

CONCRETE ELEMENT	STRENGTH F'C	NOMINAL AGG. SIZE	SPECIFIED SLUMP
RC SLABS	40MPa	20	80

NOTE: MIN. CONCRETE STRENGTH AT 28 DAYS

LEGEND

- (THK) DENOTES SLAB THICKNESS OVERALL UNO.
- DENOTES WALL/COLUMN UNDER
- ▨ DENOTES CONCRETE WALL/COLUMN OVER
- ▩ DENOTES CONCRETE WALL/COLUMN OVER & UNDER
- ▧ DENOTES LOAD BEARING PRECAST PANEL
- ▨ DENOTES NON LOAD BEARING PRECAST PANEL
- ▩ DENOTES PRECAST BALUSTRADE
- DENOTES STEP IN SOFFIT
- ▨ DENOTES SECONDARY SLAB POURED LATER ON BLOCKWORK - REFER TO TYPICAL DETAIL
- 100 DENOTES STEP IN TOP OF SLAB
- DENOTES VOID
- HOB DENOTES CONCRETE HOB
- DENOTES ISOLATION JOINT
- DENOTES CONSTRUCTION JOINT
- DENOTES 56 DAY DELAYED POUR STRIP
- DENOTES LOCATION OF SITE BOUNDARY

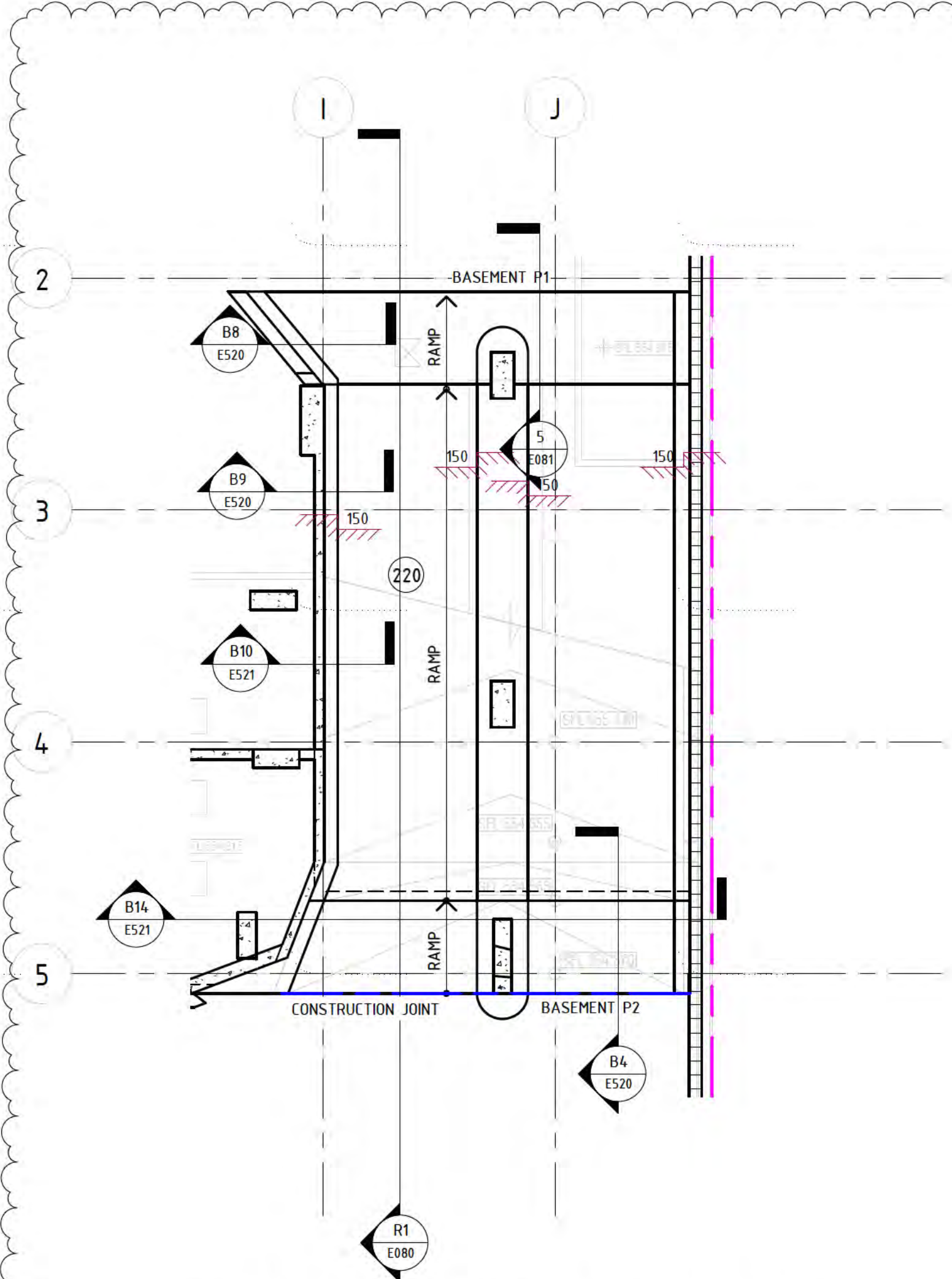
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Sustainable Focused Thinking

BUILDING APPROVAL
Issued under S28 of the Building Act 2004

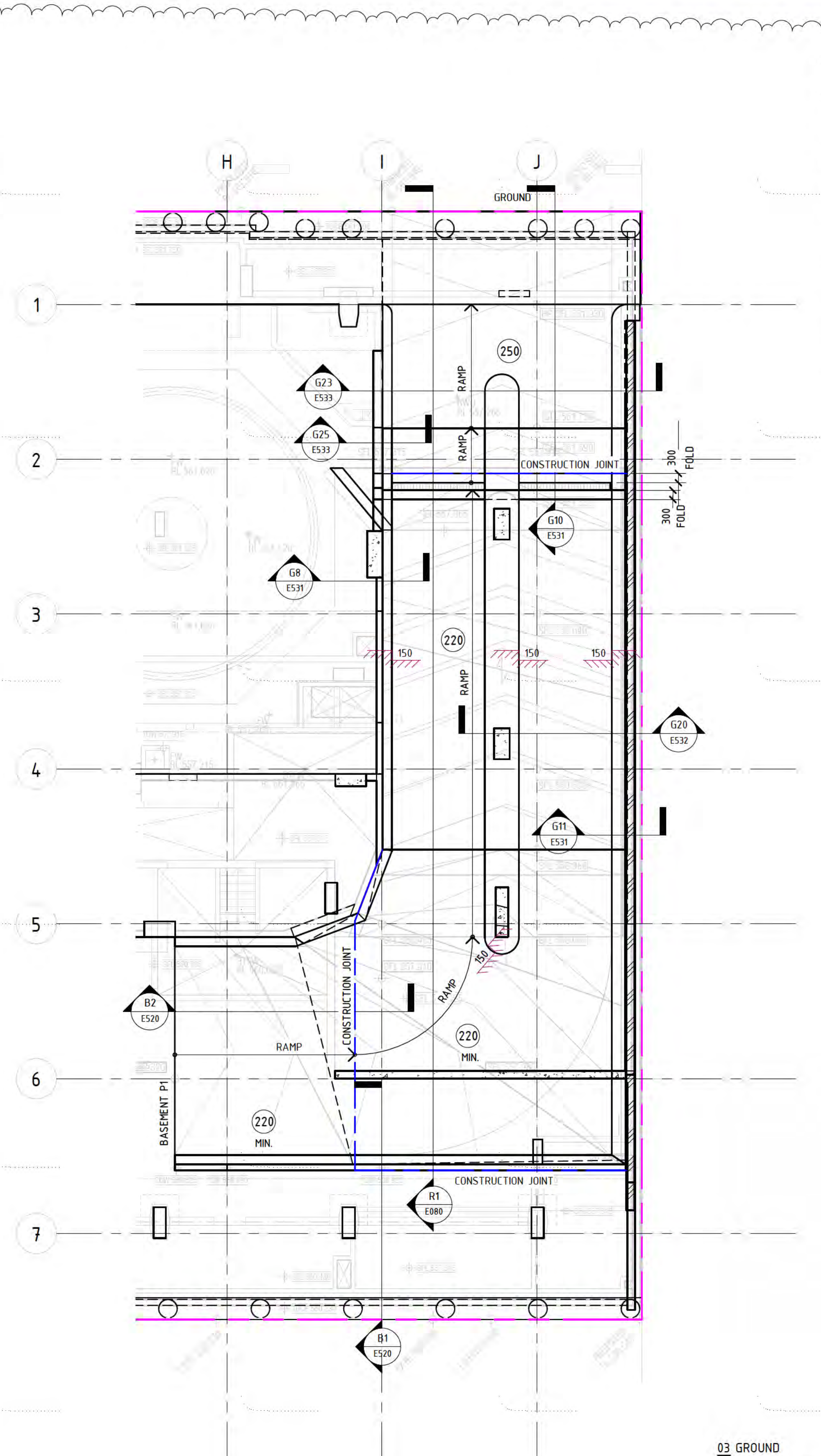
Certis (ACT) Pty Ltd
License No. [REDACTED]

ACT 1228
Block 4 Section 12 Canberra City
Issue Date: 28/10/2021
NCC Occupancy Class: 7a
NCC Construction Type: A

Sch 2 s 2.2(a)(ii)

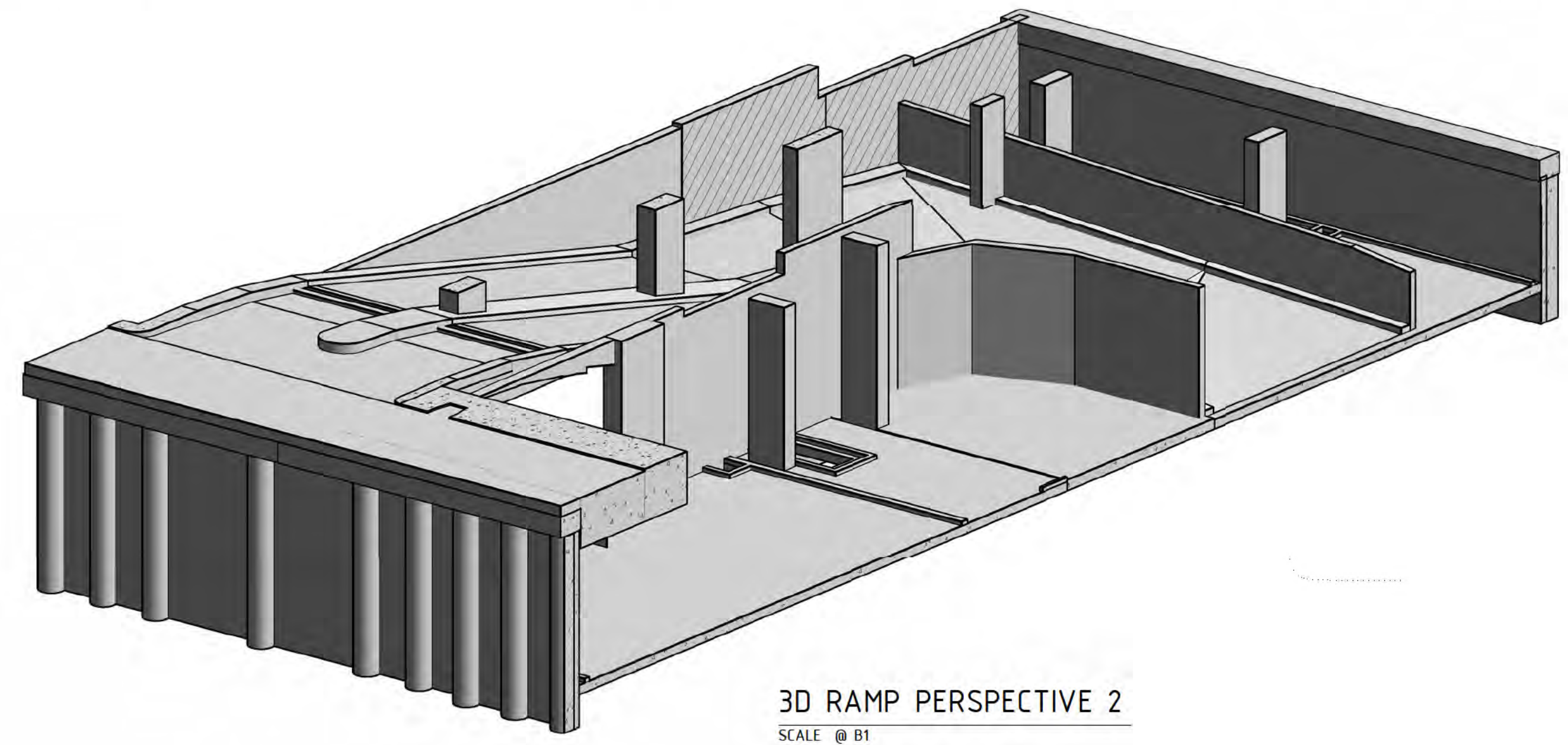


BASEMENT P2 TO P1 RAMP MARKING PLAN
SCALE 1:100 @ B1

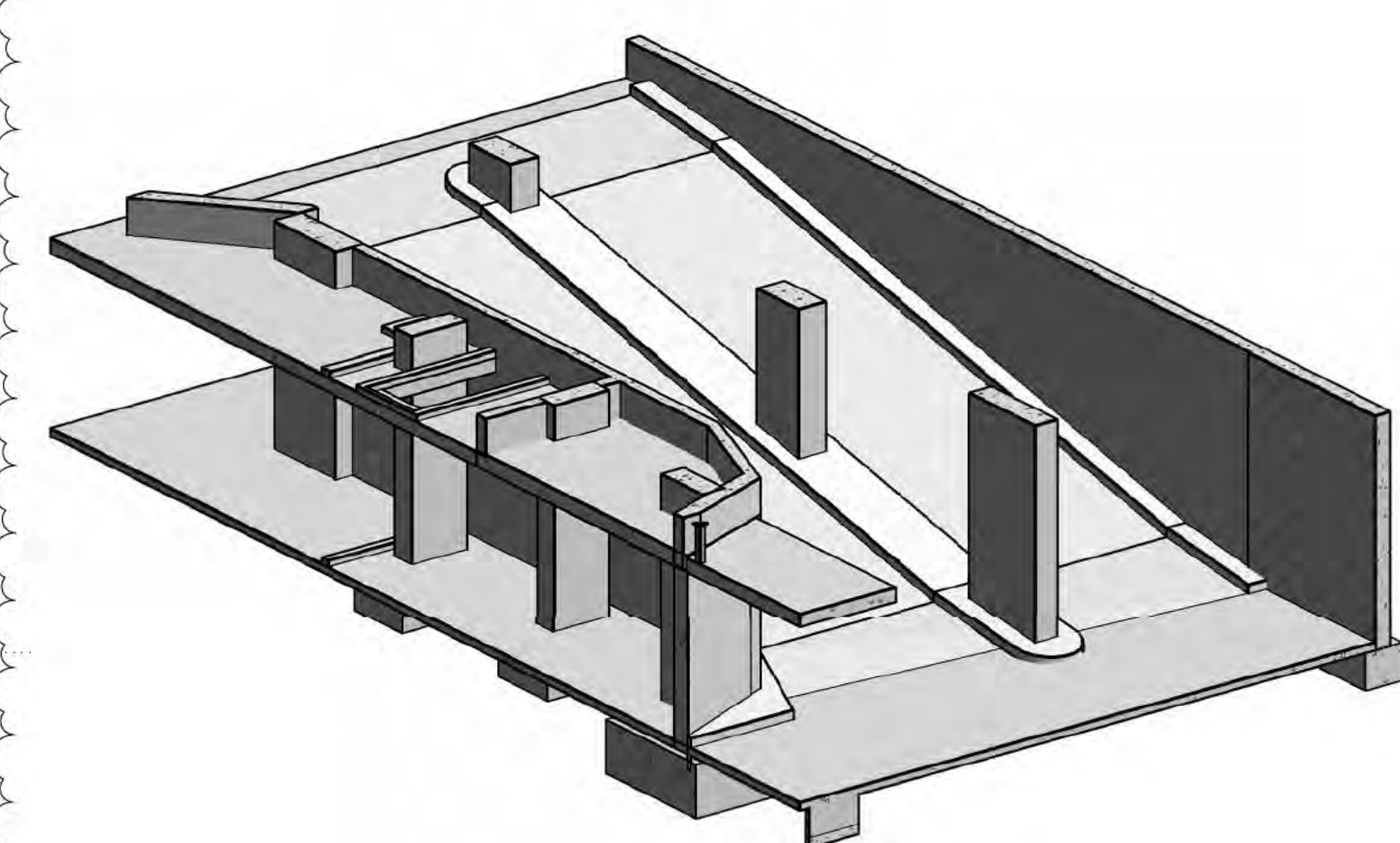


BASEMENT P1 TO GROUND RAMP MARKING PLAN
SCALE 1:100 @ B1

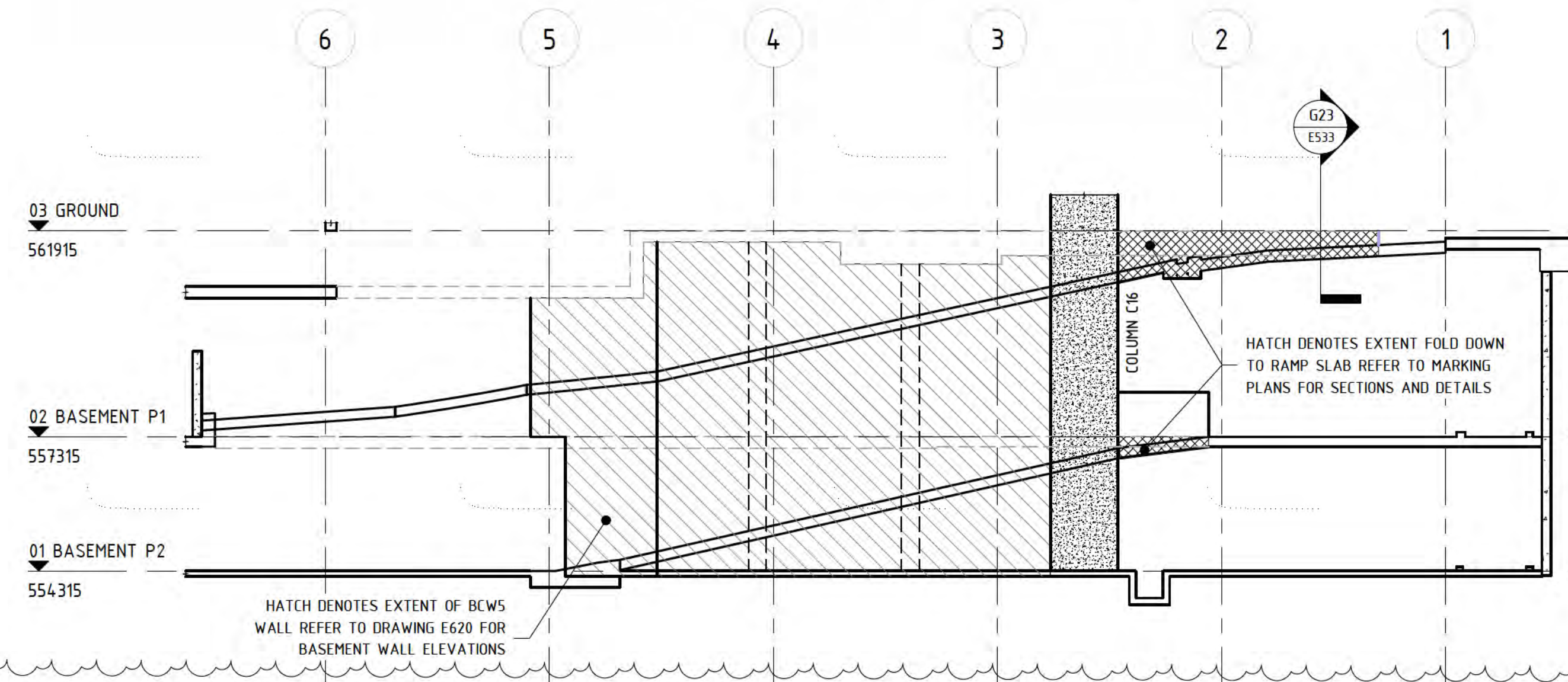
- SUSPENDED SLAB NOTES:**
- REFER TO DRAWING E001 FOR CONSTRUCTION NOTES & SPECIFICATIONS
 - REFER TO MARKING PLANS FOR SLAB DEPTHS UNO.
 - FOR BUILDING SETOUT AND DIMENSIONS REFER TO ARCHITECTS DRAWINGS
 - ALL FALLS TO ARCHITECTS DETAILS
 - MARKING PLANS TO BE CO-ORDINATED WITH HYDRAULIC & MECHANICAL SERVICES
 - REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF ALL PENETRATIONS AND SET OUTS
 - PROVIDE 100x100 HOB ALL AROUND ALL FIRE HYDRANT RECESSES AND PENETRATIONS
 - REFER TO DRAWING E018 FOR PRECAST COLUMN CONNECTION DETAILS



3D RAMP PERSPECTIVE 2
SCALE @ B1



3D RAMP PERSPECTIVE 1
SCALE @ B1



R1 RAMP SECTION
E080 SCALE 1:100 @ B1

LEVELS NOTE:
LEVELS ARE INDICATIVE ONLY.
ALL LEVELS AND DIMENSIONS TO BE TO BE CONFIRMED BY THE ARCHITECT.

NOTE: B1 DRAWING SHEET

No.	AMENDMENT	APPROVED	DATE	ISSUED BY	ARCHITECT / BUILDING DESIGNER
D	REVISED AS CLOUDED	DS	22.10.2021	GC	
C	REVISED AS CLOUDED	MM	19.07.2021	GC	
B	REVISED FOR CONSTRUCTION	MM	16.06.2021	GC	
A	ISSUED FOR CONSTRUCTION	MM	10.05.2021	GC	
4	ISSUED FOR TENDER	MM	13.04.2021	GC	
3	ISSUED FOR TENDER	MM	19.03.2021	GC	
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1	DRAFT CONCRETE TENDER	MM	19.02.2021	GC	



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www.indesco.com.au

CONSULT AUSTRALIA

APPROVED	DS
CHECKED	DS
DESIGNED BY	DS
DRAWN BY	GC
DATE	
SCALE	1:100

PROJECT
MERITON SUITES CANBERRA
40 ALLARA STREET
CANBERRA ACT 2061

ISSUED FOR CONSTRUCTION

DRAWING TITLE
RAMP MARKING PLANS

PROJECT No.
7774

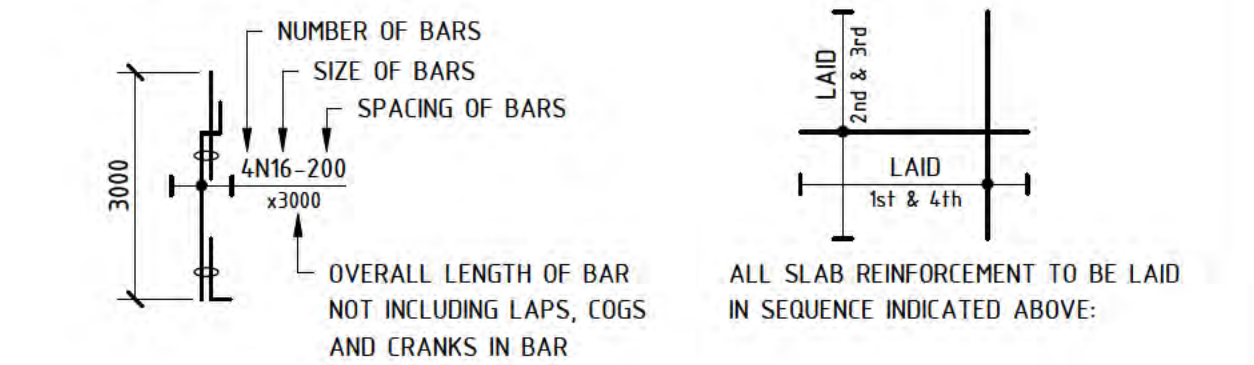
DRAWING No.
E080

AMT
D

NOTE: ENSURE ALL STEEL FIXERS ARE FAMILIAR WITH THE BAR LAYING SEQUENCE BEFORE COMMENCING ANY WORK ON SITE.

