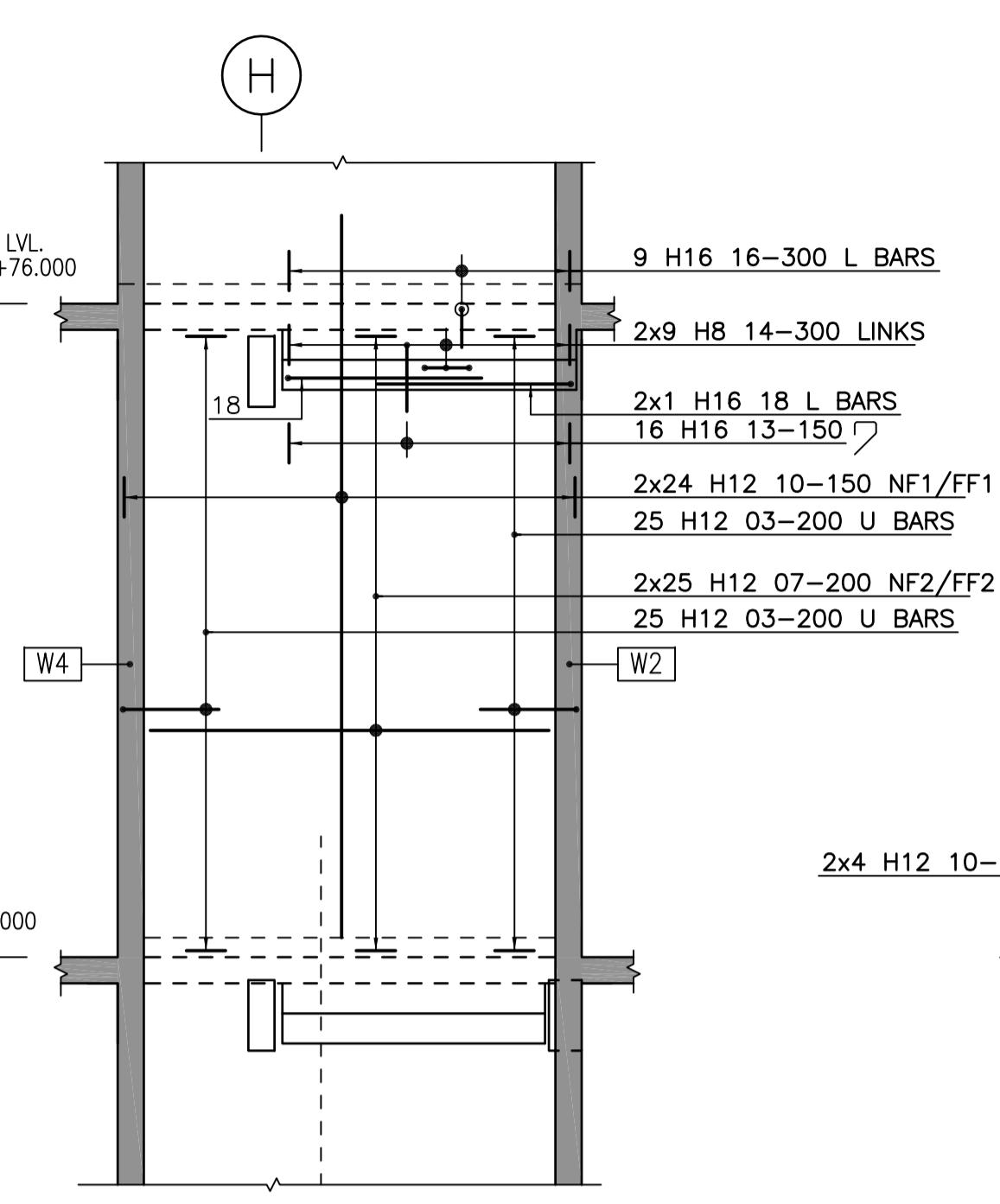
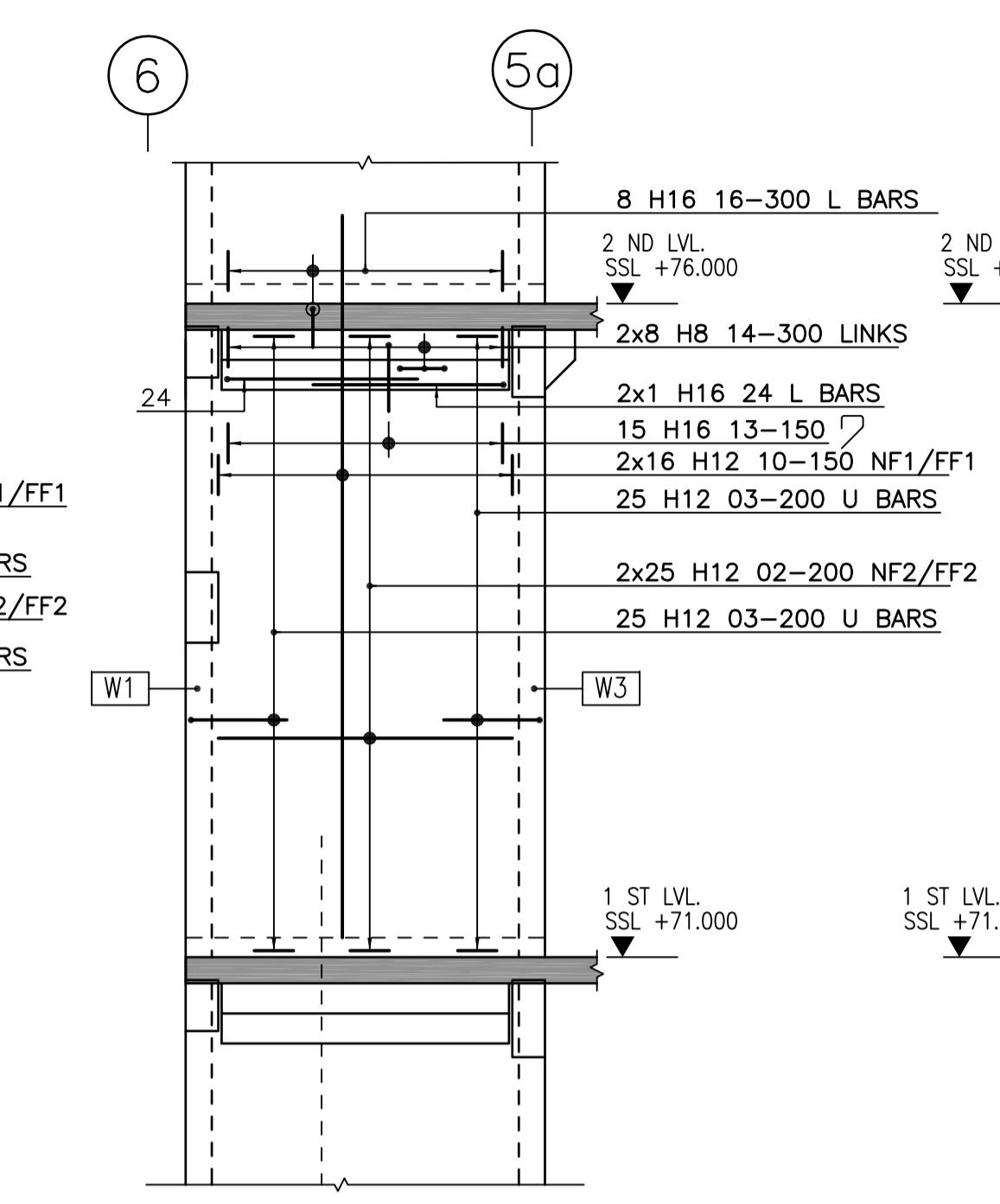
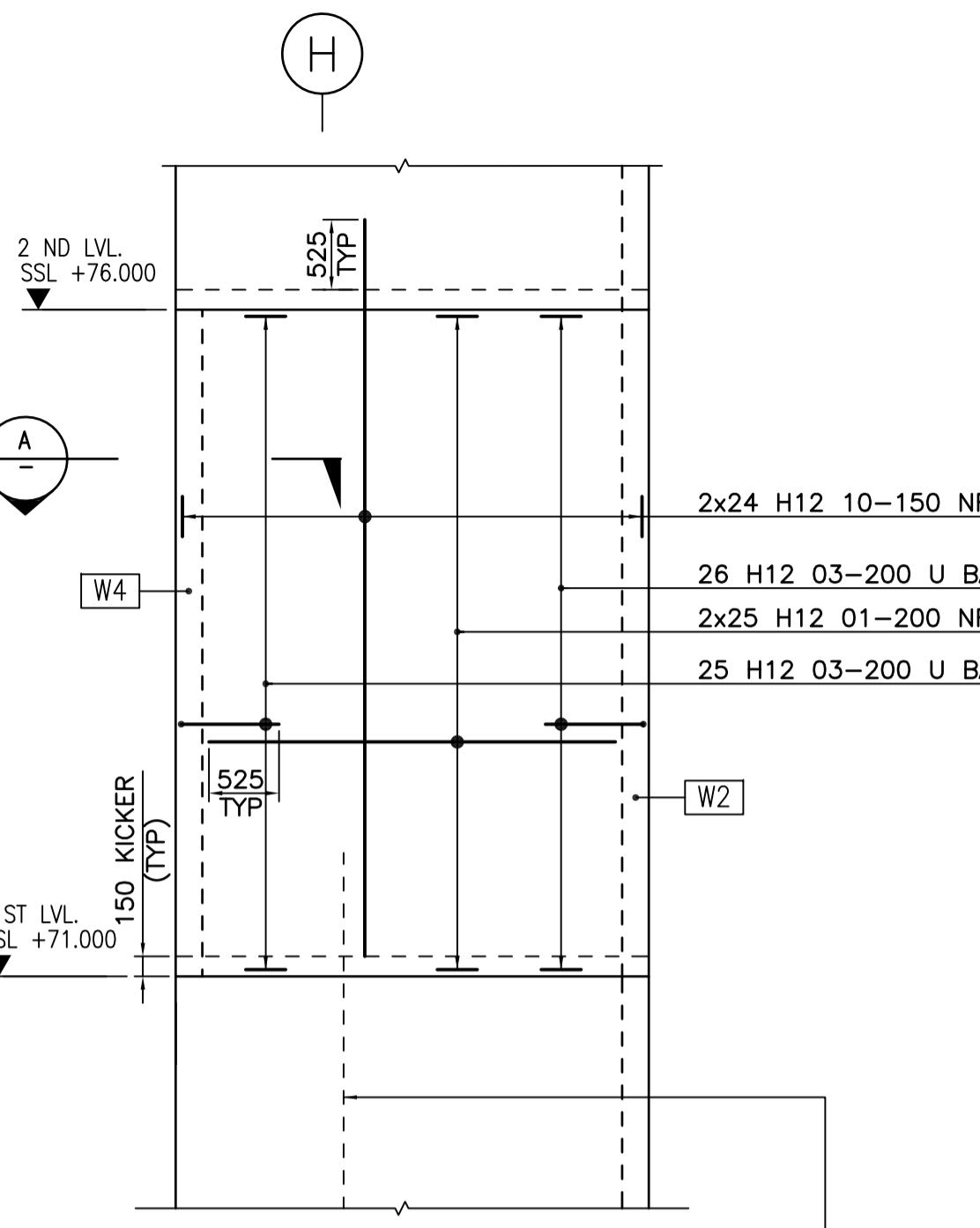
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ALL ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. CONCRETE TO BE GRADE C32/40.
3. REFER TO SCHEDULE: SC-S-3616 FOR BAR BENDING SCHEDULE.
4. COVER TO REINFORCEMENT TO BE
WALL : ALL SIDES = 30mm