REINFORCEMENT NOTES

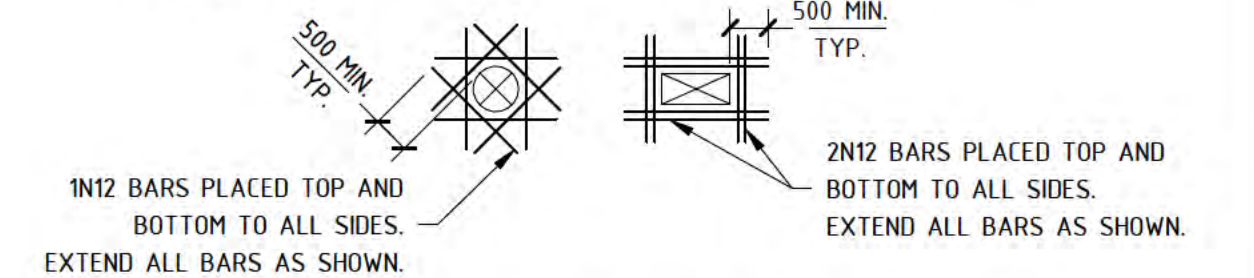
- ALL BARS DENOTED AS 'N' (eg. N12) SHALL BE DEFORMED RIBBED BARS, GRADE 500N
- ALL BARS DENOTED AS 'R' (eg. R10) SHALL BE ROUND BARS, GRADE 250N
- ALL SQUARE AND RECTANGULAR MESHES DENOTED AS 'SL' & 'RL' (eg. SLR2) SHALL COMPRISE OF DEFORMED RIBBED BARS, GRADE 500N
- ALL REINFORCEMENT SHALL COMPLY WITH AS/NZS 4671-2001
- BAR TAG NOTATION:



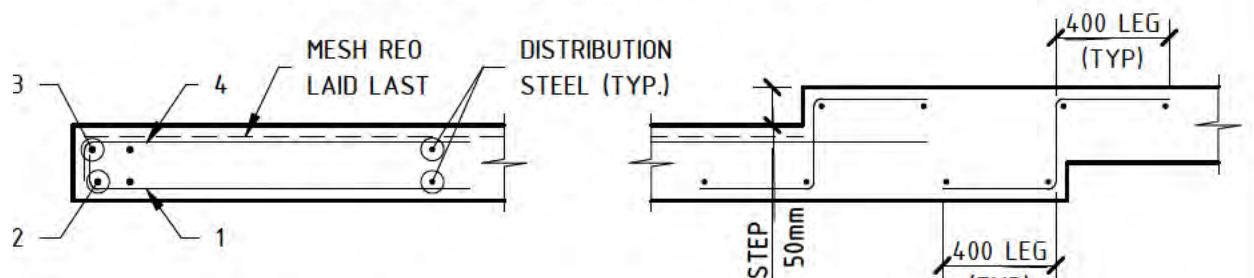
- Denotes PAN REINFORCEMENT REQUIRED. REFER TO S002 FOR SIZE AND LAYOUT OMITTED FROM PLAN FOR CLARITY PURPOSES.
- ENSURE ALL CROSS ROODS LAPPED 600mm MIN. AT ALL RE-ENTRANT CORNERS REINFORCEMENT BARS TO OVERLAP.
- REFER TO TYPICAL STEP DOWN DETAILS FOR ADDITIONAL REINFORCEMENT N.S.O.P. CONSTRUCTION MESH REQUIRED IN BEAM OR SLAB DEPTHS GREATER THAN 300mm IS NOT TO BE ACCOUNTED FOR AS PART OF THE PT DESIGN

- Denotes SL82 MESH TOP ADDITIONAL TO ALL EXTERNAL AREAS U.N.O.
- Denotes BAR COUPLERS TO BE USED AT TEMPORARY HOIST AND CRANE PENETRATION LOCATIONS.

- PROVIDE TRIMMER BAR REINFORCEMENT ONLY WHERE A PENETRATION IS GREATER THAN 300mm x 300mm AND UP TO AND INCLUDING 900mm x 900mm. SUCH PENETRATIONS SHALL HAVE THE FOLLOWING MINIMUM REINFORCEMENT SHOWN BELOW



- PROVIDE N12-900 DISTRIBUTION BARS WHERE NECESSARY TO SUPPORT MAIN REINFORCEMENT. REFER TO BELOW BAR LAYING SEQUENCE.



SLAB EDGE BAR LAYING SEQUENCE
NOTE: NUMBERS DENOTE LAYOUT SEQUENCE

TYPICAL STEP DETAIL

BAR	LAP LENGTH	
	WHERE CONC. BELOW BAR IS LESS THAN OR EQUAL TO 300	WHERE CONC. BELOW BAR IS GREATER THAN 300
N12	500	700
N16	700	900
N20	900	1200
N24	1100	1500
N28	1400	1800
N32	1600	2100
N36	1800	2300

NOTE:
ALL LAPS TO BE CONTACT SPLICES

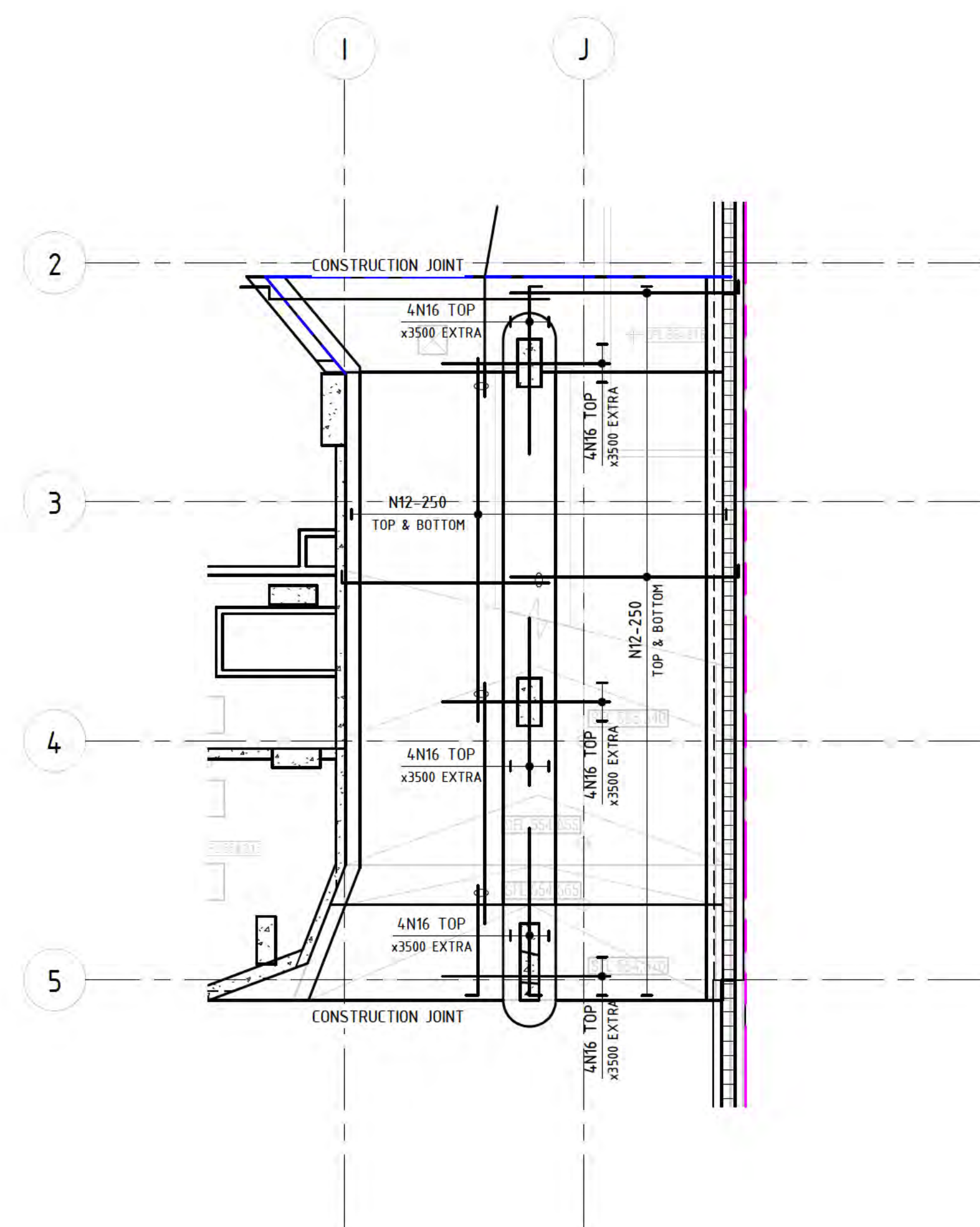
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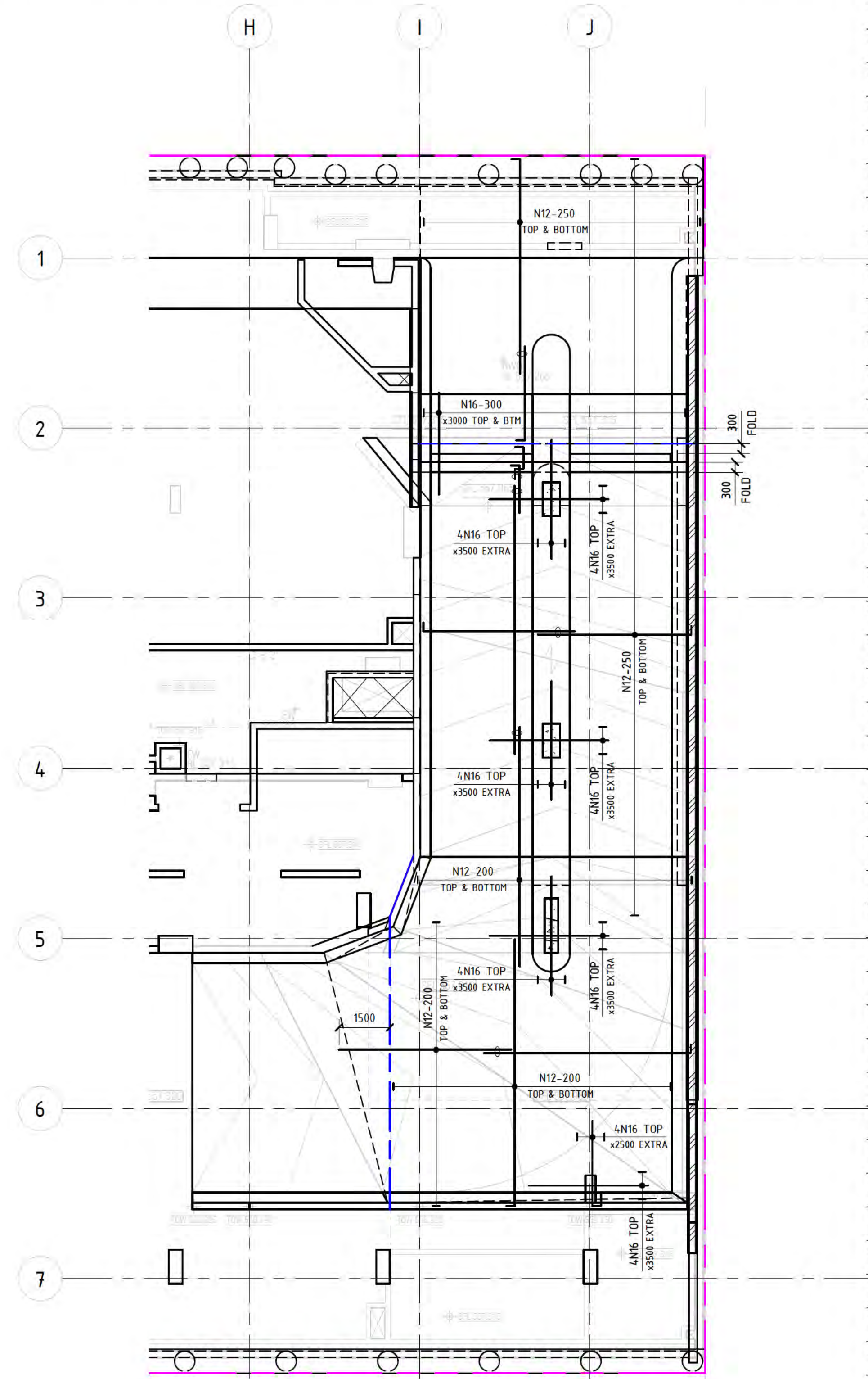
Certis (ACT) Pty Ltd
License No. 20223000

ACT 1258
Block 4 Section 12 Canberra City
Issue Date: 28/10/2021
NCC Occupancy Class: 7a
NCC Construction Type: A

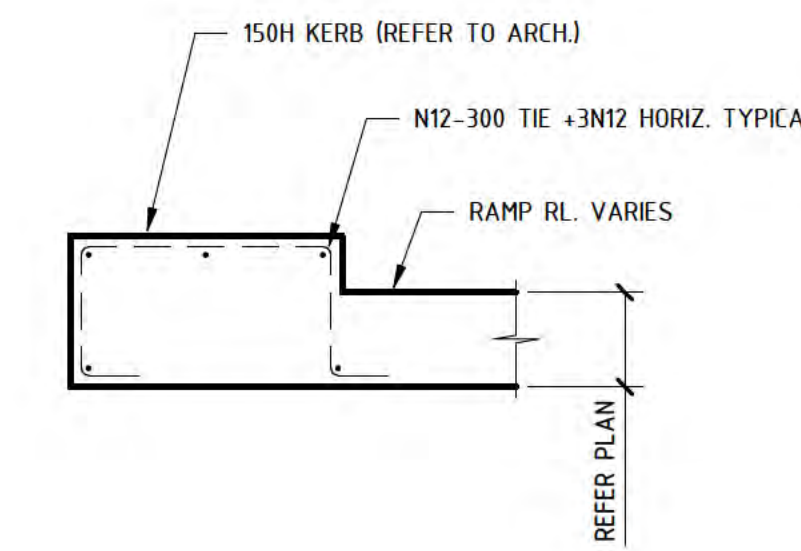
Sch 2 s 2.2(a)(ii)



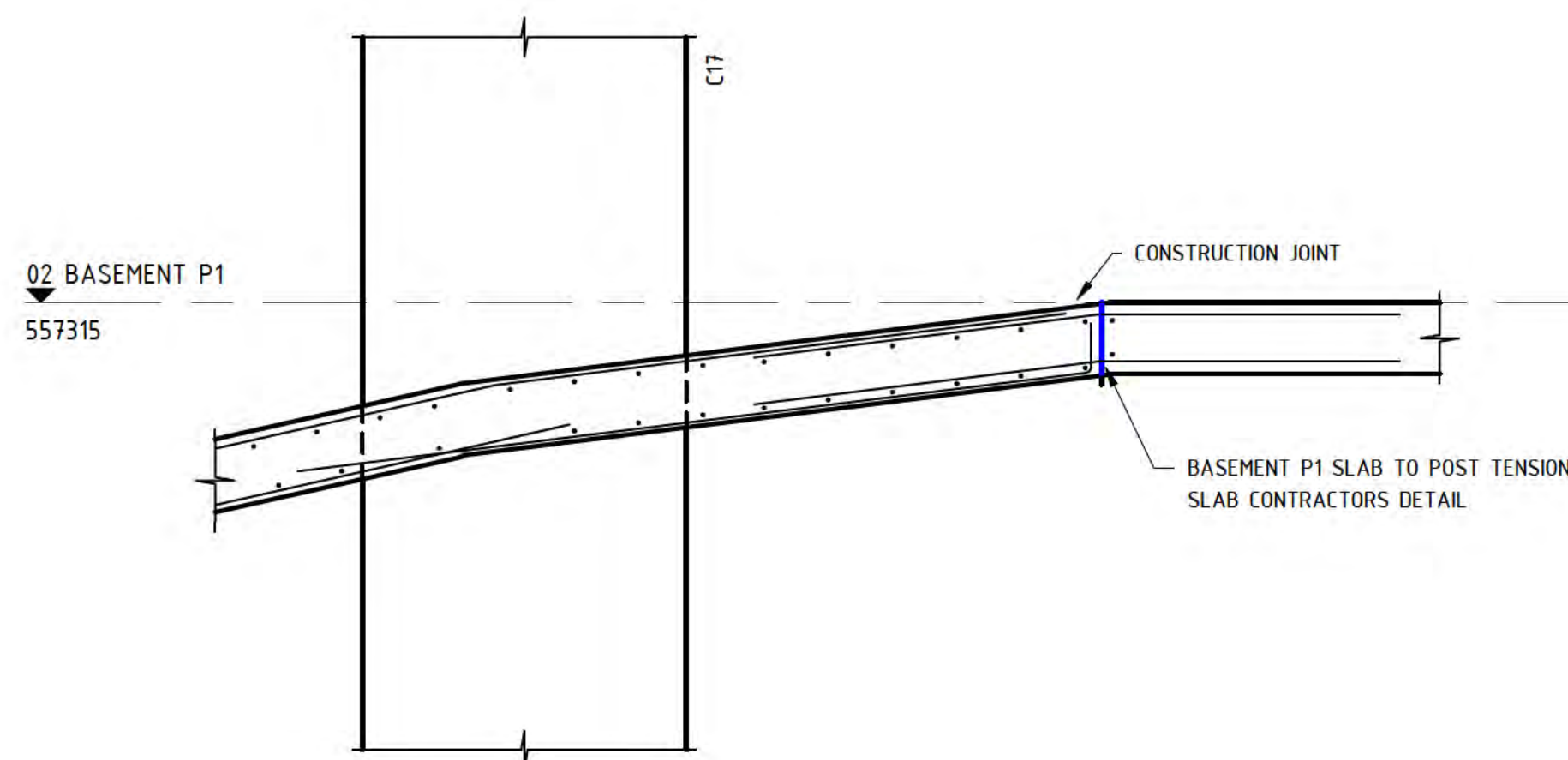
BASEMENT P2 TO P1 RAMP REINFORCEMENT PLAN
SCALE 1: 100 @ B1



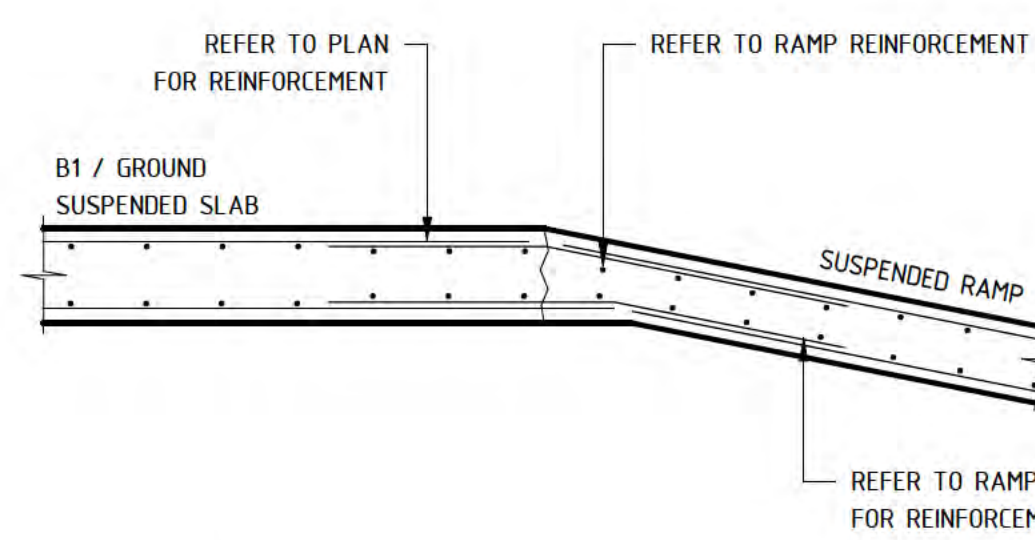
BASEMENT P1 TO GROUND RAMP REINFORCEMENT PLAN
SCALE 1: 100 @ B1



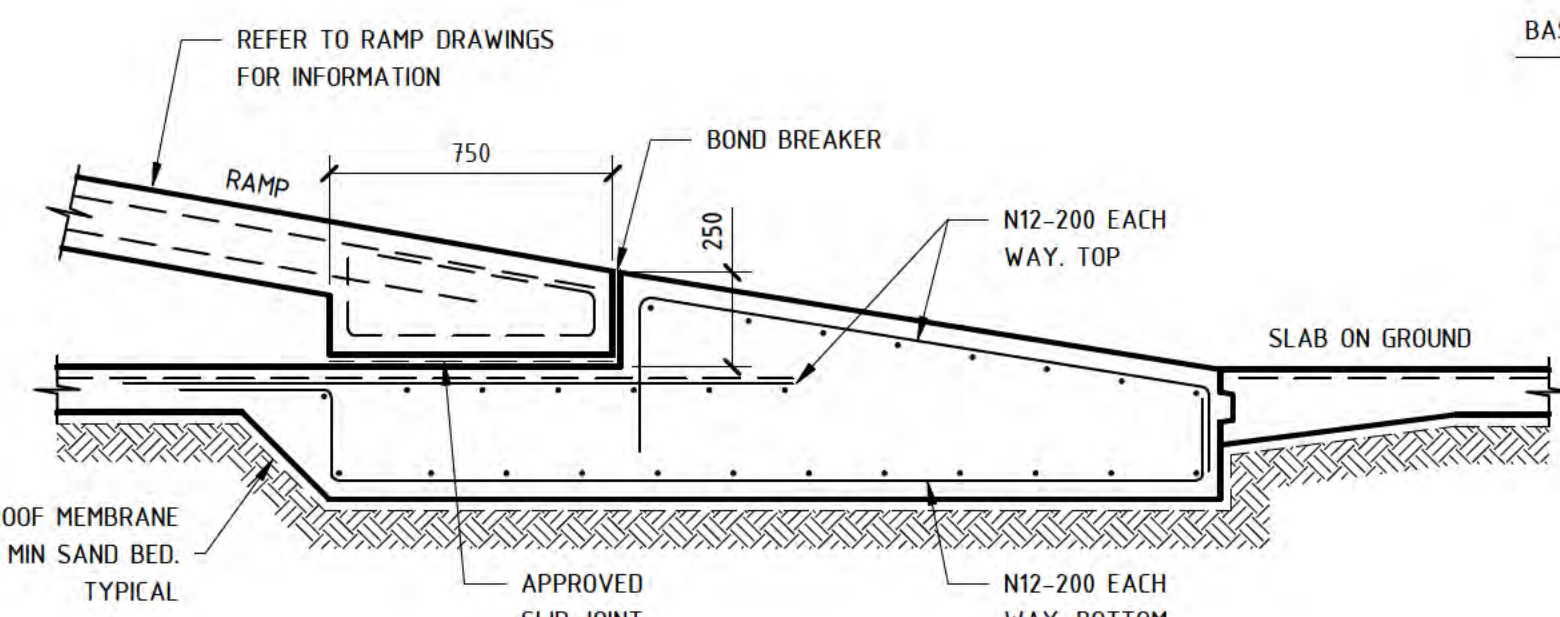
TYPICAL RAMP KERB
SCALE 1: 20 @ B1



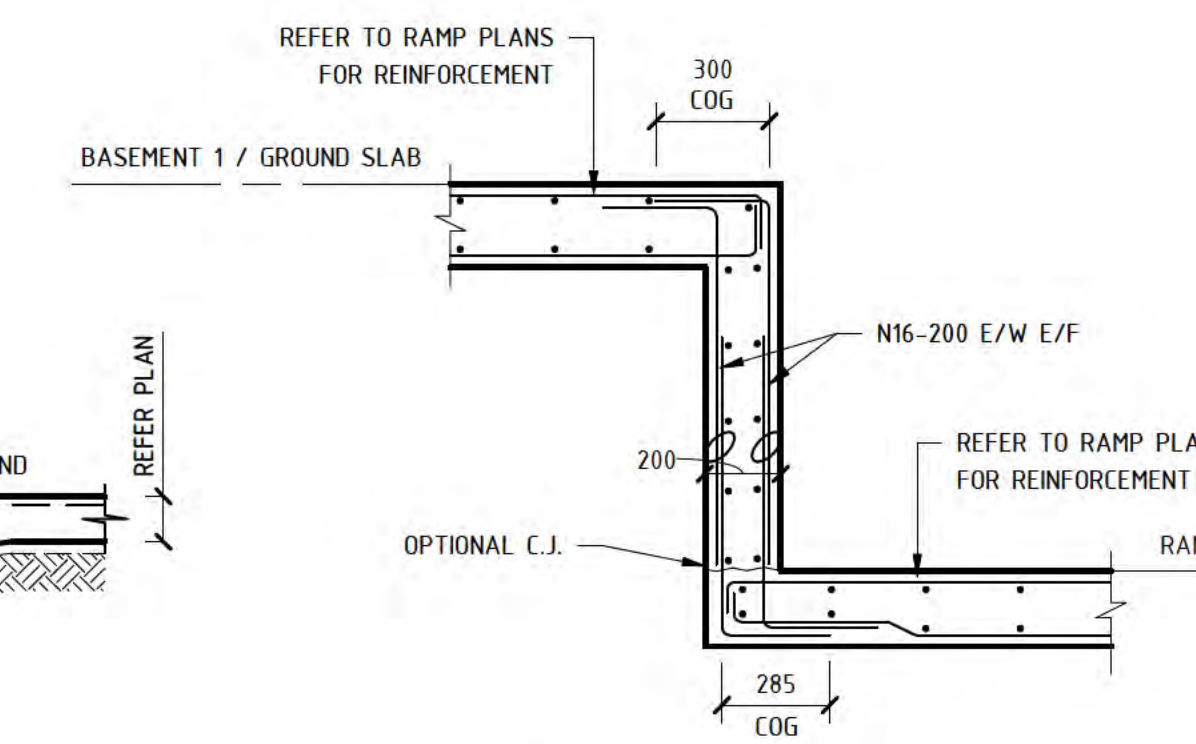
P2 TO P1 RAMP INTERFACE AT BASEMENT P1 LEVEL DETAIL
SCALE 1: 20 @ B1



TYPICAL RAMP TRANSITION
SCALE 1: 20 @ B1



TYPICAL RAMP BASE DETAIL
SCALE 1: 20 @ B1



TYPICAL SLAB TO RAMP DOWNTURN DETAIL
SCALE 1: 20 @ B1

LEVELS NOTE:
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NOTE: B1 DRAWING SHEET

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B	REV. ISSUE FOR CONSTRUCTION	MM	16.06.2021	GC	
A	ISSUED FOR CONSTRUCTION	MM	10.05.2021	GC	
4	ISSUED FOR TENDER	MM	13.04.2021	GC	
3	ISSUED FOR TENDER	MM	19.03.2021	GC	
2	ISSUED FOR TENDER	MM	04.03.2021	GC	
1	DRAFT CONCRETE TENDER	MM	19.02.2021	GC	



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CONSULT AUSTRALIA

APPROVED	DS
CHECKED	DS
DESIGNED BY	DS
DRAWN BY	GC
LAD FILE	
SCALE	As indicated

PROJECT
MERITON SUITES CANBERRA
40 ALLARA STREET
CANBERRA ACT 2061

ISSUED FOR CONSTRUCTION

DRAWING TITLE
RAMP REINFORCEMENT & DETAILS

PROJECT No.
7774

DRAWING No.
E081

AMT
C

NORTH POINT

CONCRETE ELEMENT	STRENGTH F'C	NOMINAL AGG. SIZE	SPECIFIED SLUMP
SLAB ON GROUND	32MPa	20	80

NOTE: MIN. CONCRETE STRENGTH AT 28 DAYS

LEGEND

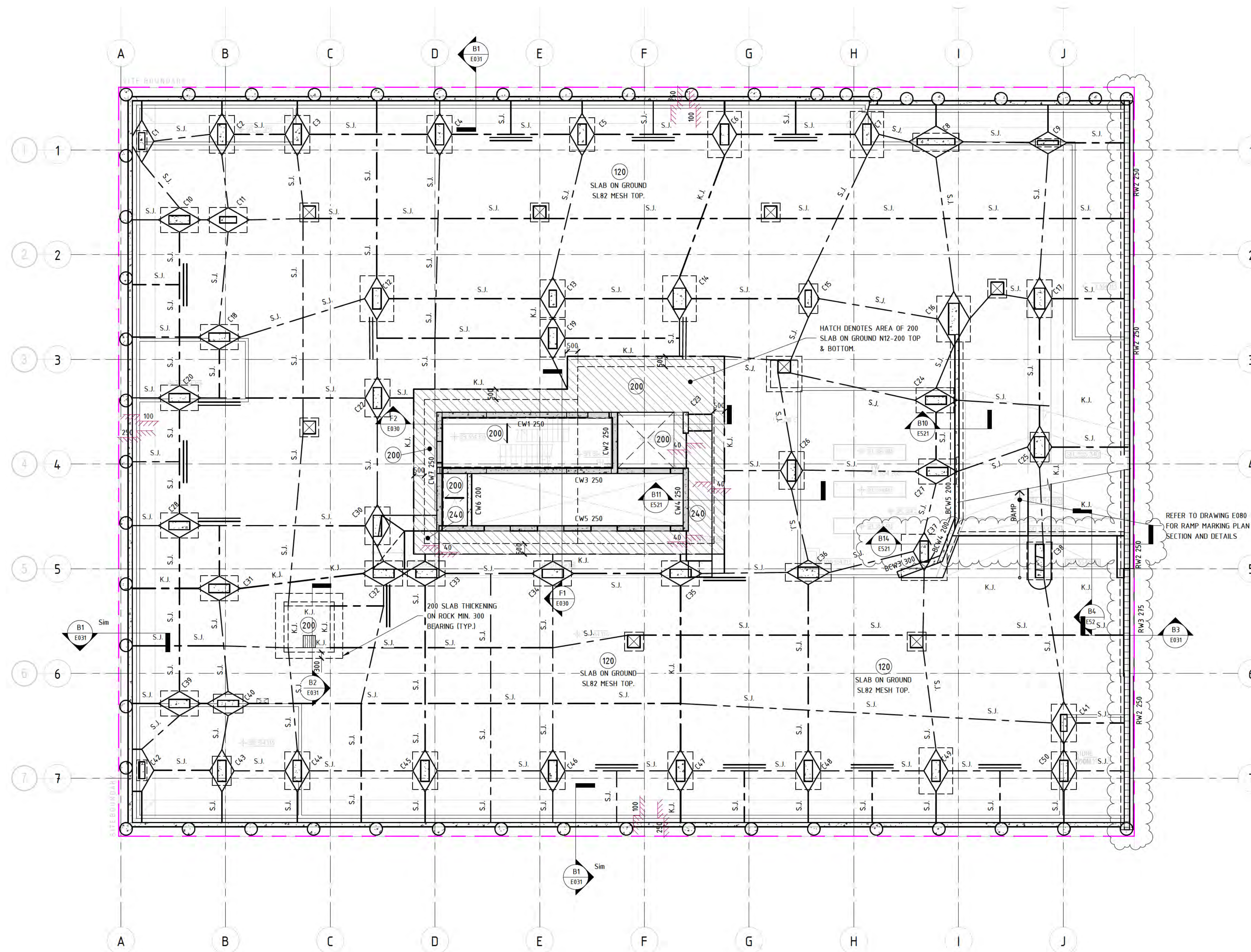
- 100 DENOTES SLAB THICKNESS OVERALL UNDO
- S.O.G. DENOTES SLAB ON GROUND
- S.J. DENOTES SAW CUT JOINT IN SLAB
- K.J. DENOTES KEY JOINT IN SLAB
- DENOTES 2/N12 TRIMMER BARS 2000 LONG
- DENOTES WALL/COLUMN UNDER
- DENOTES CONCRETE WALL/COLUMN OVER
- DENOTES CONCRETE WALL/COLUMN OVER & UNDER
- DENOTES PRECAST WALL OVER
- SU DENOTES SUMP
- DENOTES ISOLATION JOINT IN DIAMOND FORMATION
- DENOTES ISOLATION JOINT
- DENOTES CONSTRUCTION JOINT
- DENOTES MASS CONCRETE AREA OF RAMP
- DENOTES RAMP GRATED DRAIN - REFER TYPICAL DETAIL

NOTE:
FOR EXTENT OF STORMWATER AND HYDRULIC PITS, PUMPOUT PITS, DRAINAGE LINES AND SPOON DRAINS REFER TO HYDRAULIC CONSULTANTS DRAWINGS.

NOTE:
ALL UPSTAND/SPANDREL/HOB HEIGHTS, CRASH BARRIERS & PLANTER WALLS - REFER TO ARCHITECTURAL DRAWINGS.

NOTE:
ALL SLAB THICKNESSES SHOWN ARE MINIMUM.

SLAB ON GROUND REINFORCEMENT:
120 THICK SLAB ON GROUND 1 LAYER SL82 MESH, TOP, 30 COVER
200 THICK SLAB ON GROUND N12-200 EW, TOP AND BOTTOM, 40 COVER



REFER TO DRAWING E080 FOR RAMP MARKING PLAN SECTION AND DETAILS

REFERENCE DRAWINGS:
REFER TO DRAWING NO. DENOTED ON SECTION TAG FOR DETAILS
FOOTING DETAILS - REFER TO DRAWING E030 FOR DETAILS
RETAINING WALLS - REFER TO DRAWING E102 FOR DETAILS
RAMP DRAWINGS - REFER TO DRAWINGS E080 & E081 FOR DETAILS
COLUMNS - REFER TO DRAWINGS E005 TO E019 FOR DETAILS
CORE WALLS - REFER TO E800 SERIES DRAWINGS FOR DETAILS

EXTERNAL REFERENCES
THIS DRAWING IS BASED ON THE FOLLOWING ARCHITECTURAL DRAWING:
REFERENCE DRAWING: FENDER KATSALIDIS /19125 - A1098 - CONCRETE PROFILE REV - F

BASEMENT P2 MARKING PLAN

SCALE 1:100 @ B1

SLAB ON GROUND NOTES:

1. REFER TO DRAWING E001 FOR CONSTRUCTION NOTES & SPECIFICATIONS
2. REFER TO MARKING PLANS FOR SLAB DEPTHS UNDO
3. FOR BUILDING SETOUT AND DIMENSIONS REFER TO ARCHITECTS DRAWINGS
4. WATERPROOFING MEMBRANE/TANKING BY OTHERS
5. REFER TO DRAWING E031 FOR SLAB ON GROUND SECTIONS AND DETAILS
6. PROVIDE TRIMMER BARS AROUND ALL PENETRATIONS, COLUMNS, JOINT INTERSECTIONS & RE-ENTRANT CORNERS. ALL TRIMMER BARS TO BE LAID UNDER TOP REINFORCEMENT
7. ALL FALLS TO ARCHITECTS DETAILS
8. JOINTS (S.J. & K.J.) MAY BE ALTERED TO SUIT CONSTRUCTION POUR SEQUENCE. ADVISE INDESCO OF PROPOSED CHANGES PRIOR TO POUR COMMENCING
9. MARKING PLANS TO BE CO-ORIGINATED WITH HYDRAULIC & MECHANICAL SERVICES
10. REFER TO DRAWING E031 FOR SLAB ON GROUND DETAILS
11. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF ALL PENETRATIONS AND SET OUTS
PROVIDE 100x100 HOB ALL AROUND ALL FIRE HYDRANT RECESSES AND PENETRATIONS

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Solution Focused Thinking

BUILDING APPROVAL
Issued under S28 of the Building Act 2004

Certis (ACT) Pty Ltd
License No. 12558

ACT 1258
Block 4 Section 12 Canberra City
Issue Date: 28/10/2021
NCC Occupancy Class: 7a
NCC Construction Type: A

Sch 2 s 2.2(a)(ii)

NOTE: B1 DRAWING SHEET

No.	AMENDMENT	APPROVED	DATE	ISSUED BY
K	REVISED AS CLOUDED	DS	22.10.2021	GC
J	REVISED AS CLOUDED	DS	21.10.2021	GC
I	REVISED AS CLOUDED	DS	30.09.2021	GC
H	REVISED AS CLOUDED	DS	26.09.2021	GC
G	REVISED AS CLOUDED	DS	10.09.2021	GC
F	REVISED AS CLOUDED	DS	17.08.2021	GC
E	REVISED AS CLOUDED	MM	19.07.2021	GC
D	RE-ISSUED FOR CONSTRUCTION	MM	07.07.2021	GC
C	RE-ISSUED FOR CONSTRUCTION	MM	16.06.2021	GC
B	ISSUED FOR CONSTRUCTION	MM	10.05.2021	GC
A	ISSUED FOR CONSTRUCTION CERTIFICATE	MM	27.04.2021	GC

ARCHITECT / BUILDING DESIGNER

FK
FENDER KATSALIDIS

CLIENT

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CONSULT AUSTRALIA

APPROVED	DS
CHECKED	DS
DESIGNED BY	DS
DRAWN BY	GC
LEAD FILE	
SCALE	1:100

PROJECT

MERITON SUITES CANBERRA
40 ALLARA STREET
CANBERRA ACT 2061

ISSUED FOR CONSTRUCTION

DRAWING TITLE

BASEMENT 2 MARKING PLAN

PROJECT No. 7774

DRAWING No. E201

AMT K

CONCRETE ELEMENT	STRENGTH F'C	NOMINAL AGG. SIZE	SPECIFIED SLUMP
PT SLABS (PT MIX) (22 MPa AT 4 DAYS)	40MPa	20	80

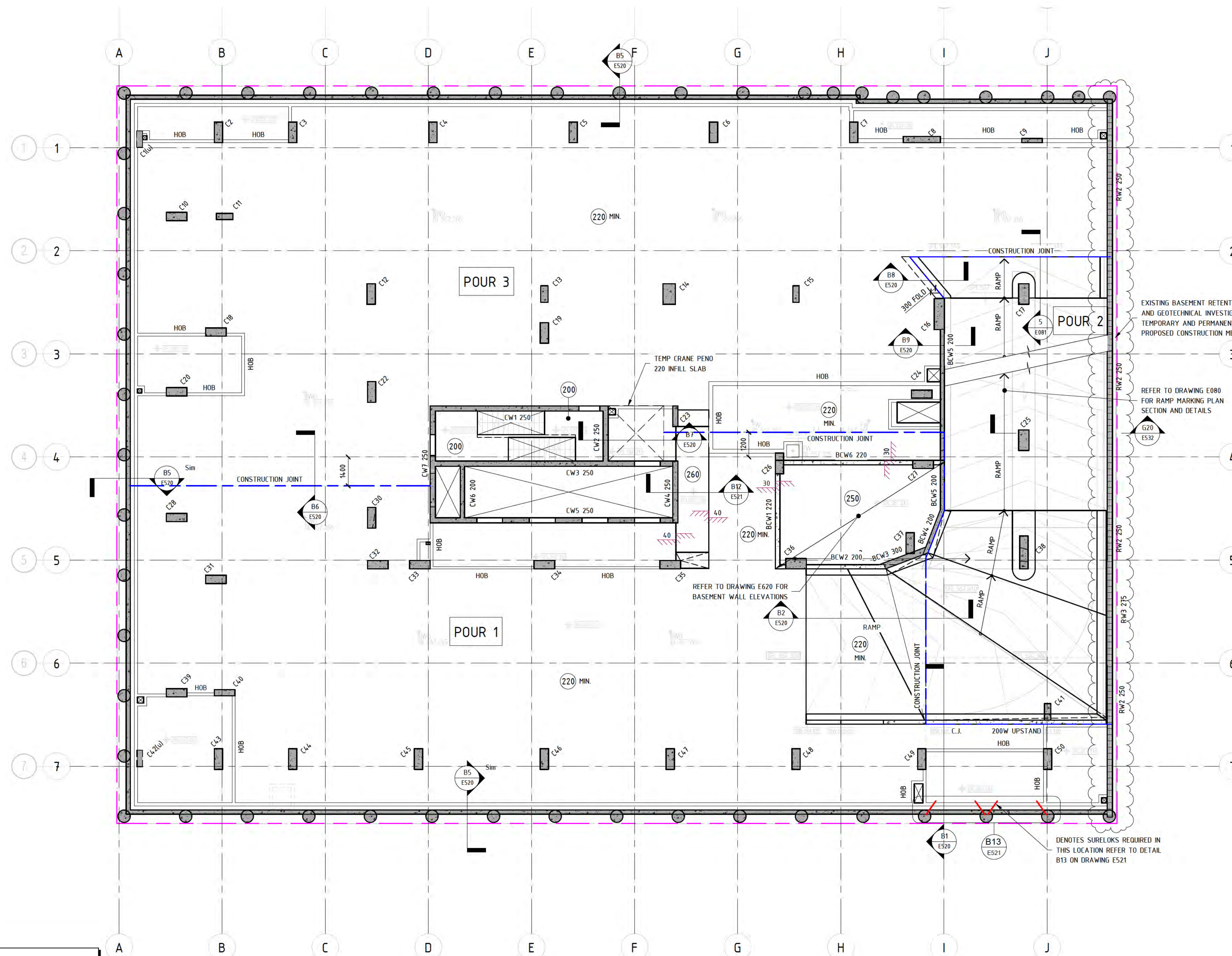
NOTE: MIN. CONCRETE STRENGTH AT 28 DAYS

LEGEND

- DENOTES SLAB THICKNESS OVERALL UNO
- DENOTES WALL/COLUMN UNDER
- DENOTES CONCRETE WALL/COLUMN OVER
- DENOTES CONCRETE WALL/COLUMN OVER & UNDER
- DENOTES LOAD BEARING PRECAST PANEL
- DENOTES NON LOAD BEARING PRECAST PANEL
- DENOTES PRECAST BALUSTRADE
- DENOTES STEP IN SOFFIT
- DENOTES SECONDARY SLAB POURED LATER ON BLOCKWORK - REFER TO TYPICAL DETAIL
- DENOTES STEP IN TOP OF SLAB
- DENOTES VOID
- DENOTES CONCRETE HOB
- DENOTES ISOLATION JOINT
- DENOTES CONSTRUCTION JOINT
- DENOTES 56 DAY DELAYED POUR STRIP
- DENOTES LOCATION OF SITE BOUNDARY

NOTE:
ALL SLAB THICKNESSES SHOWN ARE MINIMUM.

NOTE:
ALL UPSTAND/SPANDREL/HOB HEIGHTS, CRASH BARRIERS & PLANTER WALLS - REFER TO ARCHITECTURAL DRAWINGS.



EXISTING BASEMENT RETENTION/SHORING WALL. FURTHER SITE AND GEOTECHNICAL INVESTIGATION REQUIRED TO DETERMINE TEMPORARY AND PERMANENT SUPPORT IN CONJUNCTION WITH PROPOSED CONSTRUCTION METHODOLOGY.

REFER TO DRAWING E080 FOR RAMP MARKING PLAN SECTION AND DETAILS.

DENOTES SURELOCKS REQUIRED IN THIS LOCATION REFER TO DETAIL B13 ON DRAWING E521

REFERENCE DRAWINGS:
REFER TO DRAWING NO. DENOTED ON SECTION TAG FOR DETAILS
FOOTING DETAILS - REFER TO DRAWING E030 FOR DETAILS
RETAINING WALLS - REFER TO DRAWING E102 FOR DETAILS
TANKS - REFER TO DRAWING E620 FOR DETAILS
COLUMNS - REFER TO DRAWINGS E005 TO E019 FOR DETAILS
CORE WALLS - REFER TO E800 SERIES DRAWINGS FOR DETAILS
STARTER BARS DETAILS - REFER TO DRAWING E018 FOR DETAILS

BASEMENT P1 MARKING PLAN

SCALE 1 : 100 @ B1

SUSPENDED SLAB NOTES:

1. REFER TO DRAWING E001 FOR CONSTRUCTION NOTES & SPECIFICATIONS
2. REFER TO MARKING PLANS FOR SLAB DEPTHS UNO.
3. FOR BUILDING SETOUT AND DIMENSIONS REFER TO ARCHITECTS DRAWINGS
5. ALL FALLS TO ARCHITECTS DETAILS
6. MARKING PLANS TO BE CO-ORDINATED WITH HYDRAULIC & MECHANICAL SERVICES
7. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF ALL PENETRATIONS AND SET OUTS
8. PROVIDE 100x100 HOB ALL AROUND ALL FIRE HYDRANT RECESSES AND PENETRATIONS
- REFER TO DRAWING E018 FOR PRECAST COLUMN CONNECTION DETAILS

EXTERNAL REFERENCES
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CANBERRA SYDNEY WOLLONGONG
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APPROVED	DS
CHECKED	DS
DESIGNED BY	DS
DRAWN BY	GC
SCALE	1 : 100

PROJECT
MERITON SUITES CANBERRA
40 ALLARA STREET
CANBERRA ACT 2061

ISSUED FOR CONSTRUCTION

DRAWING TITLE
BASEMENT 1 MARKING PLAN

PROJECT No. **7774**

NORTH POINT

DRAWING No. **E202**

AMT **I**

CONCRETE ELEMENT	STRENGTH F'C	NOMINAL AGG. SIZE	SPECIFIED SLUMP
RC SLABS	40MPa	20	80
PT SLABS (PT MIX) (22 MPa AT 4 DAYS)	40MPa	20	80

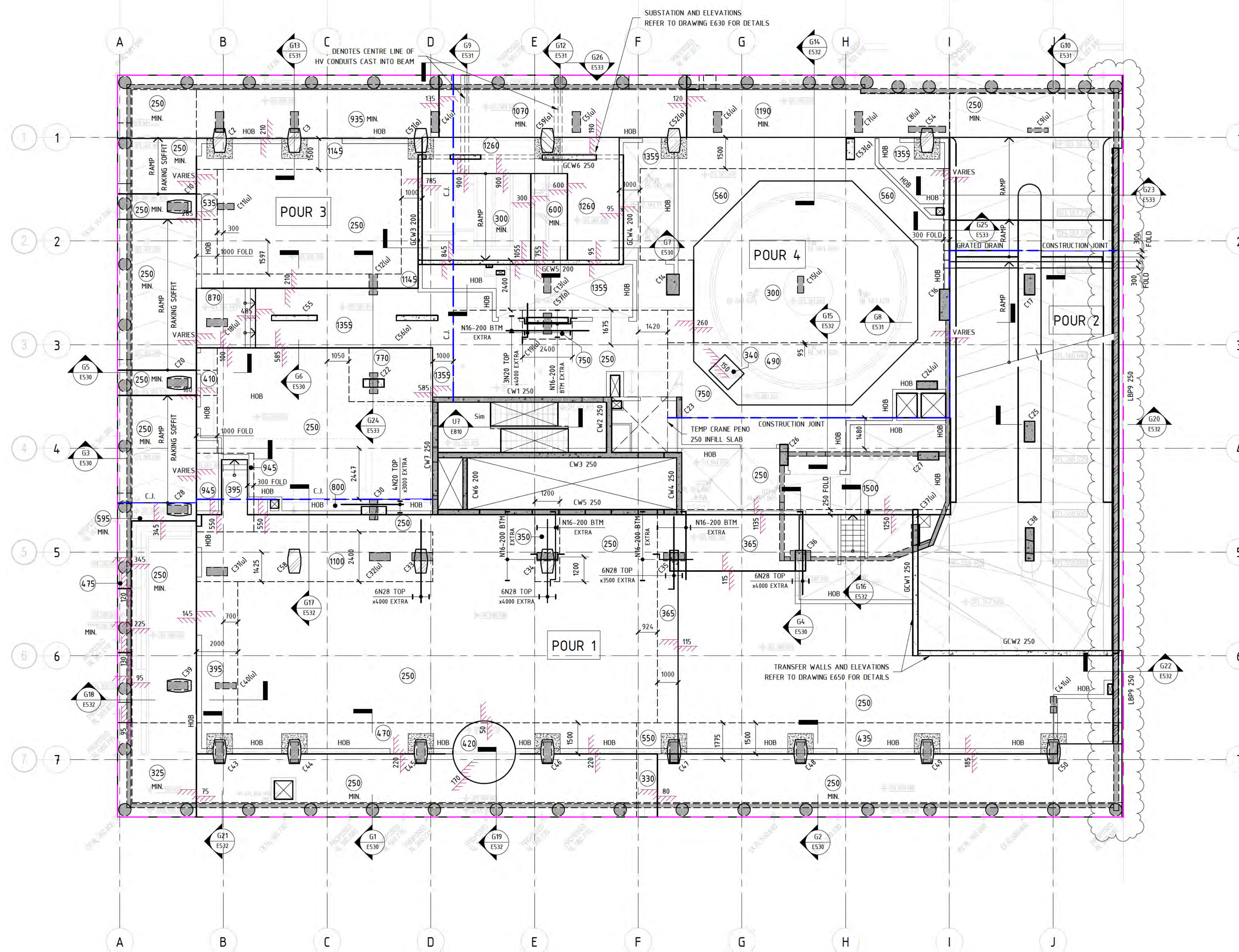
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NOTE:
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GROUND FLOOR MARKING PLAN

SCALE 1 : 100 @ B1

SUSPENDED SLAB NOTES:

1. REFER TO DRAWING E001 FOR CONSTRUCTION NOTES & SPECIFICATIONS
2. REFER TO MARKING PLANS FOR SLAB DEPTHS UNO.
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6. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF ALL PENETRATIONS AND SET OUTS
7. PROVIDE 100x100 HOB ALL AROUND ALL FIRE HYDRANT RECESSES AND PENETRATIONS
8. REFER TO DRAWING E018 FOR PRECAST COLUMN CONNECTION DETAILS

REFERENCE DRAWINGS:
REFER TO DRAWING NO. DENOTED ON SECTION TAG FOR DETAILS
RAMP DRAWINGS - REFER TO DRAWINGS E080 & E081 FOR DETAILS
COLUMNS - REFER TO DRAWINGS E005 TO E019 FOR DETAILS
PRECAST WALLS - REFER TO E600 SERIES DRAWINGS FOR DETAILS
CORE WALLS - REFER TO E800 SERIES DRAWINGS FOR DETAILS

EXTERNAL REFERENCES

THIS DRAWING IS BASED ON THE FOLLOWING ARCHITECTURAL DRAWING

REFERENCE DRAWING: FENDER KATSALIDIS /19125 - A1100 - FLOOR PLAN REV - C

No.	AMENDMENT	APPROVED	DATE	ISSUED BY
J	REVISED AS CLOUDED	DS	22.10.2021	GC
I	REVISED AS CLOUDED	DS	15.10.2021	GC
H	ISSUED FOR CONSTRUCTION	DS	10.09.2021	GC
G	REVISED AS CLOUDED	DS	01.09.2021	GC
F	REVISED AS CLOUDED	DS	17.08.2021	GC
E	REVISED AS CLOUDED	MM	20.07.2021	GC
D	REVISED AS CLOUDED	MM	19.07.2021	GC
C	RE-ISSUE FOR CONSTRUCTION	MM	16.06.2021	GC
B	ISSUED FOR CONSTRUCTION	MM	10.05.2021	GC
A	ISSUED FOR CONSTRUCTION CERTIFICATE	MM	21.04.2021	GC
7	ISSUED FOR TENDER	MM	13.04.2021	GC

ARCHITECT / BUILDING DESIGNER



CLIENT



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APPROVED	DS
CHECKED	DS
DESIGNED BY	DS
DRAWN BY	GC
DATE	
SCALE	1 : 100