ABBREVIATIONS:

B-	BOTTOM
B1-	BOTTOM FIRST LAYER
B2-	BOTTOM SECOND LAYER
T-	TOP
T1-	TOP FIRST LAYER
T2-	TOP SECOND LAYER
NF-	NEAR FACE
FF-	Far Face
EF-	Each Face
AP-	ALTERNATELY PLACED
ABR-	ALTERNATE BARS REVERSED
STGD-	STAGGERED
DWLs-	DOWEL BARS
SF-	SIDE FACE
TYP-	TYPE
TOC-	TOP OF CONCRETE
TOF-	TOP OF FOOTING
DP-	DEPTH

5. MINIMUM LAPS / ANCHORAGE TO REINFORCEMENT TO BE AS FOLLOWS :

BAR DIA	LAP LENGTHS		ANCHORAGE LENGTHS	
	GOOD BOND	POOR BOND	GOOD BOND	POOR BOND
8	300	425	200	275
10	400	575	275	400
12	525	750	350	500
14	675	950	450	625
20	1000	1425	675	950
25	1300	1850	875	1250
32	1650	2350	1100	1575
40	2250	3200	1500	2150



Issue	Date	Description	By	Chkd	Verfd
Project					
Client					
Architect					
Title RC DETAILS OF LIFT PIT 1 AND 2 WALLS W1 TO W8 (FIRST TO SECOND FL. LVL)					
Drawing No.		Drawing Status			
Job No.		Scale @A1			
Originator	Checked	Verified	Issue		

DO NOT SCALE FROM THIS DRAWING

- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL
ELEVANT ARCHITECTS AND ALL ENGINEERS DRAWINGS AND
SPECIFICATIONS.

CONCRETE TO BE GRADE C32/40.

REFER TO SCHEDULE: SC-S-3617 FOR BAR BENDING SCHEDULE.

MATERIALS:

OVER TO REINFORCEMENT TO BE

ALL : ALL SIDES = 30mm

ABBREVIATIONS:

B :- BOTTOM
BOTTOM THE BOTTOM

B1 :-	BOTTOM FIRST LAYER
B2 :-	BOTTOM SECOND LAYER
T :-	TOP
T1 :-	TOP FIRST LAYER
T2 :-	TOP SECOND LAYER
NF :-	NEAR FACE
FF:-	FAR FACE
EF :-	EACH FACE
AP :-	ALTERNATELY PLACED
ABR :-	ALTERNATE BARS REVERSED
STGD :-	STAGGERED
DWLS :-	DOWEL BARS
SF :-	SIDE FACE
TYP :-	TYPICAL
TOC :-	TOP OF CONCRETE
TOF :-	TOP OF FOOTING
DP :-	DEPTH

**MINIMUM LAPS / ANCHORAGE TO REINFORCEMENT TO BE
S FOLLOWS :**

CAR DIA	LAP LENGTHS		ANCHORAGE LENGTHS	
	GOOD BOND	POOR BOND	GOOD BOND	POOR BOND
8	300	425	200	275
10	400	575	275	400
12	525	750	350	500
16	775	1100	525	725
20	1000	1425	675	950
25	1300	1850	875	1250
32	1650	2350	1100	1575
40	2250	3200	1500	2150

Architectural drawing showing the reinforcement details for Wall W1. The wall is 150 KICKER (TYP) thick. Key dimensions include 525 TYP for vertical distances and 27 H12 03-200 U BARS for horizontal reinforcement. Labels include H at the top, A on the left, W4 and W2 near the bottom, and 2 ND LVL. SSL +76.000 and ROOF LVL. TOC +81.130 at the top.