PROJECT

MERITON SUITES CANBERRA
40 ALLARA STREET
CANBERRA ACT 2061

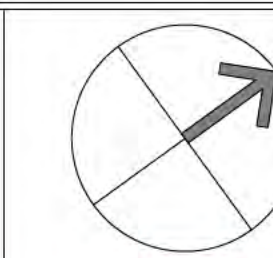
ISSUED FOR CONSTRUCTION

DRAWING TITLE

GROUND FLOOR MARKING PLAN

PROJECT No. 7774

NOTE: B1 DRAWING SHEET

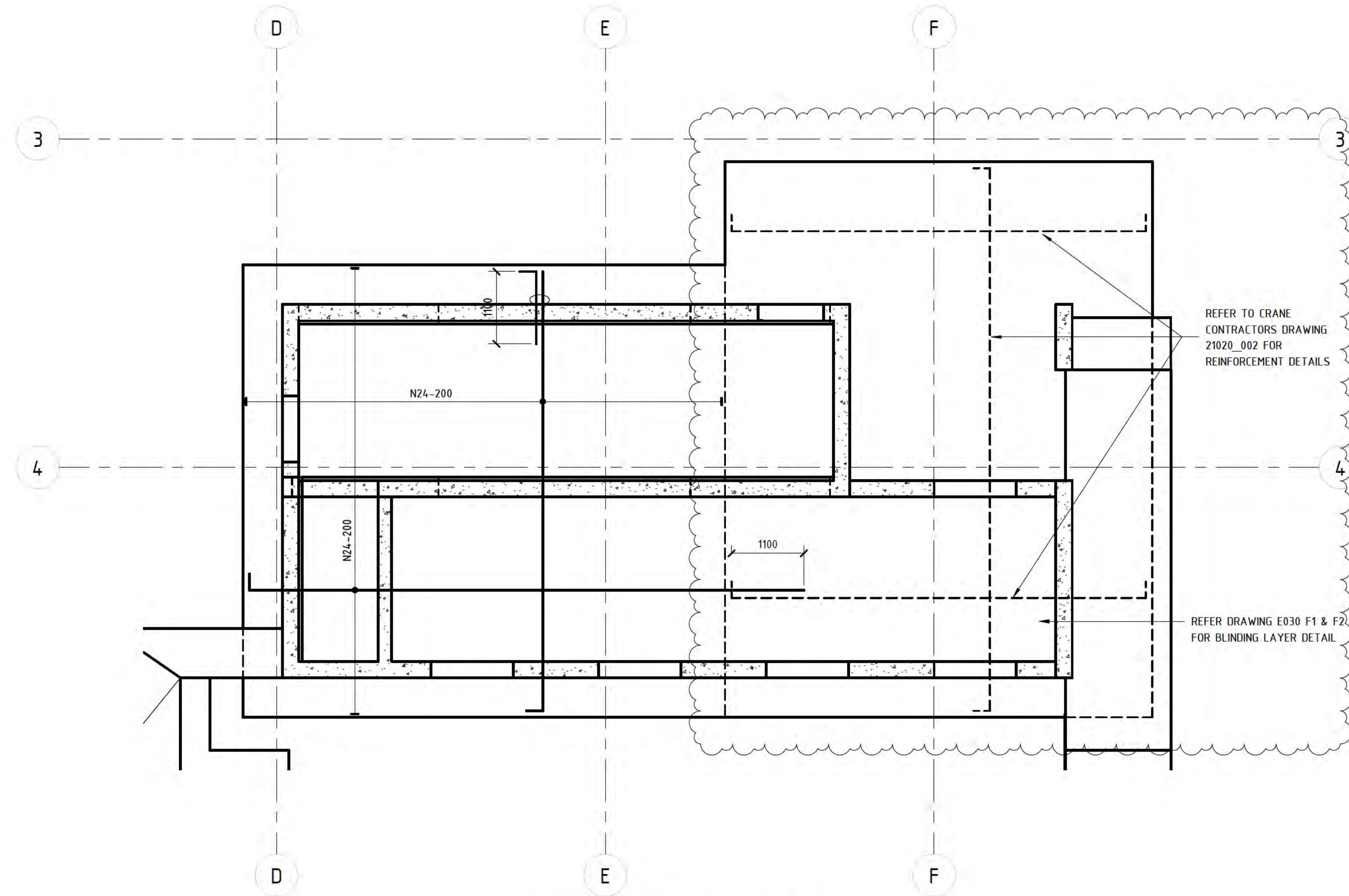


NORTH POINT

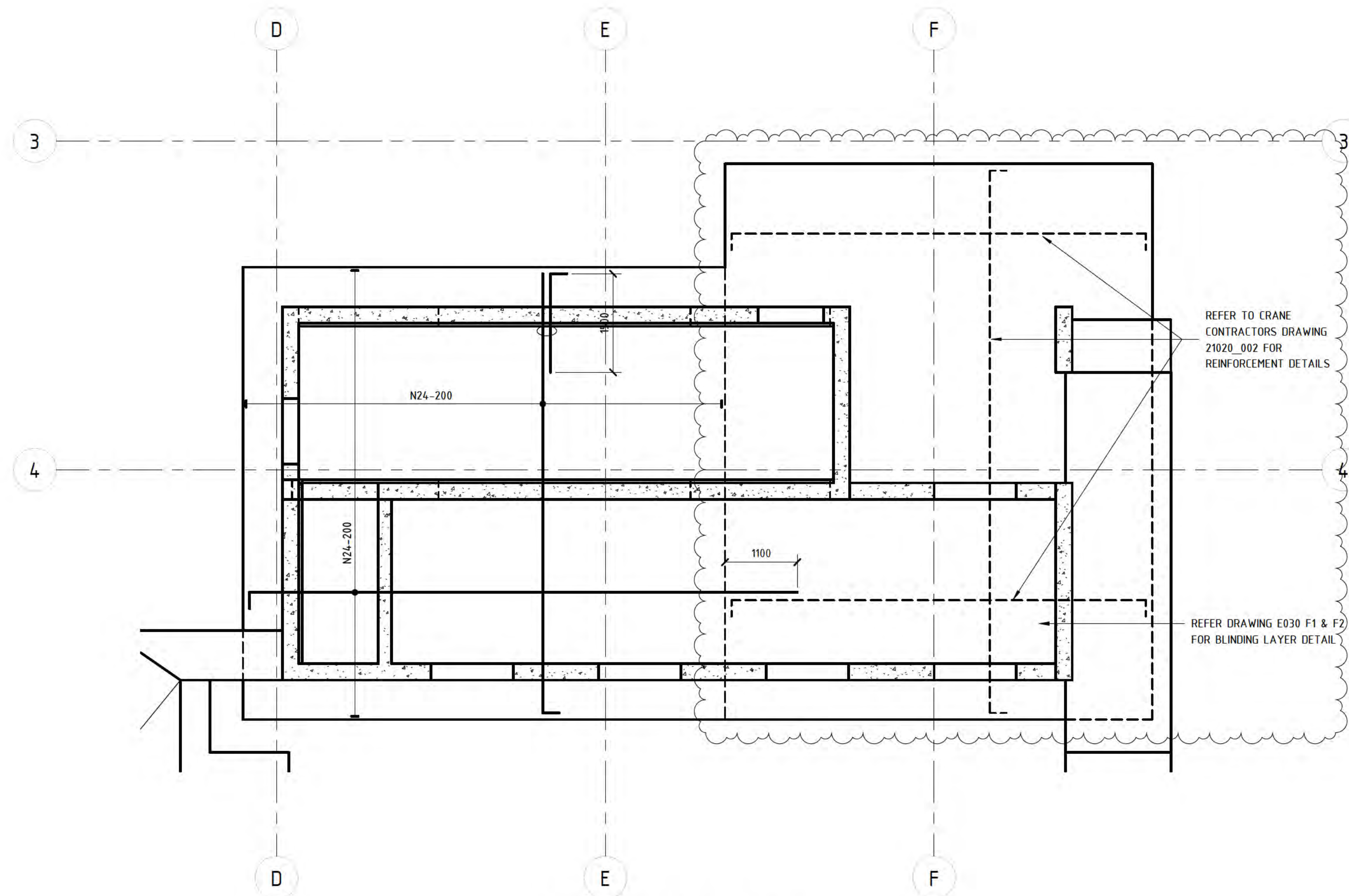
DRAWING No. E203

AMT

J



BOTTOM REINFORCEMENT PLAN
SCALE 1:50 @ B1

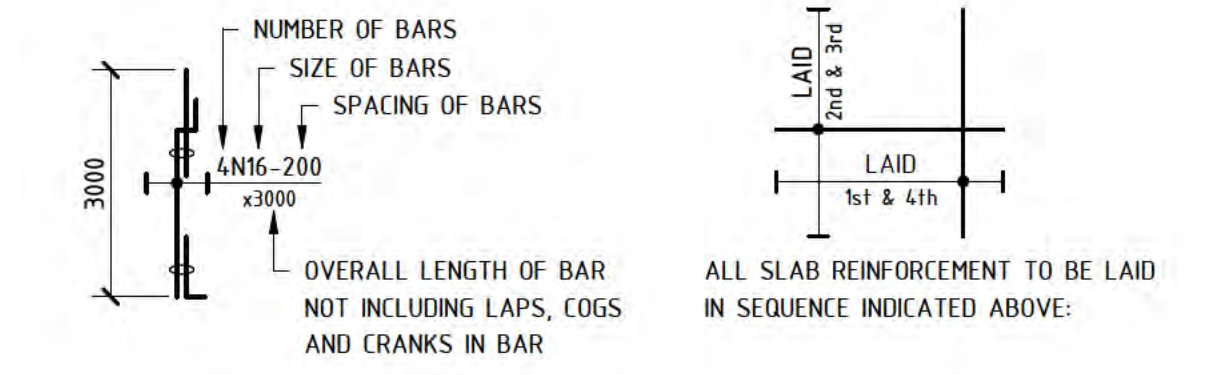


TOP REINFORCEMENT PLAN
SCALE 1:50 @ B1

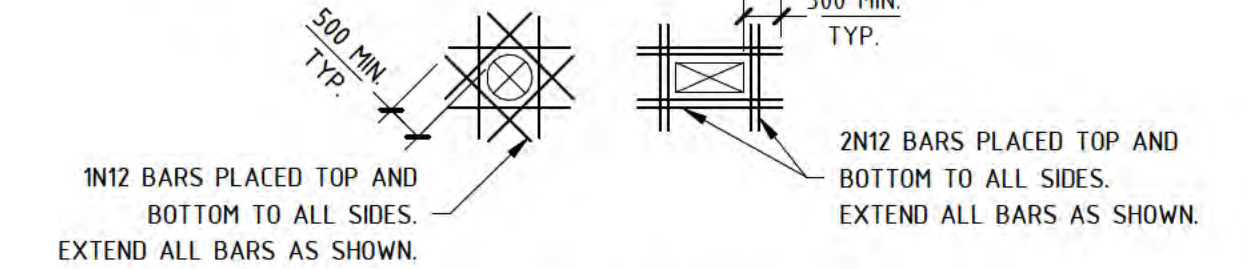
NOTE: ENSURE ALL STEEL FIXERS ARE FAMILIAR WITH THE BAR LAYING SEQUENCE BEFORE COMMENCING ANY WORK ON SITE.

REINFORCEMENT NOTES

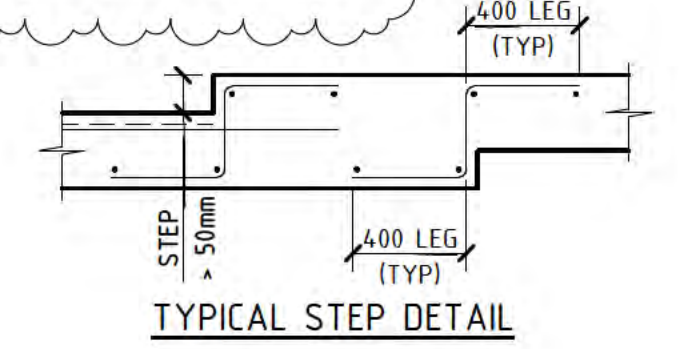
- ALL BARS DENOTED AS 'N' (eg. N12) SHALL BE DEFORMED RIBBED BARS, GRADE 500N
- ALL BARS DENOTED AS 'R' (eg. R10) SHALL BE ROUND BARS, GRADE 250N
- ALL SQUARE AND RECTANGULAR MESHES DENOTED AS 'SL' & 'RL' (eg. SL82) SHALL COMPRISE OF DEFORMED RIBBED BARS, GRADE 500N
- ALL REINFORCEMENT SHALL COMPLY WITH AS/NZS 4671-2001
- BAR TAG NOTATION:



- IDENTIFIES PAN REINFORCEMENT REQUIRED. REFER TO S002 FOR SIZE AND LAYOUT OMITTED FROM PLAN FOR CLARITY PURPOSES.
- ENSURE ALL CROSS RODS LAPPED 600mm MIN. AT ALL RE-ENTRANT CORNERS REINFORCEMENT BARS TO OVERLAP.
- REFER TO TYPICAL STEP DOWN DETAILS FOR ADDITIONAL REINFORCEMENT N.S.O.P. CONSTRUCTION MESH REQUIRED IN BEAM OR SLAB DEPTHS GREATER THAN 300mm IS NOT TO BE ACCOUNTED FOR AS PART OF THE PT DESIGN
- IDENTIFIES SL82 MESH TOP ADDITIONAL TO ALL EXTERNAL AREAS UNO.
- IDENTIFIES BAR COUPLERS TO BE USED AT TEMPORARY HOIST AND CRANE PENETRATION LOCATIONS.
- PROVIDE TRIMMER BAR REINFORCEMENT ONLY WHERE A PENETRATION IS GREATER THAN 300mm x 300mm AND UP TO AND INCLUDING 900mm x 900mm. SUCH PENETRATIONS SHALL HAVE THE FOLLOWING MINIMUM REINFORCEMENT SHOWN BELOW



- PROVIDE N12-900 DISTRIBUTION BARS WHERE NECESSARY TO SUPPORT MAIN REINFORCEMENT. REFER TO BELOW BAR LAYING SEQUENCE.
- STARTER BARS DETAILS - REFER TO DRAWING E018 FOR DETAILS.



TYPICAL STEP DETAIL

BAR LAP & ANCHORAGE

BAR	LAP LENGTH	
	WHERE CONC. BELOW BAR IS LESS THAN OR EQUAL TO 300	WHERE CONC. BELOW BAR IS GREATER THAN 300
N12	500	700
N16	700	900
N20	900	1200
N24	1100	1500
N28	1400	1800
N32	1600	2100
N36	1800	2300

NOTE: ALL LAPS TO BE CONTACT SPLICES

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ACT 1258
Block 4 Section 12 Canberra City
Issue Date: 28/10/2021
NCC Occupancy Class: 7a
NCC Construction Type: A

Sch 2 s 2.2(a)(ii)

NOTE: B1 DRAWING SHEET

No.	AMENDMENT	APPROVED	DATE	ISSUED BY
C	REVISED AS CLOUDED	DS	17.08.2021	GC
B	RE-ISSUED FOR CONSTRUCTION	MM	07.07.2021	GC
A	ISSUE FOR CONSTRUCTION	MM	16.06.2021	GC

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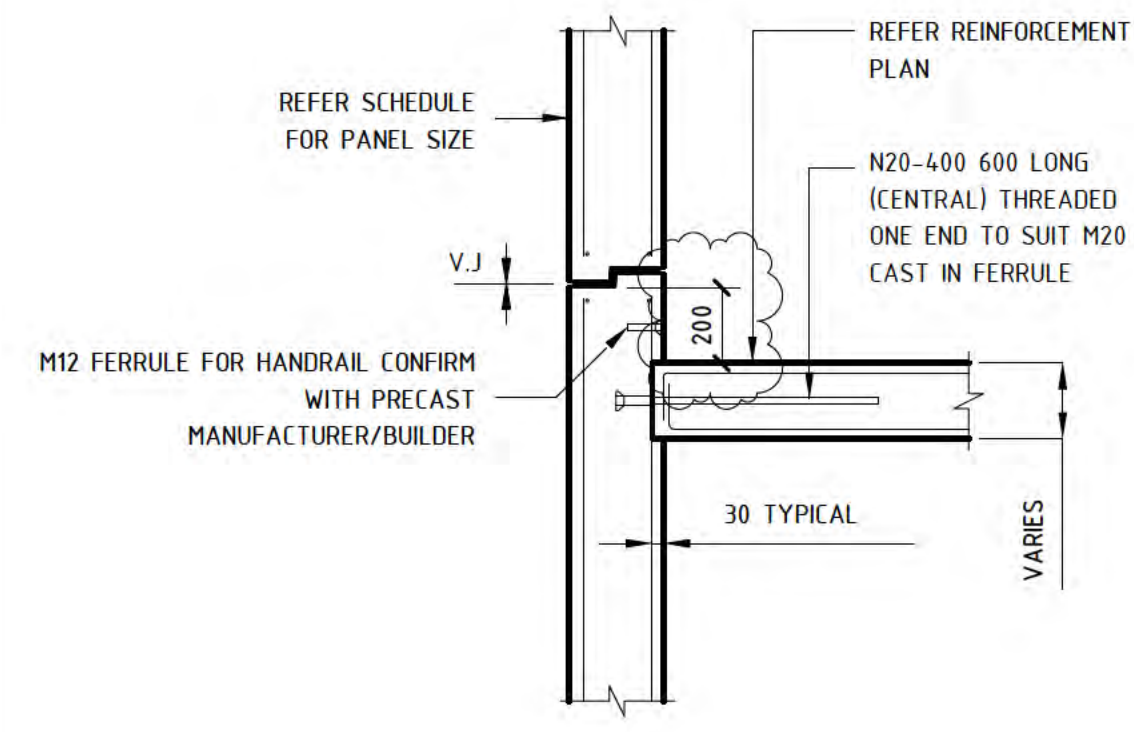
APPROVED	MM
CHECKED	MM
DESIGNED BY	MM/DP
DRAWN BY	GC/SS
LEAD FILE	
SCALE	As indicated

PROJECT
MERITON SUITES CANBERRA
40 ALLARA STREET
CANBERRA ACT 2061

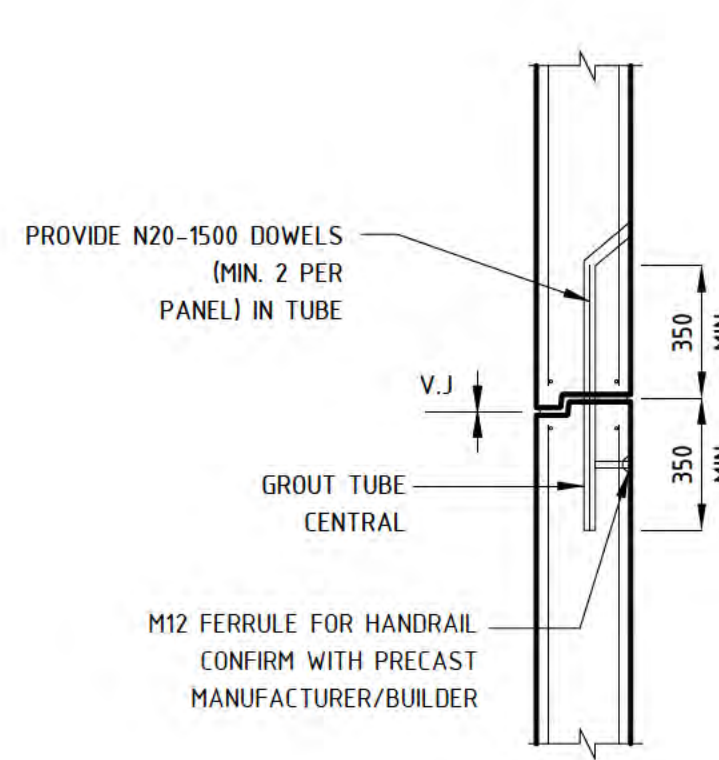
DRAWING TITLE
LIFT/STAIR AND CRANE
FOUNDATION REINFORCEMENT
PLANS

PROJECT No. 7774

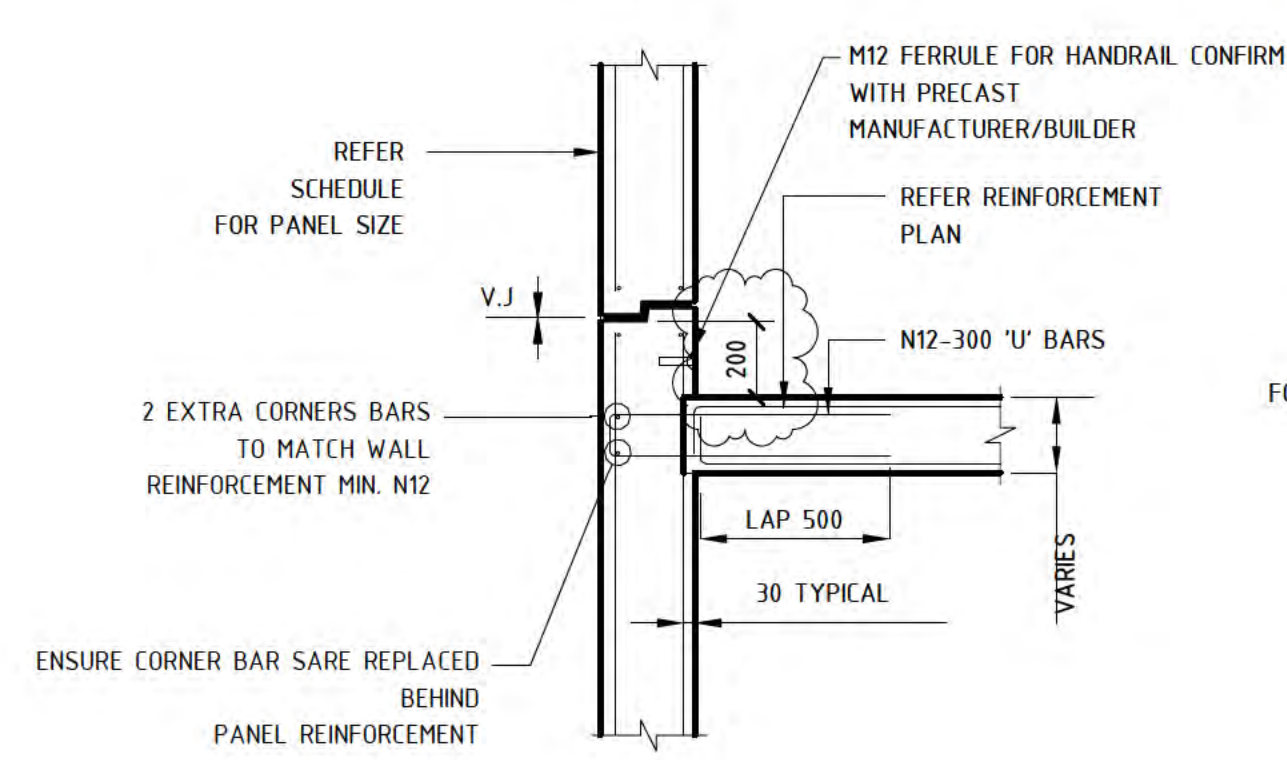
DRAWING No. E4.00
AMT C



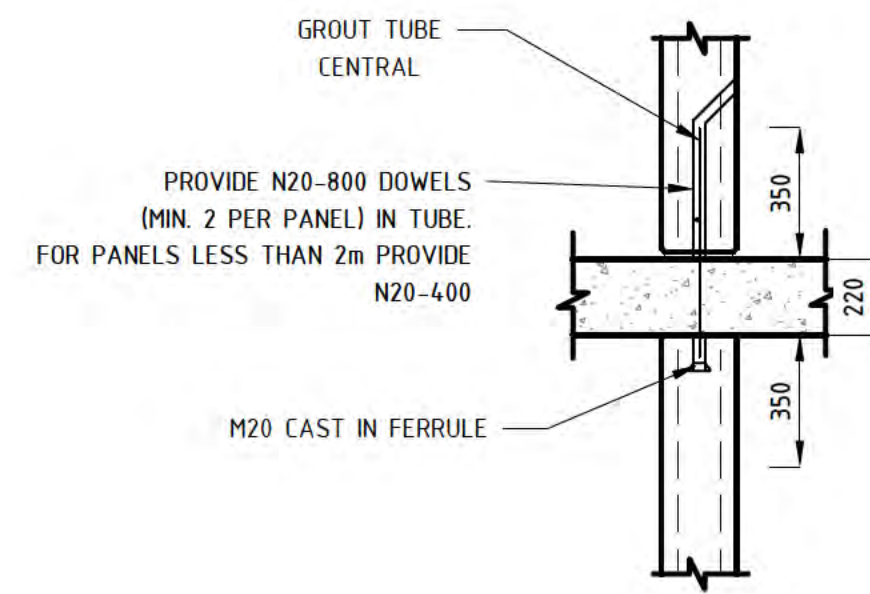
SUSPENDED SLAB TO PANEL FERRULE DETAIL



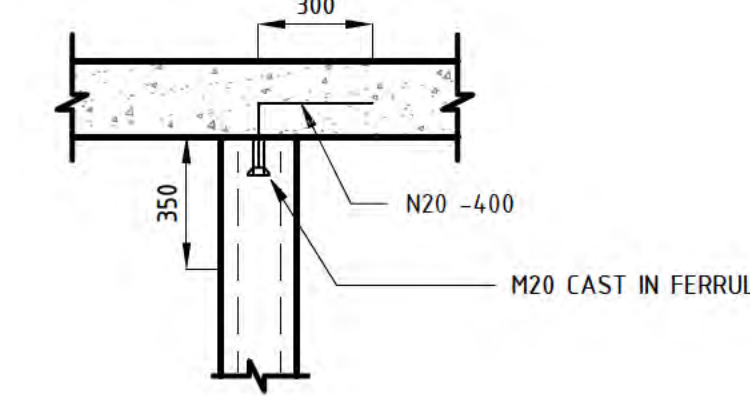
TYPICAL PANEL DOWEL JOINT DETAIL



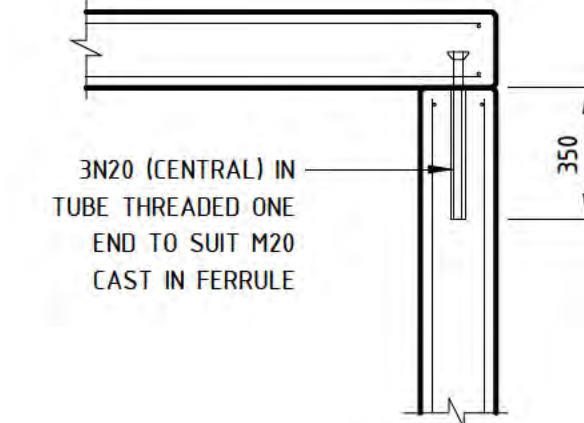
SUSPENDED SLAB TO PRECAST PULL OUT BEAM DETAIL



TYPICAL PRECAST/SLAB DETAIL



TYPICAL PRECAST TERMINATION DETAIL



LIFT/STAIR SHAFT LID DETAIL

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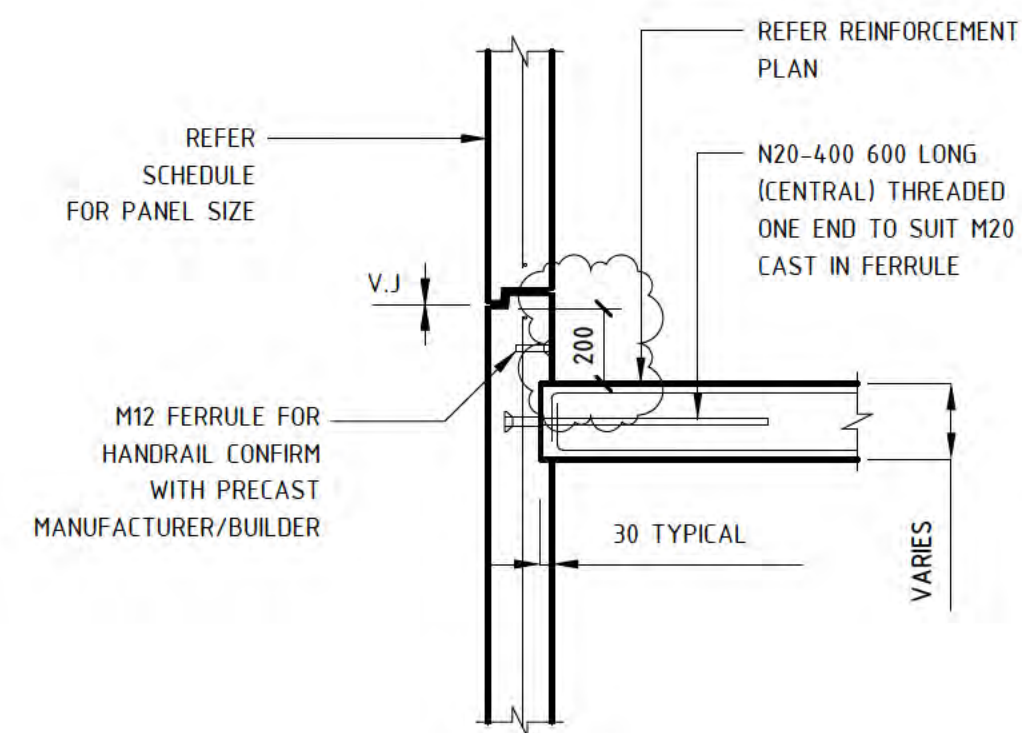
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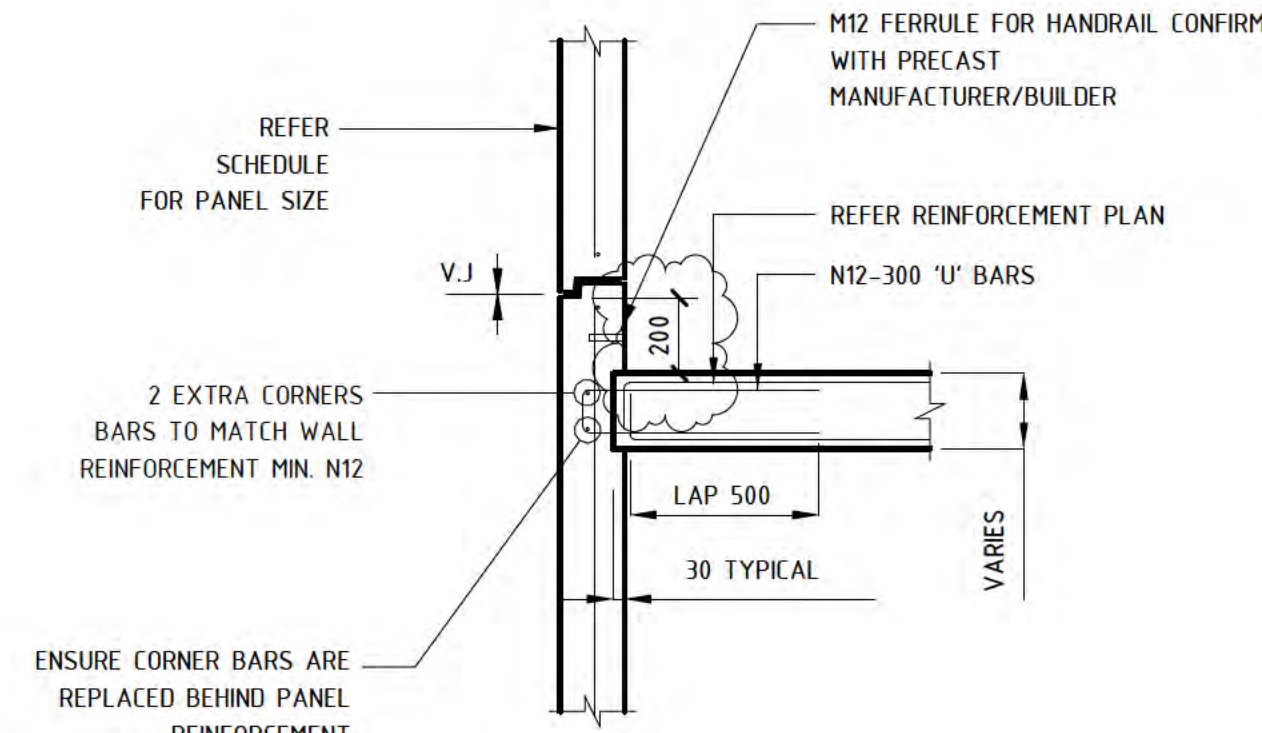
ACT 1258
Block 4 Section 12 Canberra City
Issue Date: 28/10/2021
NCC Occupancy Class: 7a
NCC Construction Type: A

Sch 2 s 2.2(a)(ii)

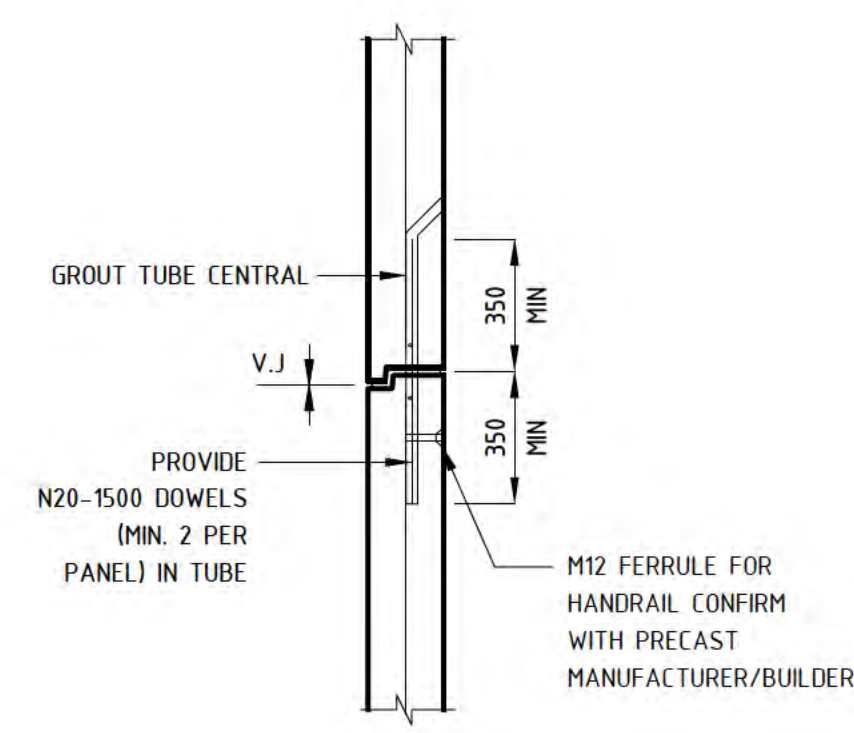
PRECAST REINFORCEMENT - DOUBLE LAYER
SCALE 1:20



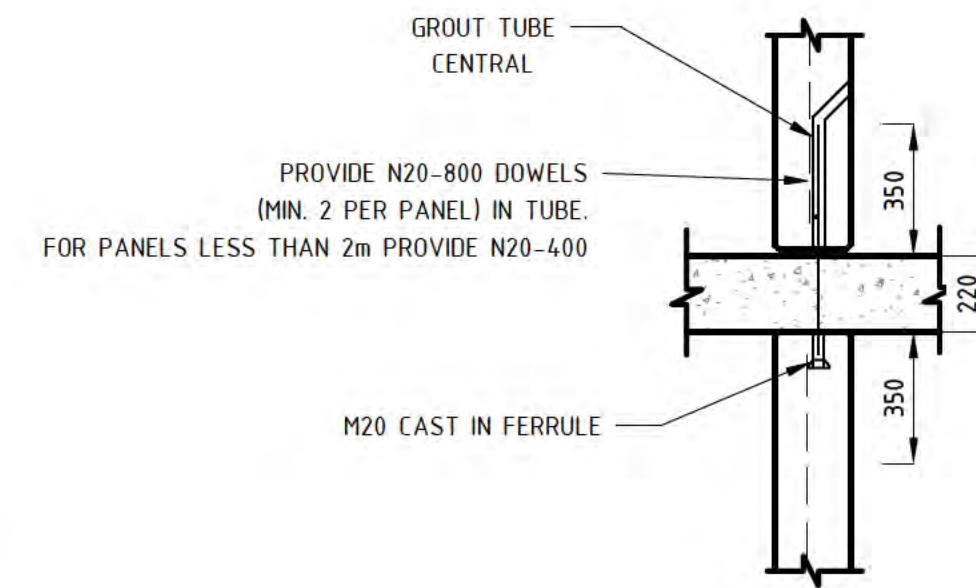
SUSPENDED SLAB TO PANEL FERRULE DETAIL



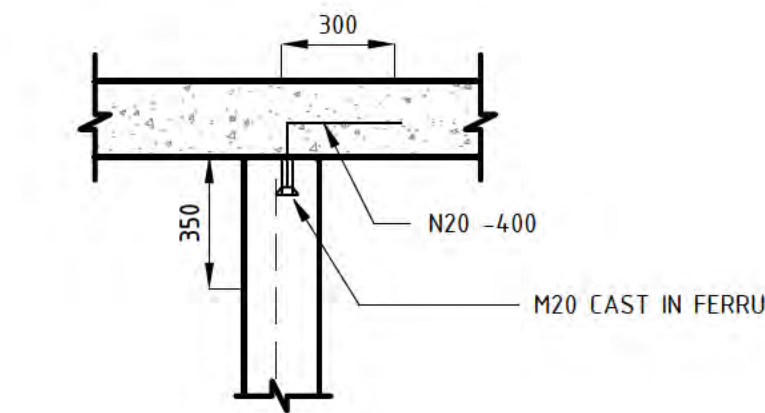
SUSPENDED SLAB TO PRECAST PULL OUT BEAM DETAIL



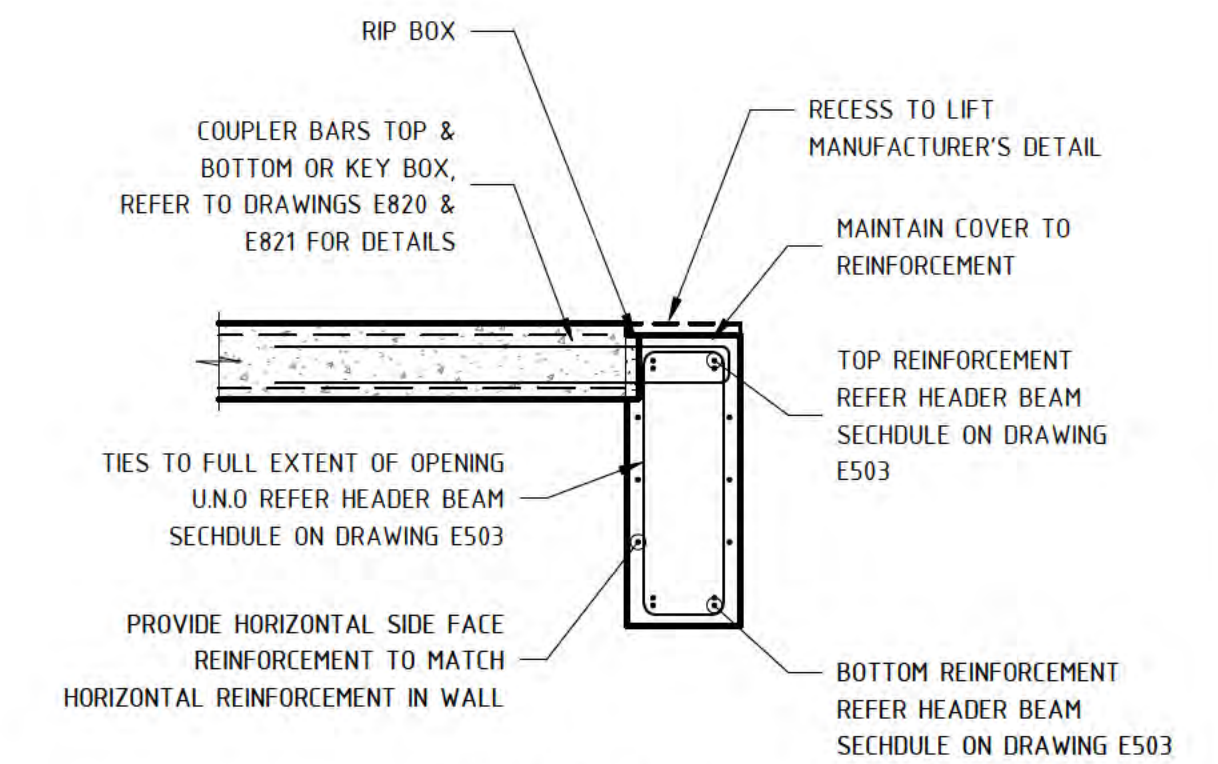
PANEL DOWEL JOINT DETAIL



TYPICAL PRECAST/SLAB DETAIL

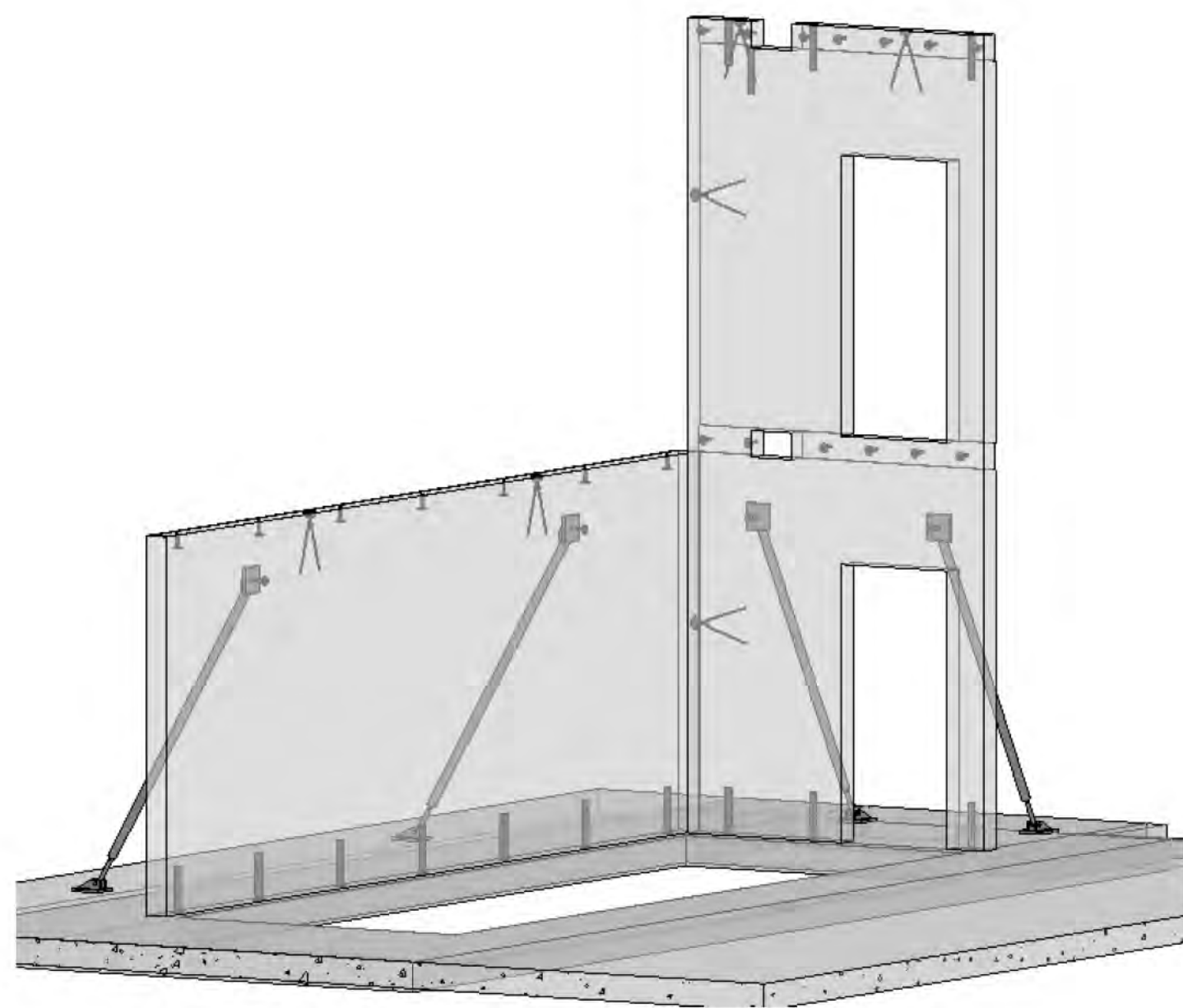


TYPICAL PRECAST TERMINATION DETAIL



TIE ARRANGEMENT TYPE 1

PRECAST REINFORCEMENT - SINGLE LAYER
SCALE 1:20



TYPICAL 3D PRECAST WALL PERSPECTIVE

SIDE OF SLAB PULL OUT BARS DETAIL

TYPICAL PANEL SHIPLAP DETAIL
SCALE 1:20

MINIMUM PRECAST DIMENSIONS AT JOINT	
PANEL THICKNESS	'X' (MINIMUM BEARING)
200	130
220	150
250	180

SECTION

ELEVATION

TYPICAL PRECAST BALUSTRADE DETAIL

STANDARD PARAPET DETAIL

SUSPENDED SLAB TO PRECAST BALUSTRADE DETAILS

NOTE: B1 DRAWING SHEET

No.	AMENDMENT	APPROVED	DATE	ISSUED BY	ARCHITECT / BUILDING DESIGNER
A	ISSUED FOR CONSTRUCTION	DS	25.10.2021	GC	
4	REVISED AS CLOAKED	DS	15.09.2021	GC	
5	ISSUED FOR TENDER	MM	06.07.2021	GC	
4	ISSUED FOR TENDER	MM	16.06.2021	GC	
3	ISSUED FOR TENDER	MM	13.04.2021	GC	
2	ISSUED FOR TENDER	MM	04.03.2021	GC	
1	DRAFT CONCRETE TENDER	MM	19.02.2021	GC	



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APPROVED	DS
CHECKED	DS
DESIGNED BY	DS
DRAWN BY	GC
LEAD FILE	
SCALE	1 : 20

PROJECT
MERITON SUITES CANBERRA
40 ALLARA STREET
CANBERRA ACT 2061

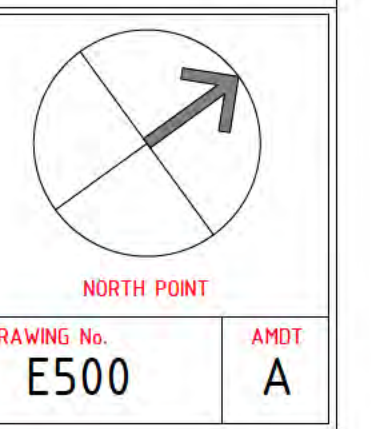
DRAWING TITLE
TYPICAL PRECAST WALL DETAILS