ROOF LVL.
TOC +81.130

H

24 H12 01-150 U BARS

2x24 H12 11-150 NF1/FF1

27 H12 03-200 U BARS

2x27 H12 04-200 NF2/FF2

27 H12 03-200 U BARS

A

W4

W2

2 ND LVL.
SSL +76.000

150 KICKER
(TYP)

525 TYP

525 TYP

RC DETAILS OF WALL W1

6

5a

ROOF LVL.
TOC +81.130

16 H12 01-150 U BARS

2x16 H12 11-150 NF1/FF1

27 H12 03-200 U BARS

2x27 H12 05-200 NF2/FF2

27 H12 03-200 U BARS

W1

W3

2 ND LVL.
SSL +76.000

2 ND
SSL

200

200

200

RC DETAILS OF WALL W2

ROOF LVL.
TOC +81.192

TOC +81.130

24 H12 01-150 U BARS

2x2 H12 11 NF1/FF1

2x22 H12 02-150 NF1/FF1

27 H12 03-200 U BARS

2x27 H12 06-200 NF2/FF2

27 H12 03-200 U BARS

W4

LVL.
+76.000

200

W2

RC DETAILS OF WALL W3

**ROOF LVL.
TOC +81.130**

6

A

5a

15 H12 01-150 U BARS

2x15 H12 05-200 NF2/F

15 H12 03-200 U BARS

15 H12 03-200 U BARS

2x10 H12 07-150 NF1/F

10 H12 08-150 U BARS

2x2 H12 14 DIAGONAL BA

2 H16 18 TRIMMER L BA

2x2 H16 15 TRIMMER BA

2x1 H12 11-150 NF1/FF

2x4 H12 11-150 NF1/FF

12 H12 13-200 LINKS

12 H12 12-200 LINKS

W1

B

**2 ND LVL.
SSL +76.000**

W3

RC DETAILS OF WALL W4

ROOF LVL.
TOC +81.175

U

24 H12 01-150 U BARS

2x24 H12 16-150 NF1/FF1

2x33 H12 04-200 NF2/FF2

W8

33 H12 03-200 U BARS

33 H12 03-200 U BARS

W6

2 ND LVL.
SSL +74.675

2 ND
SSL

200

RC DETAILS OF WALL W5
(200 THK.)

[SCALE 1:50]

6

5a

ROOF LVL.
TOC +81.175

16 H12 01-150 U BARS

2x16 H12 16-150 NF1/FF1

2x33 H12 05-200 NF2/FF2

33 H12 03-200 U BARS

34 H12 03-200 U BARS

W5

W7

LVL.
+74.675

200

2 ND LVL.
SSL +74.675

RC DETAILS OF WALL W7
(200 THK.)

[SCALE 1:50]

ROOF LVL.
TOC +81.175

6

5a

16 H12 01-150 U BARS

2x10 H12 10-150 NF1/FF

21 H12 03-200 U BARS

21 H12 03-200 U BARS

2x21 H12 05-200 NF2/FF

W7

2x1 H12 16-150 NF1/FF

10 H12 19-150 U BARS

2x2 H12 14 DIAGONAL BARS

2 H16 18 TRIMMER BARS

2x5 H12 16-150 NF1/FF

12 H12 20-200 LINKS

12 H12 21-200 LINKS

2x2 H16 22 TRIMMER BARS

W5

2 ND LVL.
SSL +74.675

03

200

2x1 H12 03-200 U BARS

2x1 H12 05-200 NF2/FF

RC DETAILS OF WALL W8
(200 THK.)

[SCALE 1:50]

SECTION A-A

30 COVER (TYP)

200

W1

W4

200

A technical drawing showing a vertical profile with various dimensions and labels:

- Top horizontal dimension: 200
- Left vertical dimension: 05
- Right vertical dimension: 05
- Middle vertical dimension: 07
- Bottom left vertical dimension: 01
- Bottom right vertical dimension: 01
- Bottom horizontal dimension: 18
- Bottom left horizontal dimension: 05
- Bottom right horizontal dimension: 05
- Bottom center horizontal dimension: 08

This architectural key plan diagram illustrates a structural section with various components and reference points. The vertical axis is marked with horizontal dashed lines labeled 5a, 6, and 6a from top to bottom. The horizontal axis is marked with vertical dashed lines labeled G, H, and K from left to right. A central feature is a rectangular structure bounded by WALL W1, WALL W2, WALL W3, and WALL W4. Arrows point from these labels to their respective walls. To the right of this structure is a rectangular opening labeled LIFT PIT 1. The diagram also shows a vertical wall on the far left and a vertical column on the far right. Reference points I and J are located on the horizontal dashed line at level 6, between the vertical dashed lines G and K. Reference point H is located on the vertical dashed line at level 6, between the horizontal dashed lines 5a and 6.