ISSUED FOR CONSTRUCTION

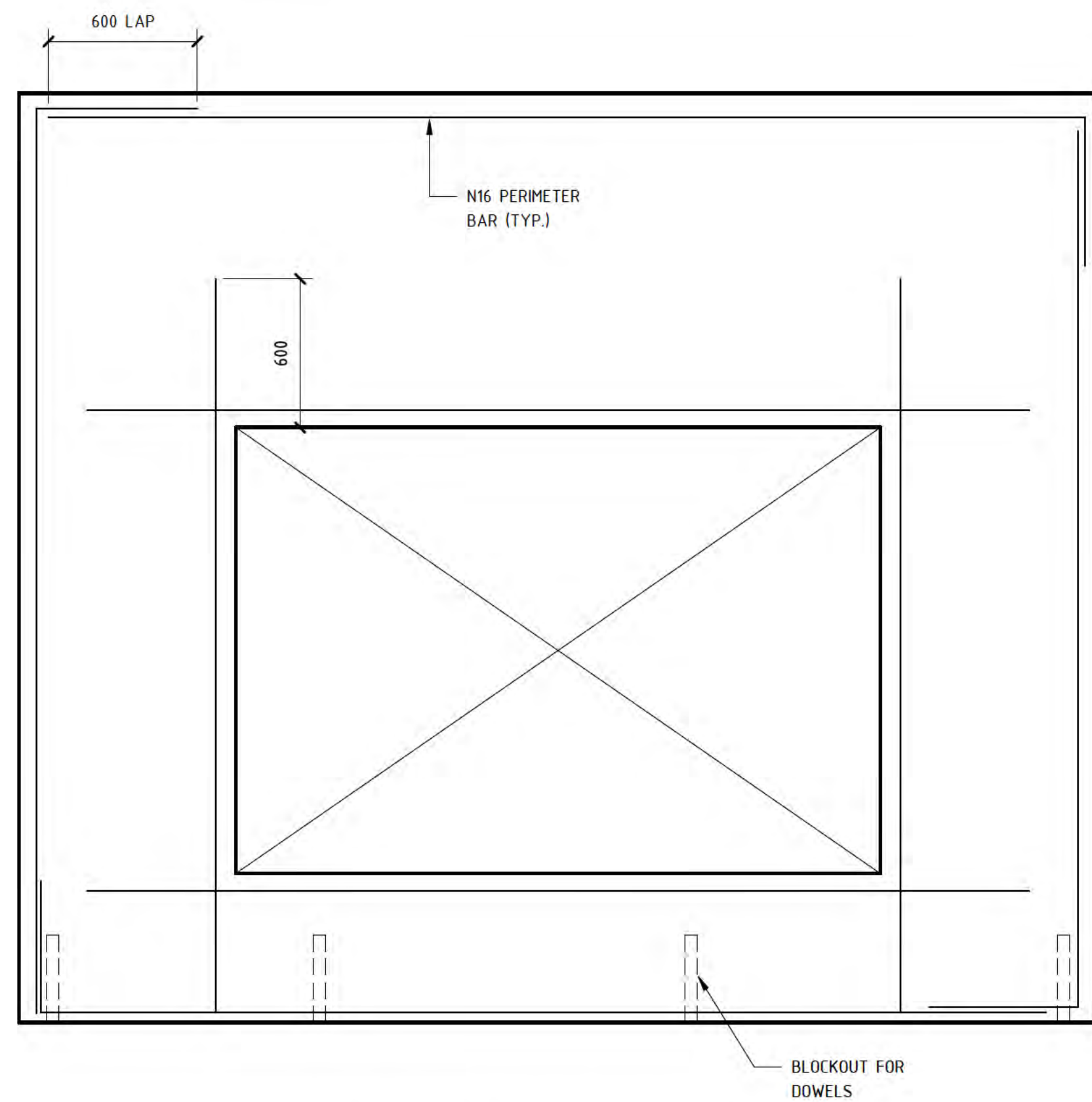
PROJECT No.
7774

DRAWING No.
E500

AMT
A

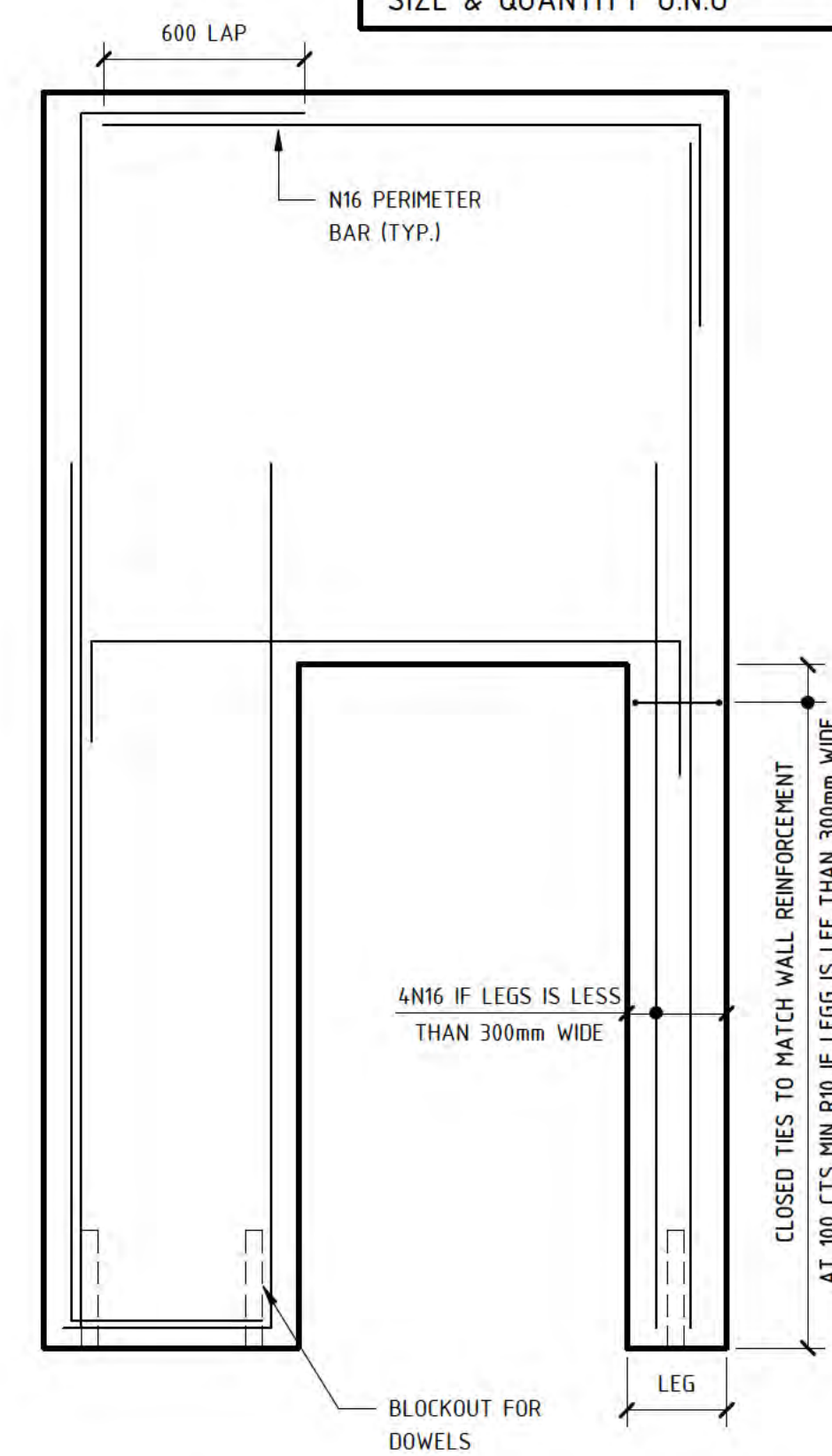


REFER TO PRECAST WALL SCHEDULE FOR REINFORCEMENT SIZE & QUANTITY U.N.O



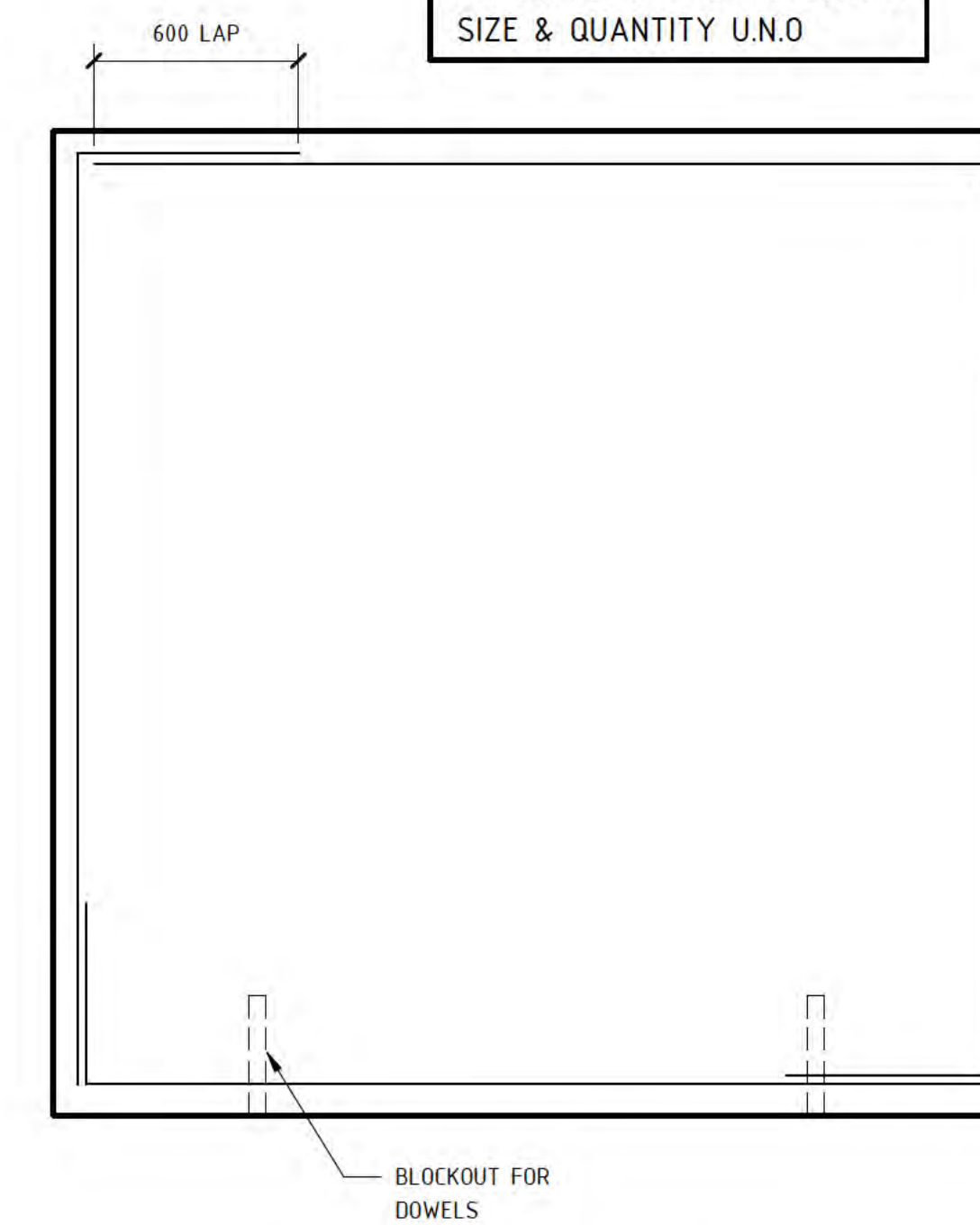
TYPICAL PRECAST WITH OPENING
SCALE 1:20

REFER TO PRECAST WALL SCHEDULE FOR REINFORCEMENT SIZE & QUANTITY U.N.O

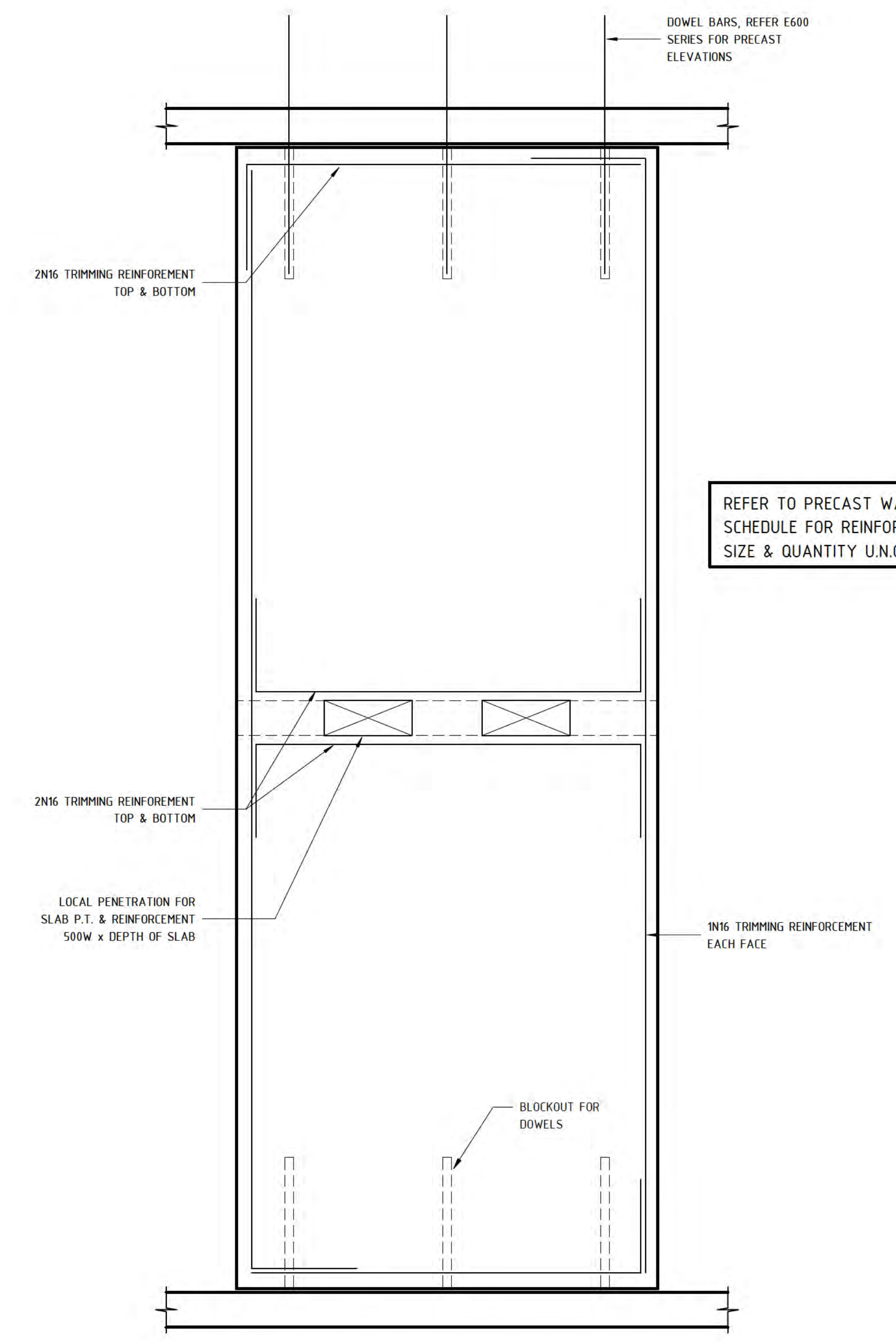


TYPICAL PRECAST WITH DOOR OPENING
SCALE 1:20

REFER TO PRECAST WALL SCHEDULE FOR REINFORCEMENT SIZE & QUANTITY U.N.O

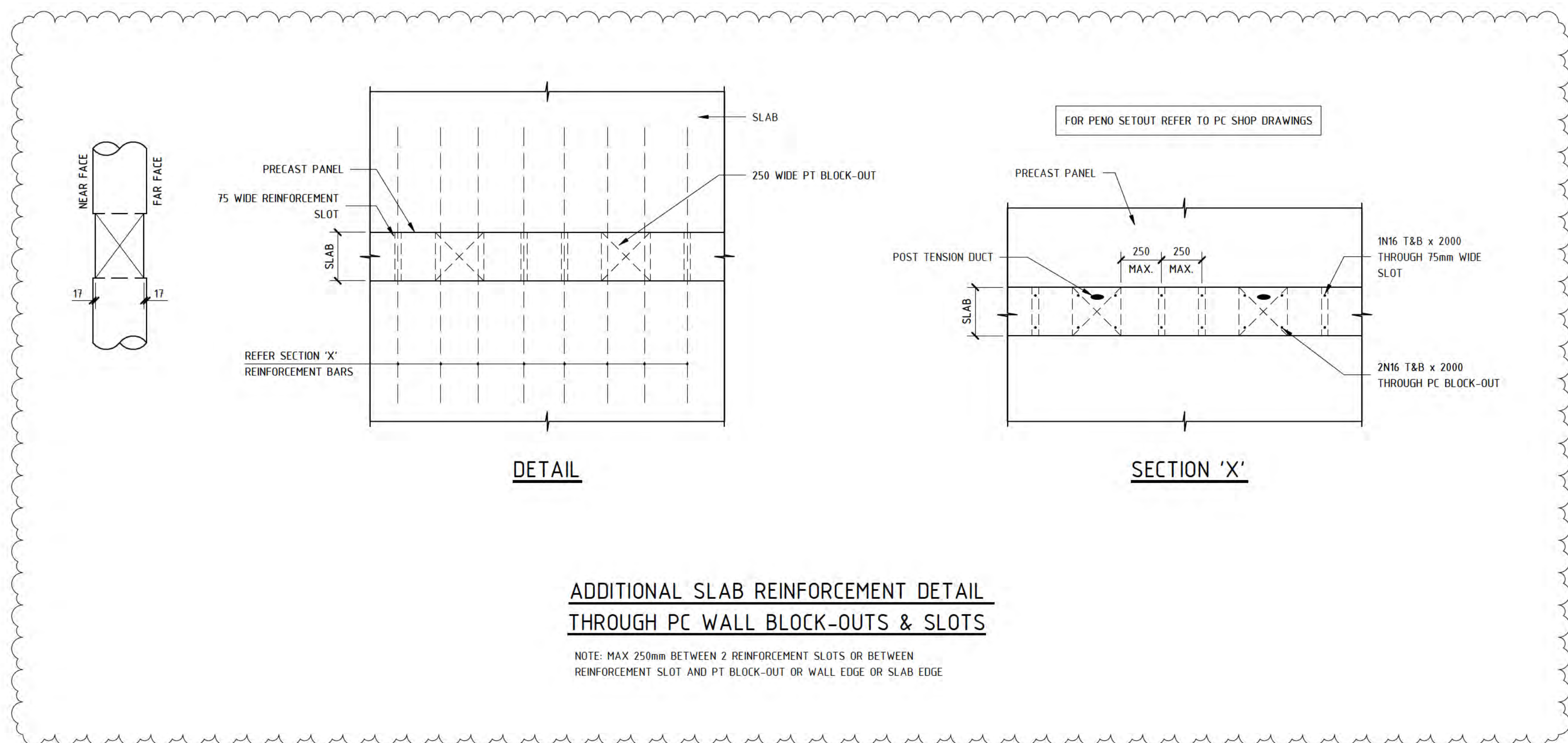


TYPICAL PRECAST PANEL
SCALE 1:20



REFER TO PRECAST WALL SCHEDULE FOR REINFORCEMENT SIZE & QUANTITY U.N.O

TYPICAL PRECAST PANEL
SCALE 1:20



ADDITIONAL SLAB REINFORCEMENT DETAIL THROUGH PC WALL BLOCK-OUTS & SLOTS

NOTE: MAX 250mm BETWEEN 2 REINFORCEMENT SLOTS OR BETWEEN REINFORCEMENT SLOT AND PT BLOCK-OUT OR WALL EDGE OR SLAB EDGE

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ACT 1258
Block 4 Section 12 Canberra City
Issue Date: 28/10/2021
NCC Occupancy Class: 7a
NCC Construction Type: A

Sch 2 s 2.2(a)(ii)

NOTE: B1 DRAWING SHEET

No.	AMENDMENT	APPROVED	DATE	ISSUED BY
A	ISSUED FOR CONSTRUCTION	DS	25.10.2021	GC
4	ISSUED FOR TENDER	MM	16.06.2021	GC
3	ISSUED FOR TENDER	MM	13.04.2021	GC
2	ISSUED FOR TENDER	MM	04.03.2021	GC
1	DRAFT CONCRETE TENDER	MM	19.02.2021	GC

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DESIGNED BY	DS
DRAWN BY	GC
LEAD FILE	
SCALE	1:20

PROJECT
MERITON SUITES CANBERRA
40 ALLARA STREET
CANBERRA ACT 2061

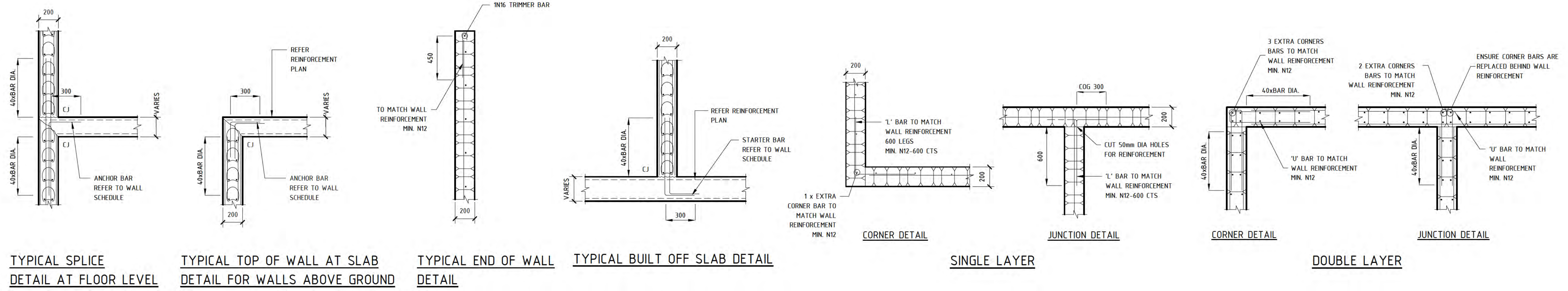
DRAWING TITLE
TYPICAL PRECAST PANEL LAYOUTS

PROJECT No.
7774

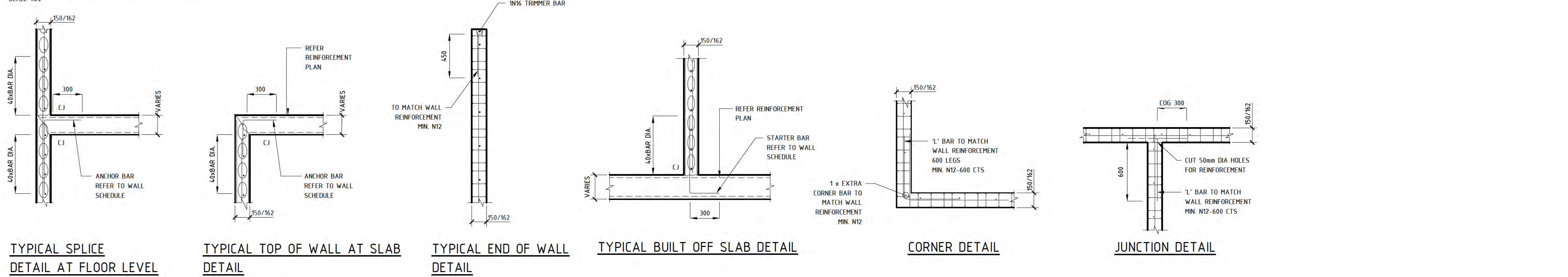
NORTH POINT

DRAWING No.
E502

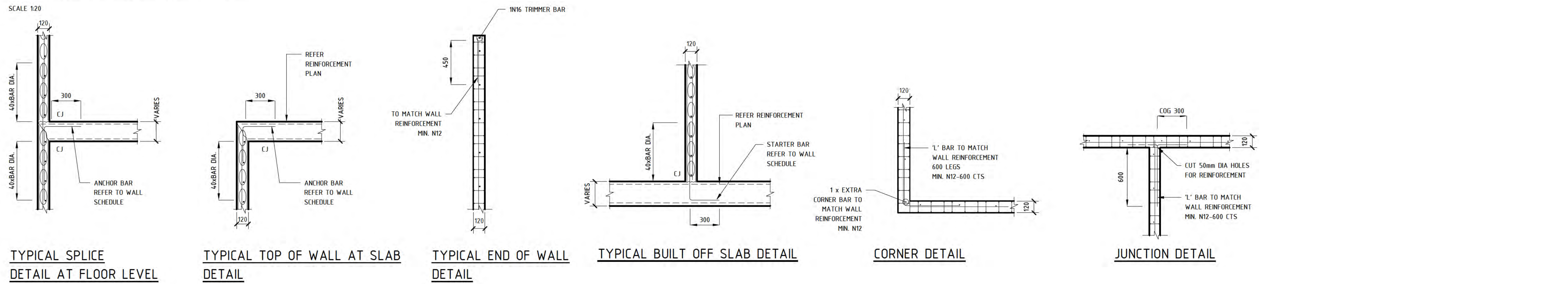
AMT
A



AFS WALL DETAILS - 200 & 256mm



AFS WALL DETAILS - 150 & 162mm



AFS WALL DETAILS - 120mm

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ACT 1258
Block 4 Section 12 Canberra City
Issue Date: 28/10/2021
NCC Occupancy Class: 7a
NCC Construction Type: A

Sch 2 s 2.2(a)(ii)

NOTE: B1 DRAWING SHEET

No.	AMENDMENT	APPROVED	DATE	ISSUED BY
1	DRAFT CONCRETE TENDER	MM	19.02.2021	GC
2	ISSUED FOR TENDER	MM	04.03.2021	GC
3	ISSUED FOR TENDER	MM	13.04.2021	GC
4	ISSUED FOR CONSTRUCTION	MM	10.05.2021	GC

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LEAD FILE	
SCALE	1 : 20

PROJECT
MERITON SUITES CANBERRA
40 ALLARA STREET
CANBERRA ACT 2061

ISSUED FOR CONSTRUCTION

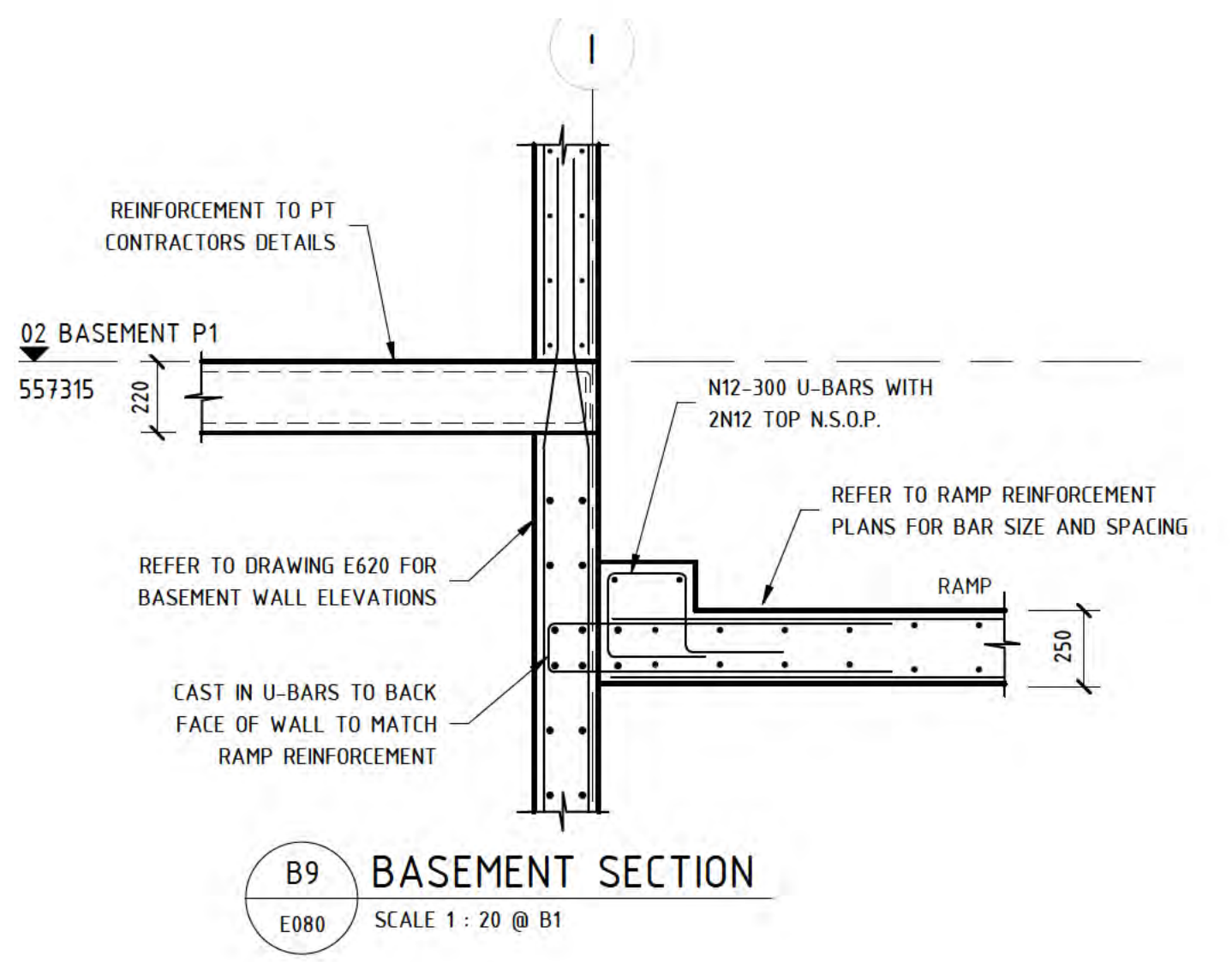
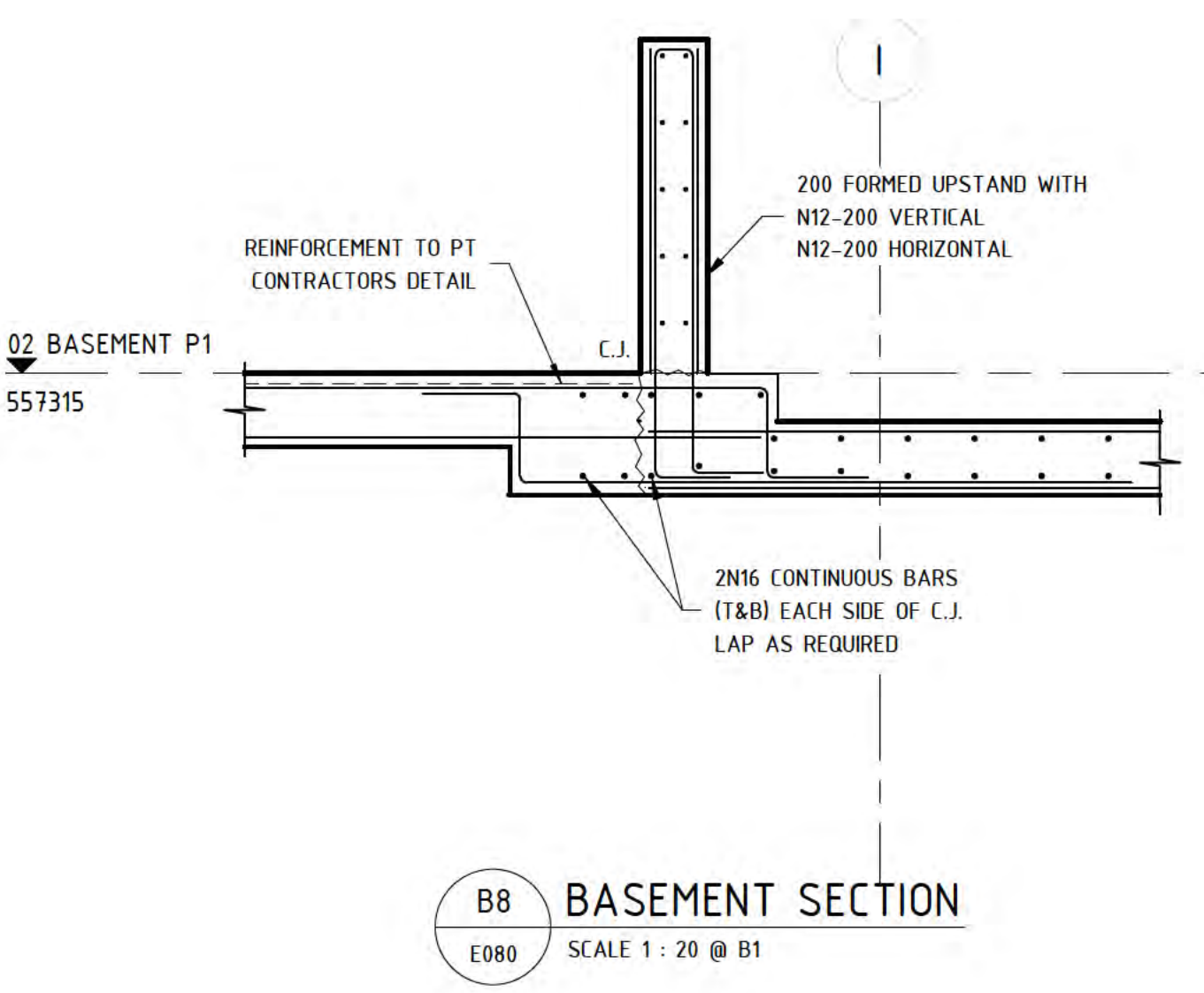
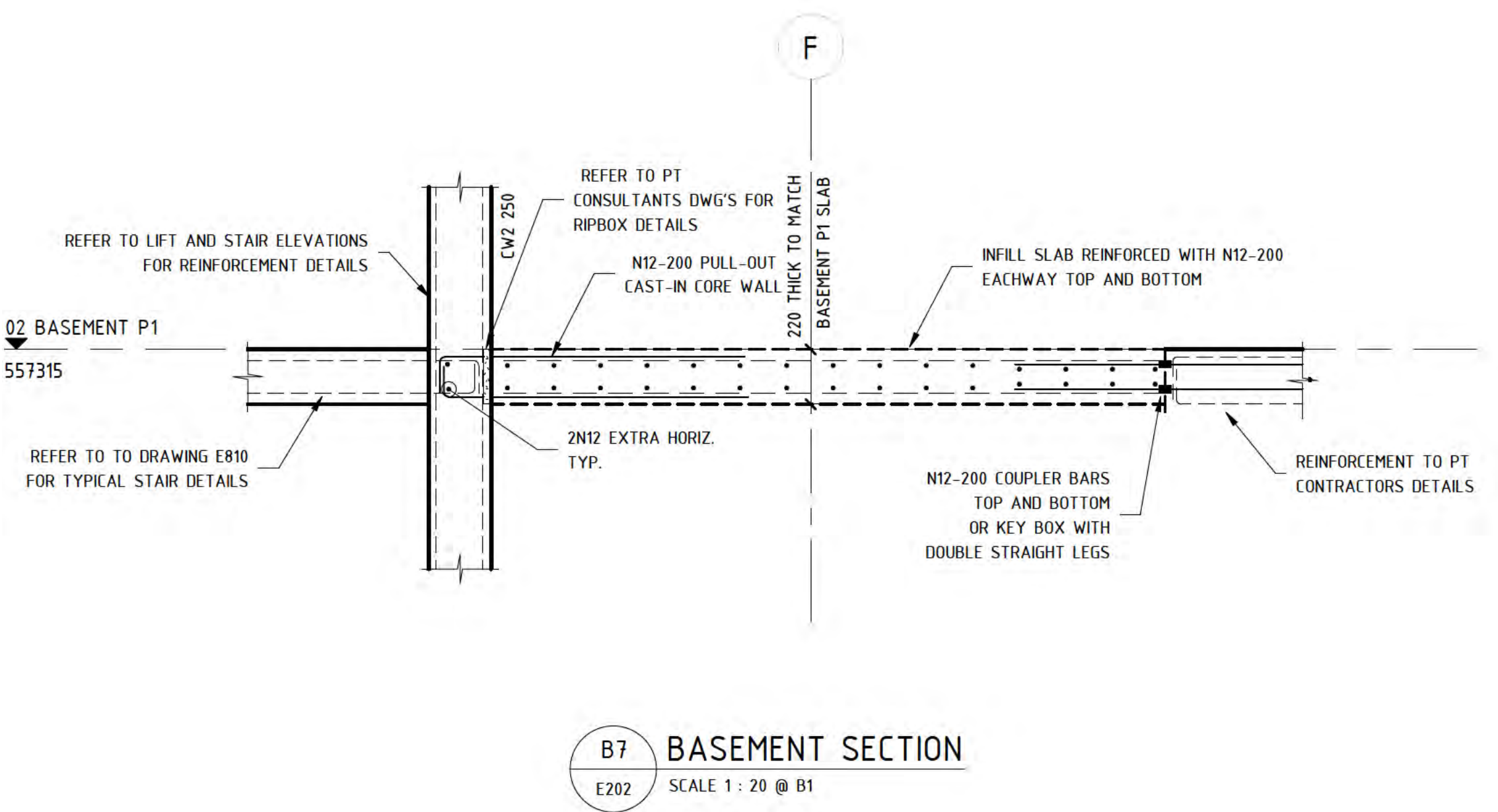
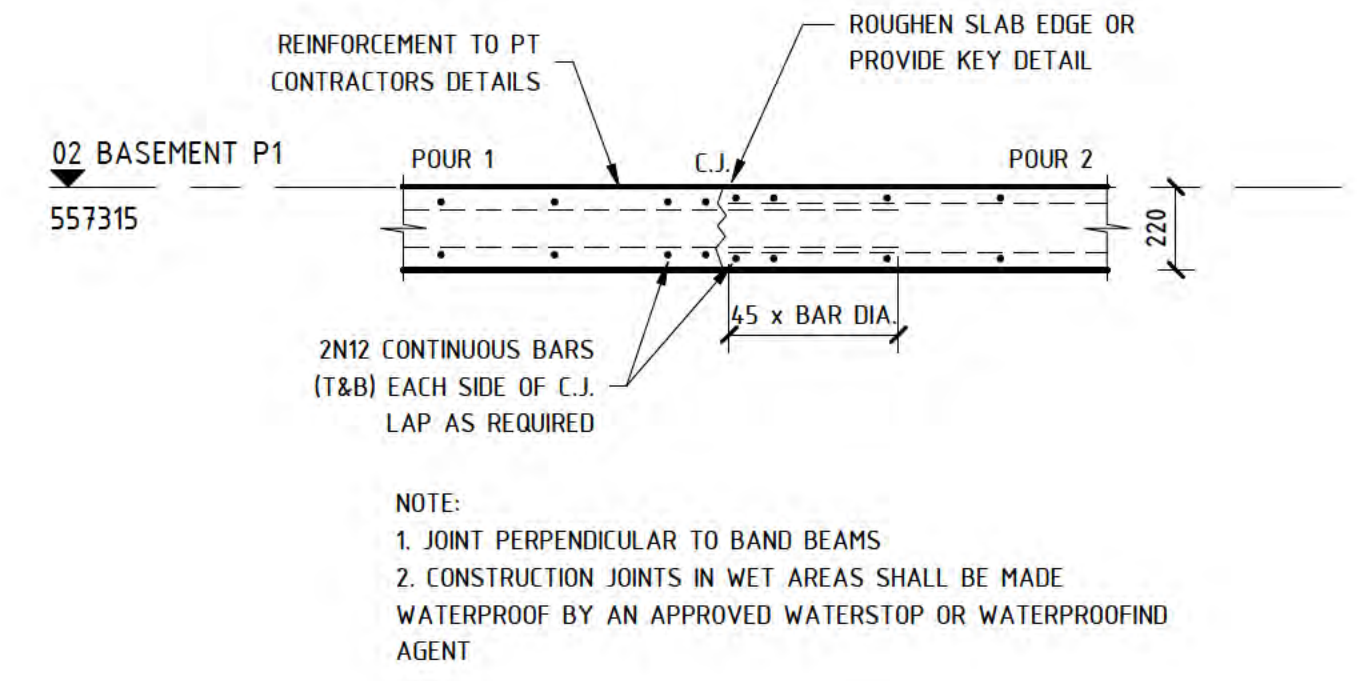
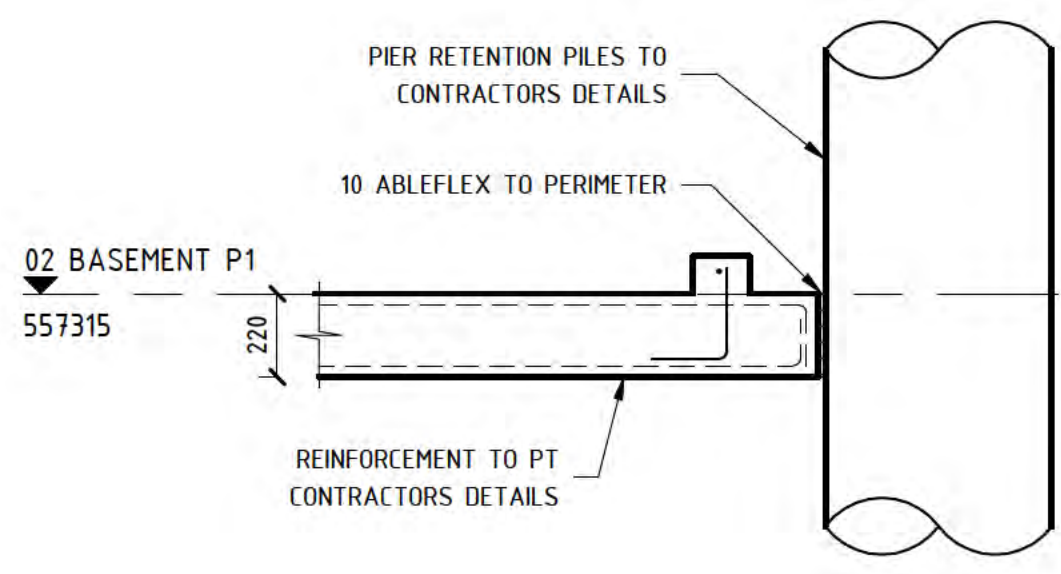
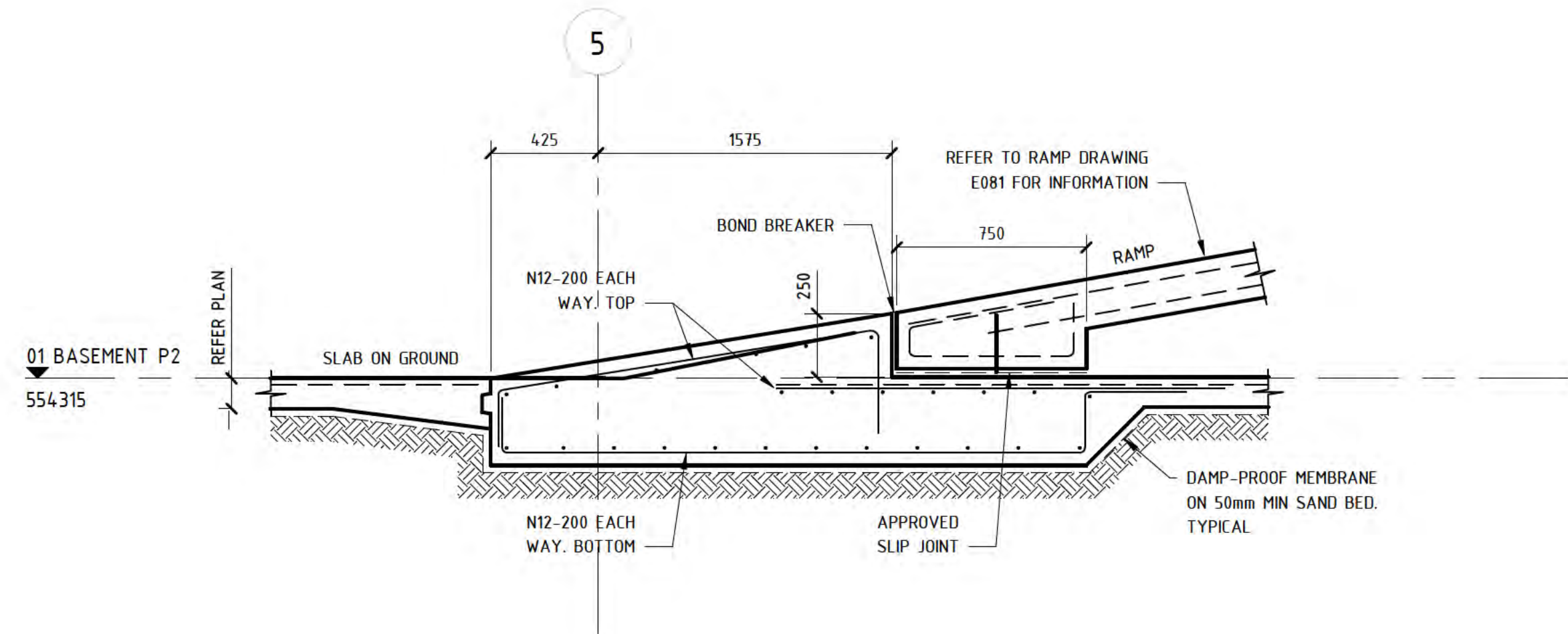
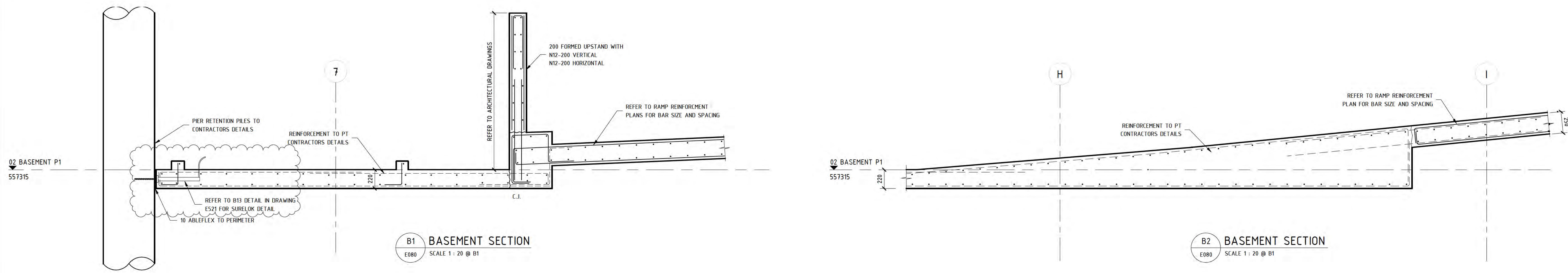
DRAWING TITLE
TYPICAL AFS WALL DETAILS

PROJECT No.
7774

North Point

E504

AMT
A



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ACT 1258
Block 4 Section 12 Canberra City
Issue Date: 28/10/2021
NCC Occupancy Class: 7a
NCC Construction Type: A

Sch 2 s 2.2(a)(ii)

NOTE: B1 DRAWING SHEET

No.	AMENDMENT	APPROVED	DATE	ISSUED BY
F	REVISED AS CLOUDED	DS	30.09.2021	GC
E	REVISED AS CLOUDED	DS	10.09.2021	GC
D	REVISED AS CLOUDED	MM	19.07.2021	GC
C	RE-ISSUED FOR CONSTRUCTION	MM	07.07.2021	GC
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3	ISSUED FOR TENDER	MM	13.04.2021	GC
2	ISSUED FOR TENDER	MM	19.03.2021	GC
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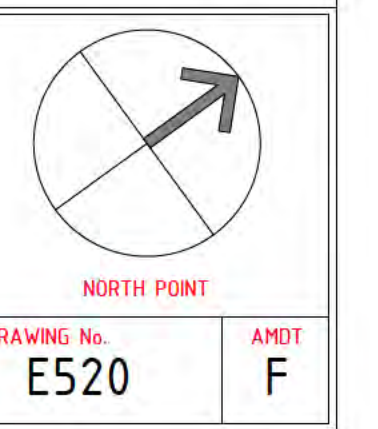
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DESIGNED BY	DS
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DATE	
SCALE	1: 20

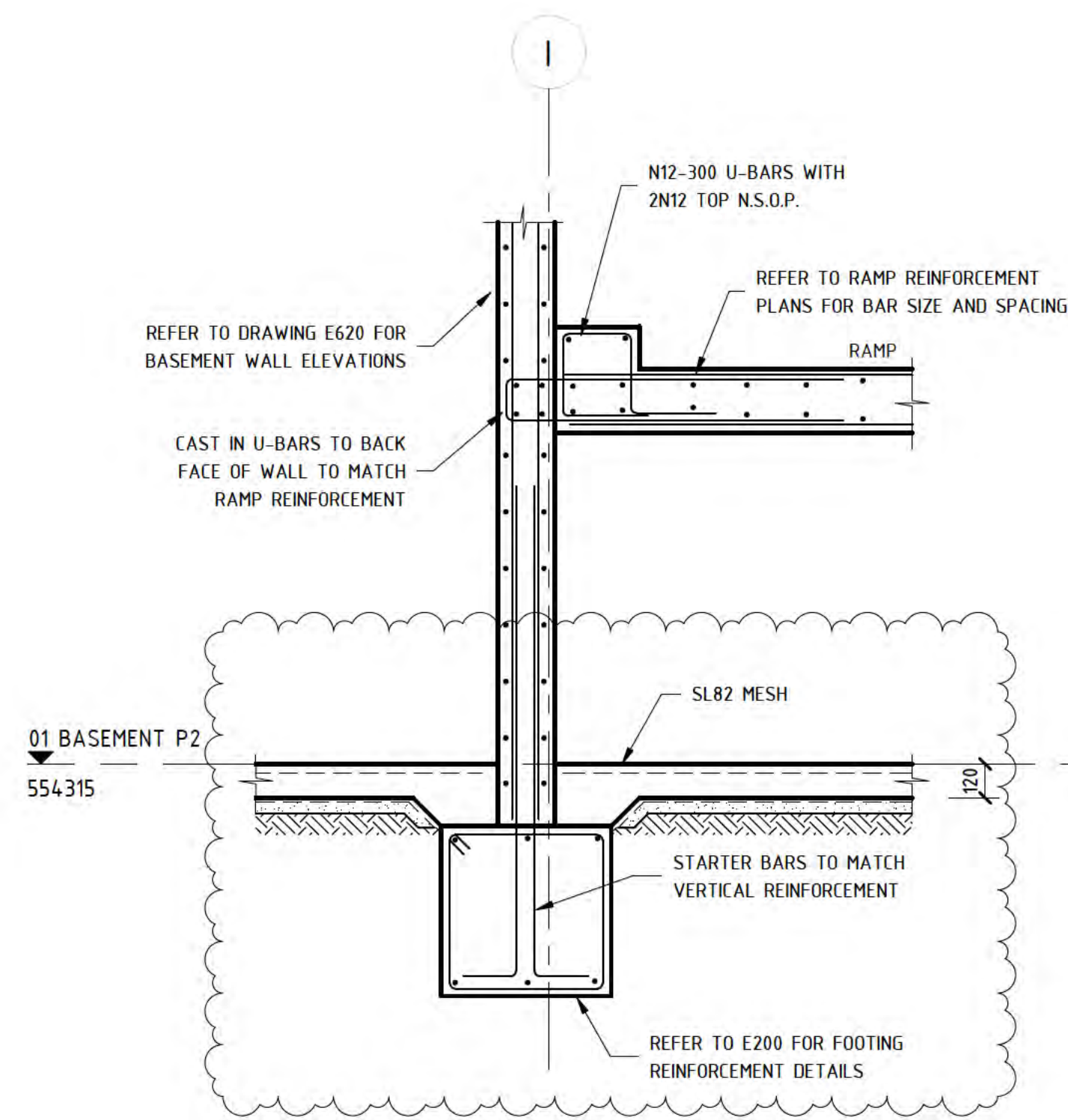
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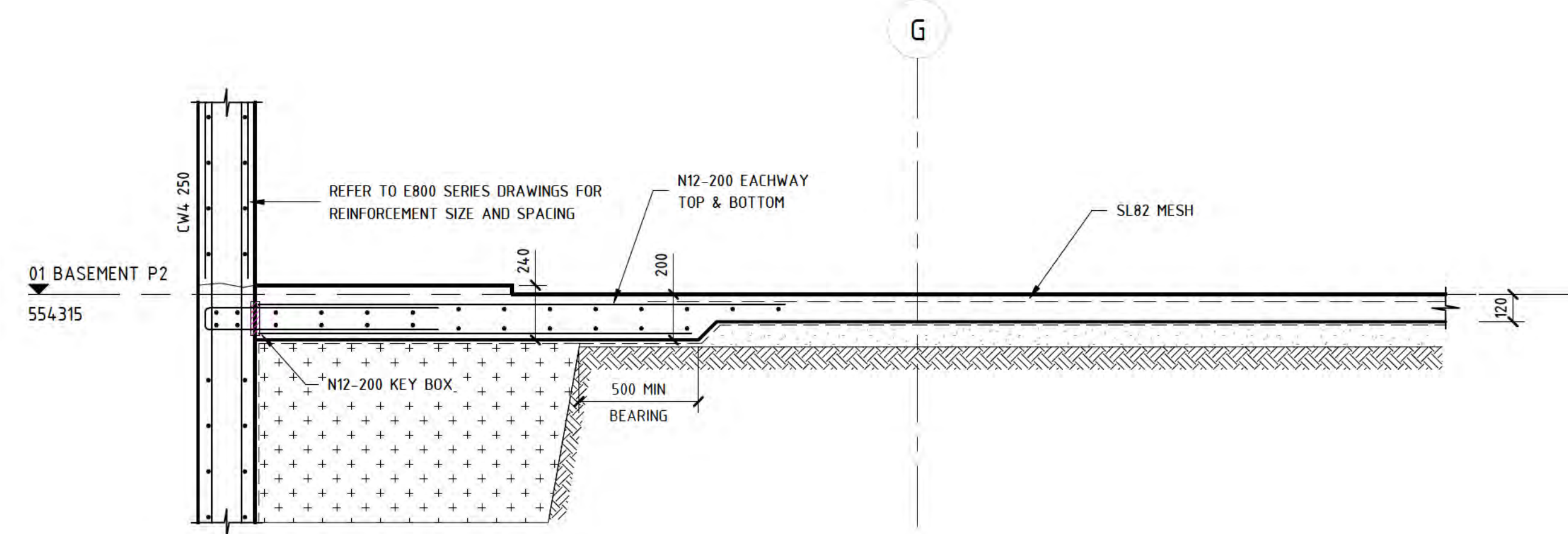
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BASEMENT SLAB DETAILS - SHEET 1

PROJECT No.
7774

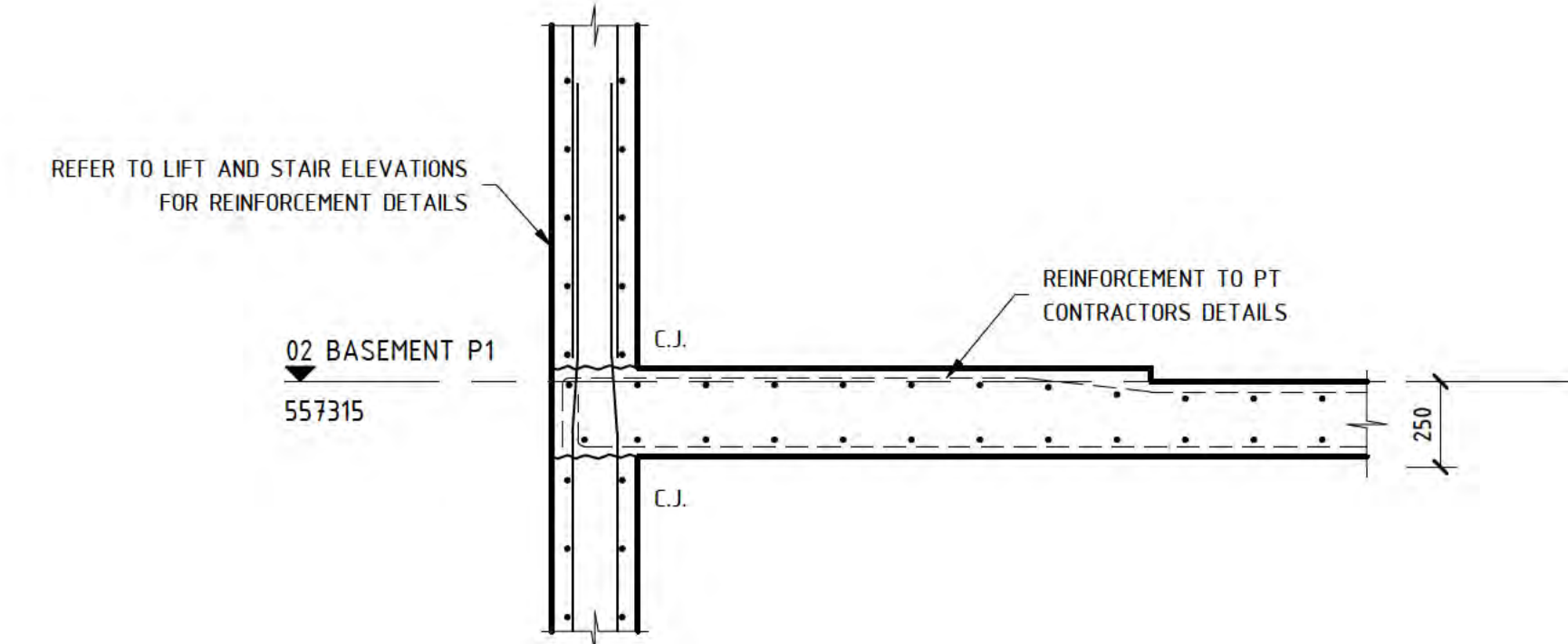




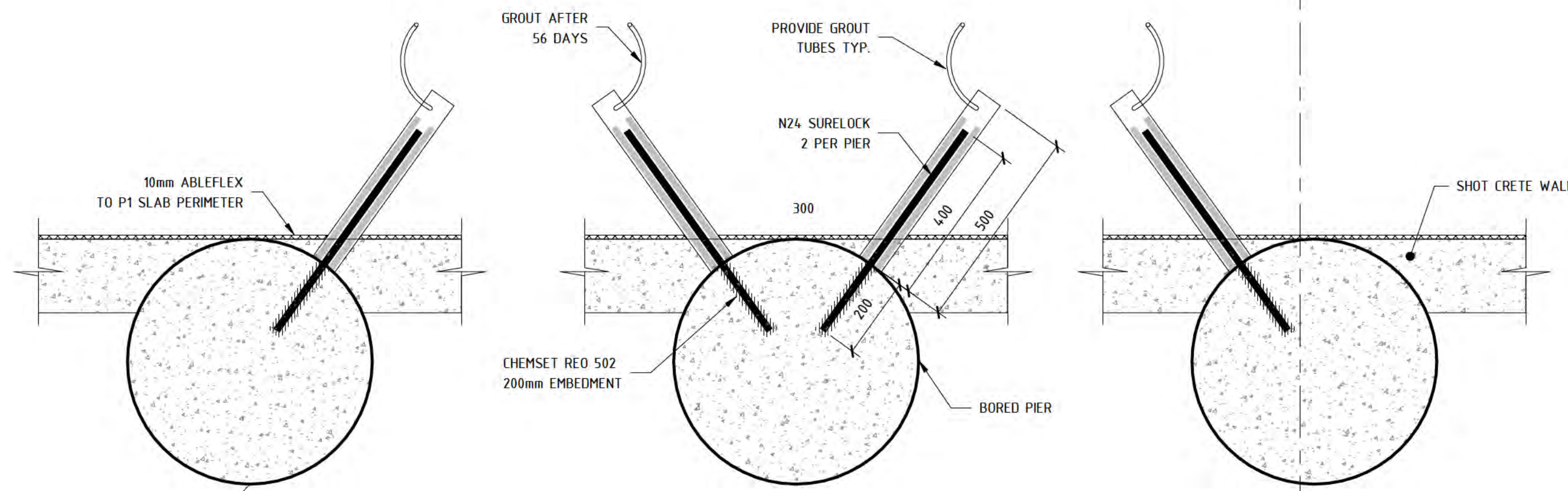
B10 BASEMENT SECTION
E080 SCALE 1:20 @ B1