The diagram illustrates a room layout with the following features:

- Walls: WALL W5, WALL W6, WALL W7, and WALL W8.
- Vertical lines: H, H, and H.
- Labels: LIFT PIT 2, WALL W5.
- Annotations: Circles U, V, and W are positioned above the room. Circles 5a, 6, and 6a are positioned to the right of vertical lines H, H, and H respectively.

Based on Architects Drg No.
Structural Drg No.
Survey Drg No.
Other Drg No.
Other Drg No.

Rev
Rev
Rev
Rev
Rev

DO NOT SCALE FROM THIS DRAWING

- Notes
 1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ALL ENGINEERS DRAWINGS AND SPECIFICATIONS.
 2. CONCRETE TO BE GRADE C32/40.
 3. REFER TO SCHEDULE: SC-S-3624 FOR BAR BENDING SCHEDULE.
 4. COVER TO REINFORCEMENT TO BE
 SLAB : BOTTOM = 75mm, TOP & SIDE = 55mm UNO.

5. ABBREVIATIONS:
 B :- BOTTOM
 B1 :- BOTTOM FIRST LAYER
 B2 :- BOTTOM SECOND LAYER
 T :- TOP
 T1 :- TOP FIRST LAYER
 T2 :- TOP SECOND LAYER
 NF :- NEAR FACE
 FF :- FAR FACE
 EF :- EACH FACE
 AP :- ALTERNATELY PLACED
 ABR :- ALTERNATE BARS REVERSED
 STGD :- STAGGERED
 DWLS :- DIAGONAL BARS
 SF :- SIDE FACE
 TYP :- TYPICAL
 TOC :- TOP OF CONCRETE
 TOF :- TOP OF FOOTING
 DP :- DEPTH

6. MINIMUM LAPS / ANCHORAGE TO REINFORCEMENT TO BE
 60 X BAR DIA. U.A.C.:
 H8 - 480mm
 H10 - 600mm
 H12 - 720mm
 H16 - 960mm
 H20 - 1200mm
 H22 - 1500mm
 H32 - 1920mm
 H40 - 2400mm

7. REFER TO SEPARATE DRAWING FOR REINFORCEMENT DETAILS TO MANHOLES.

Issue	Date	Description	By	Chkd	Verfd
-------	------	-------------	----	------	-------

Project			
---------	--	--	--

Client			
--------	--	--	--

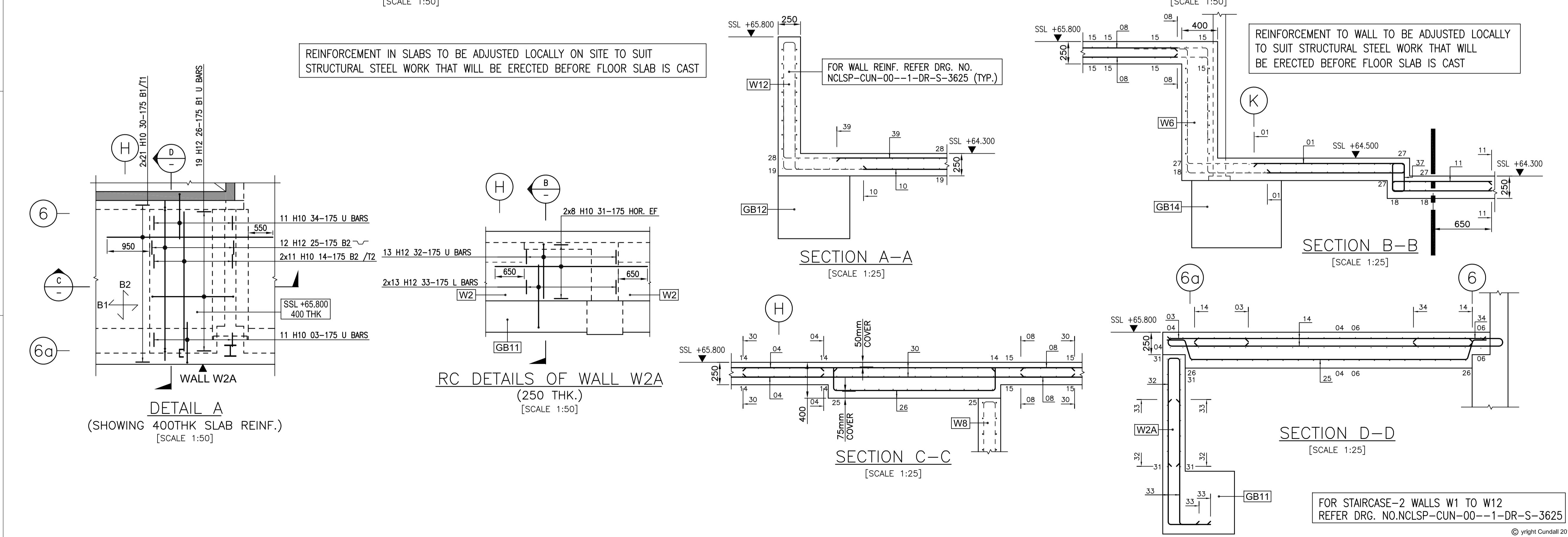
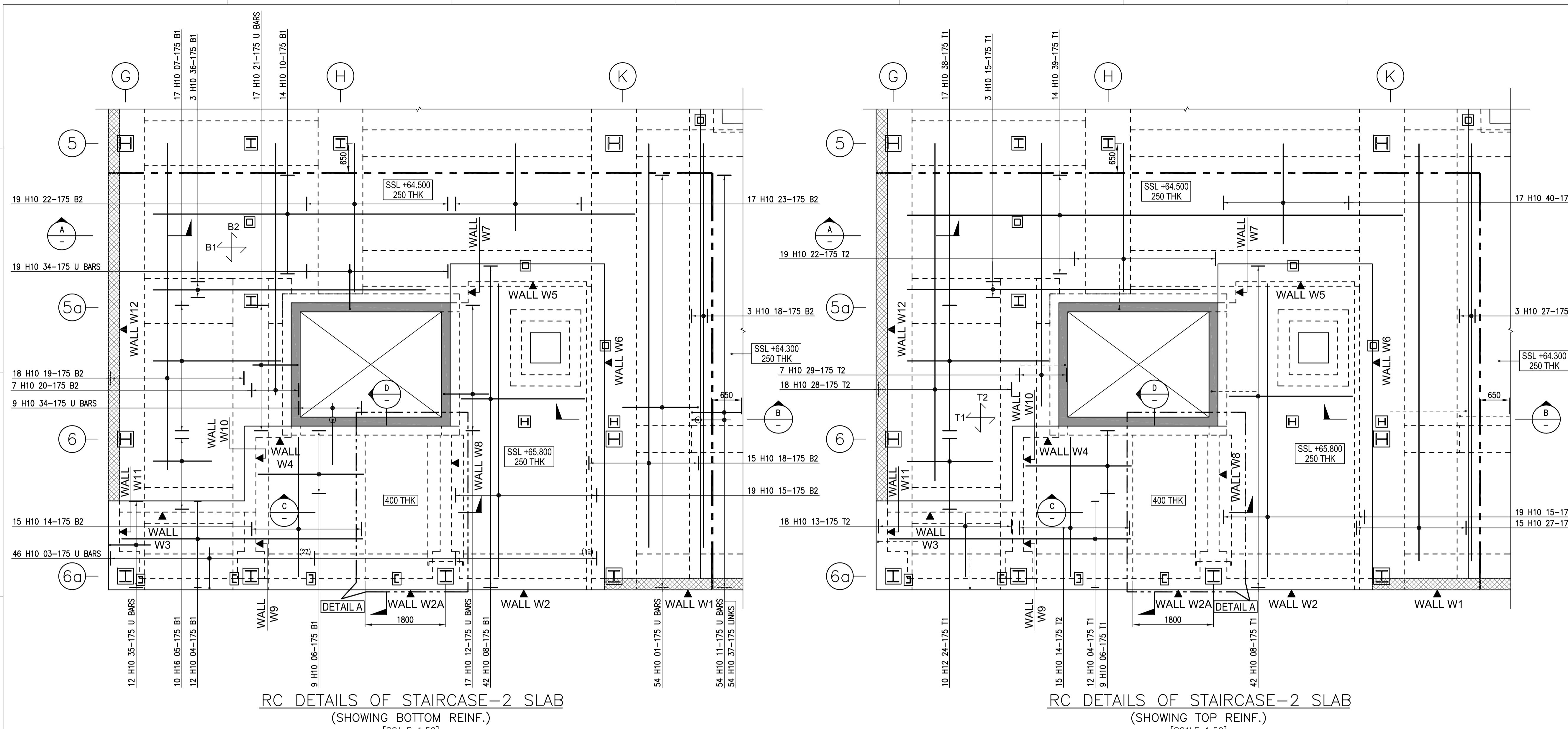
Architect			
-----------	--	--	--

Title	RC DETAIL OF STAIRCASE-2 SLAB	
-------	-------------------------------	--

Drawing No.	Drawing Status
-------------	----------------

Job No.	Scale @A1
---------	-----------

Originator	Checked	Verified	Issue
------------	---------	----------	-------



Rev
Rev
Rev
Rev
Rev

DO NOT SCALE FROM THIS DRAWING

Notes
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ALL ENGINEERS DRAWINGS AND SPECIFICATIONS.

2. CONCRETE TO BE GRADE C32/40 WATER TIGHT CONCRETE.

3. REFER TO SCHEDULE SC-3627 FOR BAR BENDING SCHEDULE.

4. COVER TO REINFORCEMENT TO BE

SLAB : BOTTOM = 50, TOP= 30 & SIDES = 35mm, U.N.O

WALL : EXTERNAL FACE=50, INTERNAL FACE=30

5. ABBREVIATIONS:

B:	BOTTOM
B1:	BOTTOM FIRST LAYER
B2:	BOTTOM SECOND LAYER
T:	TOP
T1:	TOP FIRST LAYER
T2:	TOP SECOND LAYER
NF:	NEAR FACE
FF:	FAR FACE
EF:	EACH FACE
AP:	ALTERNATE PLACED
ABR:	ALTERNATE BARS REVERSED
STGD:	STAGGERED
DWLS:	DOWEL BARS
SF:	SIDE FACE
TYP:	TYPE
TOC:	TOP OF CONCRETE
TOF:	TOP OF FOOTING
DP:	DEPTH

6. MINIMUM LAP / ANCHORAGE TO REINFORCEMENT TO BE
40 X BAR DIA IN W.L.S. U.N.O:
H10 = 600mm
H12 = 720mm
H16 = 960mm
H20 = 1200mm
H25 = 1500mm
H32 = 1920mm
H40 = 2400mm

7. MOVE BARS LOCAL TO STEEL STANCHION LOCATION.
8. CUT OUT REINFORCEMENT LOCALLY AROUND MANHOLES.

Issue Date Description By Chkd Verfd

Project

Client

Architect

Title

RC DETAIL OF G-L A-C GROUND SLAB

Drawing No. Drawing Status

Job No. Scale @A1

Originator Checked Verified Issue