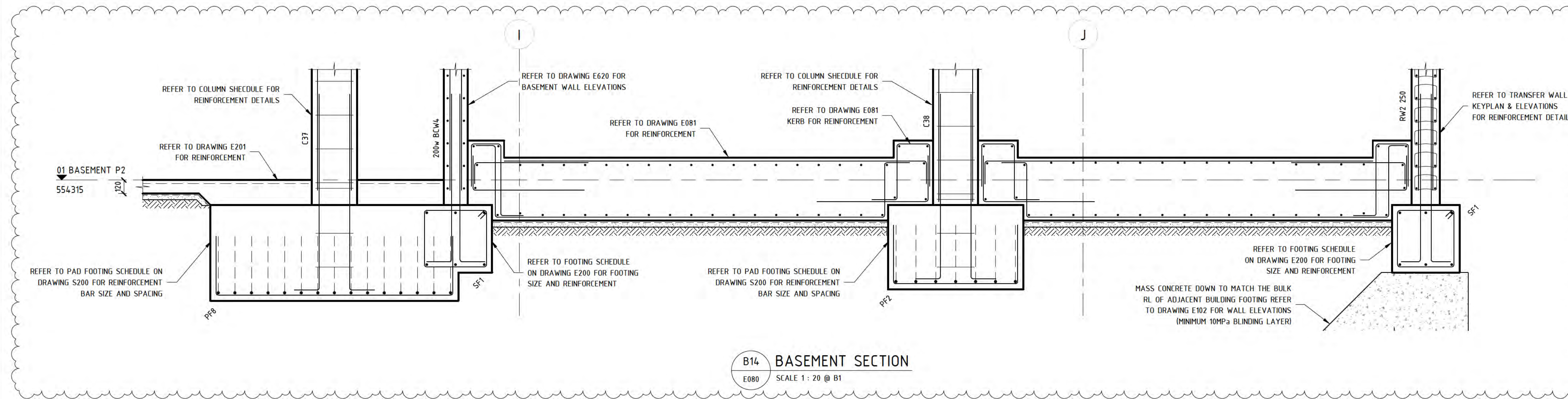
B11 BASEMENT SECTION
E201 SCALE 1:20 @ B1



B12 BASEMENT SECTION
E202 SCALE 1:20 @ B1



B13 BASEMENT DETAIL
E202 SCALE 1:10 @ B1



B14 BASEMENT SECTION
E080 SCALE 1:20 @ B1

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Solution Focused Thinking

BUILDING APPROVAL
Issued under S28 of the Building Act 2004

Certis (ACT) Pty Ltd
License No. 153494

ACT 1258
Block 4 Section 12 Canberra City
Issue Date: 28/10/2021
NCC Occupancy Class: 7a
NCC Construction Type: A

Sch 2 s 2.2(a)(ii)

NOTE: B1 DRAWING SHEET

No.	AMENDMENT	APPROVED	DATE	ISSUED BY	ARCHITECT / BUILDING DESIGNER
G	REVISED AS CLOUSED	DS	22.10.2021	GC	
F	REVISED AS CLOUSED	DS	21.10.2021	GC	
E	REVISED AS CLOUSED	DS	13.10.2021	AL	
D	REVISED AS CLOUSED	DS	30.09.2021	GC	
C	REVISED AS CLOUSED	MM	19.01.2021	GC	
B	RE-ISSUED FOR CONSTRUCTION	MM	07.01.2021	GC	
A	ISSUE FOR CONSTRUCTION	MM	16.06.2021	GC	



KARIMBLA
CONSTRUCTION SERVICES (NSW)
PTY LIMITED

Level 11, 528 Kent Street, Sydney NSW 2000
Tel: (02) 9287 2888 Fax: (02) 9287 2777
Email: info@design.meriton.com.au
Internet: http://www.meriton.com.au

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www.indesco.com.au

CONSULT AUSTRALIA

APPROVED	DS
CHECKED	DS
DESIGNED BY	DS
DRAWN BY	GC
LEAD FILE	
SCALE	As indicated

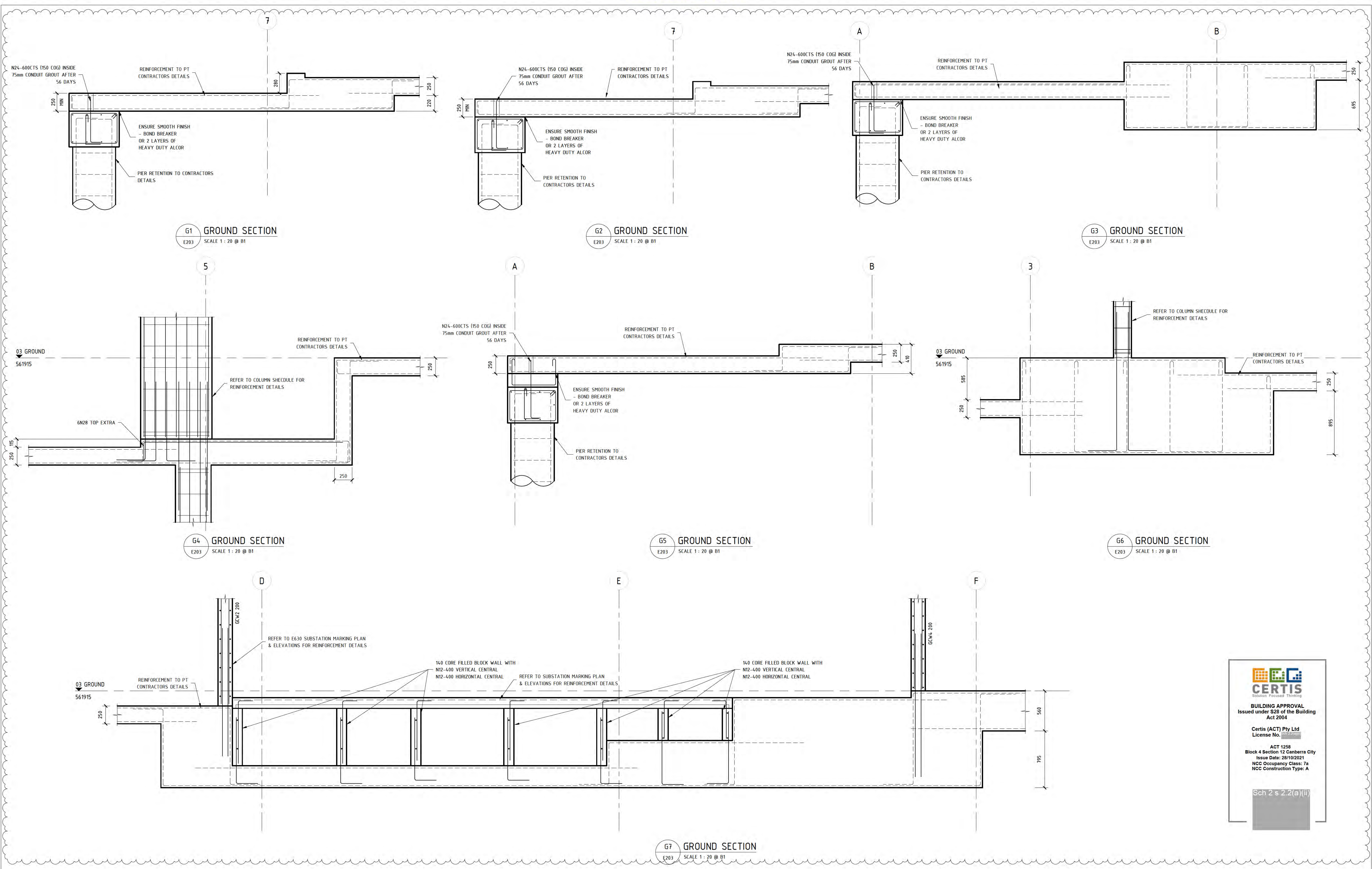
PROJECT
MERITON SUITES CANBERRA
40 ALLARA STREET
CANBERRA ACT 2061

DRAWING TITLE
BASEMENT SLAB DETAILS - SHEET 2

PROJECT No.
7774

DRAWING No.
E521

AMT
G



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Certis (ACT) Pty Ltd
License No. 12558

ACT 1258
Block 4 Section 12 Canberra City
Issue Date: 28/10/2021
NCC Occupancy Class: 7a
NCC Construction Type: A

Sch 2 s 2.2(a)(ii)

NOTE: B1 DRAWING SHEET

No.	AMENDMENT	APPROVED	DATE	ISSUED BY
C	REVISED AS CLOUDED	MM	19.07.2021	GC
B	RE-ISSUE FOR CONSTRUCTION	MM	16.06.2021	GC
A	ISSUED FOR CONSTRUCTION	MM	10.05.2021	GC
4	ISSUED FOR TENDER	MM	13.04.2021	GC
3	ISSUED FOR TENDER	MM	19.03.2021	GC
2	ISSUED FOR TENDER	MM	04.03.2021	GC
1	DRAFT CONCRETE TENDER	MM	19.02.2021	GC

FK
FENDER KATSALIDIS

KARIMBLA
CONSTRUCTION SERVICES (NSW)
PTY LIMITED

Level 11, 528 Kent Street, Sydney NSW 2000
Tel: (02) 9287 2888 Fax: (02) 9287 2777
Email: info@design.meriton.com.au
Internet: http://www.meriton.com.au

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APPROVED	MM
CHECKED	MM
DESIGNED BY	MM/DP
DRAWN BY	GC/SS
LEAD FILE	
SCALE	1:20

PROJECT
MERITON SUITES CANBERRA
40 ALLARA STREET
CANBERRA ACT 2061

ISSUED FOR CONSTRUCTION

DRAWING TITLE
GROUND SLAB DETAILS - SHEET 1

PROJECT No.
7774

North Point

Drawing No.
E530

AMT
C

Design Check Certificate of Structural Sufficiency

Block / Lot: 04 Section / DP: 12 Suburb: Canberra City

Lessee of Permit Holders Name: Meriton Group

Description of Building Work: (please cross appropriate box)

New Work Additions Alterations Other

I certify that:

- I have checked the structural design computations for the building named above and /or the following components and of their supporting elements of the building named above.
- In checking the structural design, I have paid attention to the integrity of the building under normal loading conditions relevant for this type of structure. The strength requirements and serviceability requirements of the building and its structural elements comply with the Building Code of Australia and where applicable relevant portions of SAA codes including but not limited to the table below

BUILDING COMPONENT	STANDARD OF PERFORMANCE
Structural Design Actions	AS/NZS 1170.0-4 inc-2007
Concrete Structures	AS/NZS 3600-2018
Steel Structures	AS/NZS 4100-1998
Piling Code	AS 2159-2009
Structure	BCA Part B-2019 Volume 1, Amendment 1
Handrails/Balustrades – Loading	AS/NZS 1170.1-2002

- This certificate applies to the current drawings listed below:

- S000 – Cover Sheet
- E001 – Drawing Schedule
- E002 – General Notes
- E005 – Column Schedule – Sheet 1
- E006 – Column Schedule – Sheet 2
- E007 – Column Schedule – Sheet 3
- E008 – Column Schedule – Sheet 4
- E018 – Typical Column Details
- E019 – Typical Column Transitions
- E030 – Typical Footing Details – Sheet 1
- E031 – Typical Slab on Ground Details
- E032 – Typical Bored Pier Details – Sheet 1
- E033 – Typical Bored Pier Details – Sheet 2
- E034 – Typical Blockwork Details – Sheet 1
- E035 – Typical Blockwork Details – Sheet 2
- E036 – Minimum Formwork Requirements – Ground Floor Transfer
- E040 – Backpropping Details & Plans – Sheet 1
- E041 – Backpropping Details & Plans – Sheet 2
- E042 – Backpropping Details & Plans – Sheet 3
- E050 – Basement P1 Loading Plan
- E051 – Ground Floor Loading Plan

- E052 – Level 1 Loading Plan
- E053 – Level 2 Loading Plan
- E054 – Levels 4, 6, 8 and 10 Loading Plan
- E055 – Levels 3, 5, 7, 9 and 11 Loading Plan
- E080 – Ramp Marking Plans
- E081 – Ramp Reinforcement & Details
- E100 – Bulk Excavation Marking Plan
- E101 – Pier Retention and Capping Beam Marking Plan
- E102 – Pier Retention Elevations – Sheet 1
- E103 – Detailed Excavation Marking Plan
- E200 – Footing Marking Plan
- E201 – Basement 2 Marking Plan
- E202 – Basement 1 Marking Plan
- E203 – Ground Floor Marking Plan
- E204 – Level 1 Marking Plan
- E205 – Level 2 Marking Plan
- E206 – Level 3 Marking Plan
- E207 – Level 4 Marking Plan
- E400 – Lift/Stair and Crane Foundation Reinforcement Plans
- E500 – Typical Precast Wall Details
- E501 – Typical Precast Shear Wall Details
- E502 – Typical Precast Panel Layouts
- E503 – Typical Formed Wall Details
- E504 – Typical AFS Wall Details
- E520 – Basement Slab Details – Sheet 1
- E521 – Basement Slab Details – Sheet 2
- E530 – Ground Slab Details – Sheet 1
- E531 – Ground Slab Details – Sheet 2
- E532 – Ground Slab Details – Sheet 3
- E533 – Ground Slab Details – Sheet 4
- E540 – Level 1 & 2 Slab Details – Sheet 1
- E541 – Level 1 & 2 Slab Details – Sheet 2
- E542 – Level 1 & 2 Slab Details – Sheet 3
- E550 – Typical Suspended Slab Details – Sheet 1
- E600 – Precast Keyplan – Sheet 1
- E601 – Precast Elevations – Sheet 1
- E602 – Precast Elevations – Sheet 2
- E603 – Precast Elevations – Sheet 3
- E620 – Basement Wall Elevations
- E630 – Substation Marking Plan and Elevations
- E650 – Transfer Wall Keyplan and Elevations
- E800 – Lift and Stair Wall Elevations – Sheet 1
- E801 – Lift and Stair Wall Elevations – Sheet 2
- E802 – Lift and Stair Wall Tie Plans – Sheet 1
- E803 – Lift and Stair Wall Tie Plans – Sheet 2
- E804 – Lift and Stair Wall Tie Plans – Sheet 3
- E805 – Lift and Stair Wall Tie Plans – Sheet 4
- E810 – Typical Stair Details

and computations endorsed and signed by me. The documents adequately convey the structural design intentions for the construction of this structure.

4. I am a practicing structural engineer as defined in the ACT Building Act Section 54 (1) which states:
"practicing structural engineer" means an engineer with qualifications in structural engineering which are acceptable to Engineers Australia for the Grade of Corporate member and who is actively engaged in structural design and supervision of building construction.

Signature

Sch 2 s 2.2(a)(ii)

Date 25/10/2021

Job#: 7774

Name of Engineer: Sch 2 s 2.2(a)(ii)

Qualifications: BE(Hons), MIEAust, CPEng, NER
NSW Registration DEP0000150 PRE0000142
QLD Registration PE22076
VIC Registration PE0001388

3 December 2021

Our ref: Sch 2.2(a)(xi)

Client: Sch 2.2(a)(xi)

Via email: Sch 2.2(a)(xi)

Attention: Sch 2.2(a)(ii)

Project: 40 Allara Street, (Block 4, Section 12), Canberra City, Proposed Meriton Apartments

Geotechnical Foundation Certification

1 Introduction

At the request of the client, ACT Geotechnical Engineers Pty Ltd carried out a geotechnical assessment of the foundation of the Basement footings at the above project (See Figure 1 for location).

A visual inspection was undertaken to assess the allowable bearing pressure as per the Indesco structural drawings Footing Plan, Drawing No: E200, Rev N

The inspection was undertaken between the 26 October and 3rd December 2021.

2 Foundation Conditions

The strip and pad footings exposed mostly natural materials in SW Shale, with the exception of some seems of HW/MW rock in some pads (see Figure 1)

3 Assessment & Recommendations

The exposed SW Shale foundation is suitable for the advised required 5000kPa allowable bearing pressure for pad footings.
The pads that included the HW/MW seems are assessed to be suitable for 2500kPa allowable bearing pressure.

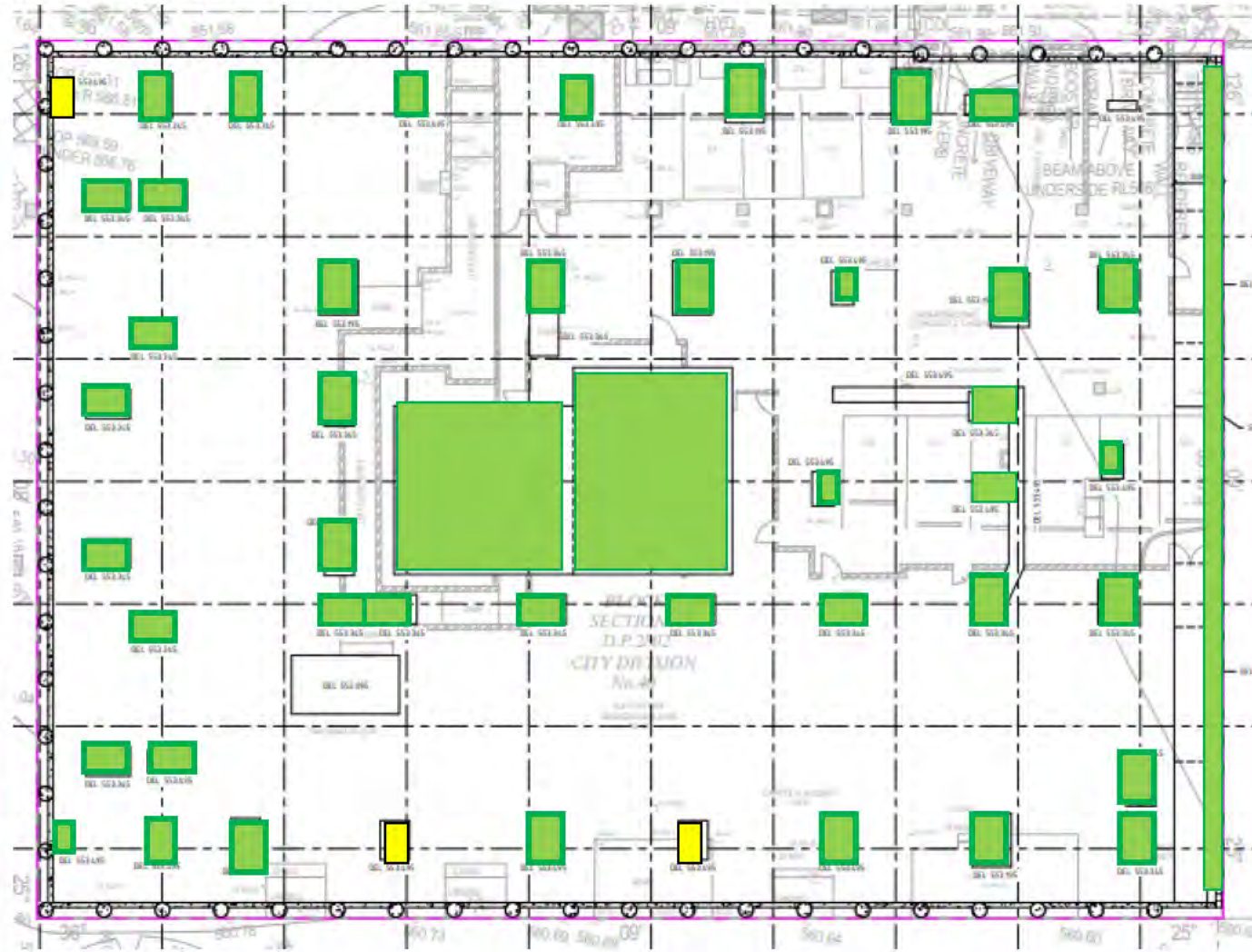
Yours faithfully

ACT Geotechnical Engineers Pty Ltd

Sch 2 s 2.2(a)(ii)


Senior Geotechnical Engineer | Director
FIEAust CPEng Eng Exec NER RPEQ APEC Engineer IntPE(Aust)
Registered Professional Engineer of Queensland (RPEQ) Sch 2.2(a)(ii)
NSW Professional Engineer Registration Sch 2.2(a)(ii)

Footing Plan, Drawing No: E200, Rev N extract below



LEGEND

 Pad footing 2500kPa

 strip & pad footing 5000kPa

40 Allara Street Civic
FOUNDATION ASSESMENT

Design Check Certificate of Structural Sufficiency

Block / Lot: 04 **Section / DP:** 12 **Suburb:** Canberra City

Lessee of Permit Holders Name: Meriton Group

Description of Building Work: (please cross appropriate box)

New Work
 Additions
 Alterations
 Other

I certify that:

1. I have checked the structural design computations for the building named above and/or the following components and their supporting element.
2. In checking the structural design, I have paid attention to the integrity of the building under normal loading conditions relevant for this type of structure. The strength requirements and serviceability requirements of the building and its structural elements comply with the Building Code of Australia (BCA) and where applicable relevant portions of SAA codes including but not limited to the table below.

Building Component	Standard Of Performance
Structural design actions General principles	AS/NZS 1170.0 – 2002
Structural design actions Permanent, imposed and other actions	AS/NZS 1170.1 – 2002
Structural design actions Wind actions	AS/NZS 1170.2 – 2011
Structural design actions Snow and ice actions	AS/NZS 1170.3 – 2003
Structural design actions Earthquake actions in Australia	AS 1170.4 – 2007
Concrete Structures	AS/NZS 3600-2018
Steel Structures	AS/NZS 4100-1998
Piling Code	AS 2159-2009
Structure	BCA Part B-2019 Volume 1, Amendment 1
Handrails/Balustrades – Loading	AS/NZS 1170.1-2002
Fire Rating Requirements	BCA Part C – 2019 Volume 1 Amendment 1

3. All structural elements have been designed to achieve Fire Resistance Levels (FRL) for all structural elements in accordance with Clause 3 and Table 3 of Section C1.1 of the BCA for a Class 3, 6 and 7a and the Fire Engineering Report by Scientific Fire Services, reference number 268021 Revision 6, dated 31st January 2021. The General FRL is summarised in the table below.

LEVEL	STRUCTURAL ELEMENT	FRL ACHIEVED
Basement P1, Basement P2	Columns, Walls, Slab, Emergency Stair & Lift Shafts	Carpark: 120/120/120 Emergency Shafts: 120/120/120
Ground Floor	Columns, Walls, Slab above, Emergency Stair & Lift Shafts	Retail: 180/180/180 Carpark/loading dock: 120/120/120 Hotel/Residential: 90/90/90 Emergency Shafts: 120/120/120
Level 1 to Roof	Columns, Walls, Slab above, Emergency Stair & Lift Shafts	Hotel/Residential: 90/90/90 Emergency Shafts: 120/120/120

4. Importance level of the building has been designed as importance level 2 in accordance with table B1.2a and B1.2b of the BCA.
5. Confirmation that the findings of the Geo-Technical Engineers Report by Douglas Partners, (reference number 94370.00.R.001, Rev 0, dated 19th December 2019), have been incorporated into the structural design.
6. This certificate applies to the current drawing/s listed below & computations endorsed & signed by me. The documents adequately convey the structural design intentions for the construction of this structure.

(refer to attached drawing schedule)

I confirm that the current works have been carried out in accordance with s.47(1)(a) of the Building Act 2004 and that the building as erected or altered is structurally sufficient, sound and stable for the purposes for which it is to be occupied or used.

Signature: Sch 2 s 2.2(a)(ii) **Date:** 15/06/2023 **Job#:** 7774

Name of Engineer: Sch 2 s 2.2(a)(ii)

Qualifications: BE(Hons), MIEAust, CPEng, NER
Technical Director
NSW Registration | DEP0000150 | PRE0000142
QLD Registration | PE22076
VIC Registration | PE0001388

INDESCO DRAWING LIST			
SHEET NUMBER	SHEET NAME	CURRENT REVISION	CURRENT REVISION DATE
E000	TITLE PAGE	A	28.07.2022
E001	DRAWING SCHEDULE	D	28.07.2022
E002	GENERAL NOTES	D	25.10.2021
E005	COLUMN SCHEDULE - SHEET 1	H	14.03.2022
E006	COLUMN SCHEDULE - SHEET 2	F	14.03.2022
E007	COLUMN SCHEDULE - SHEET 3	I	14.03.2022
E008	COLUMN SCHEDULE - SHEET 4	C	14.03.2020
E018	TYPICAL COLUMN DETAILS	H	14.03.2022
E019	TYPICAL COLUMN TRANSITIONS	F	14.03.2022
E030	TYPICAL FOOTING DETAILS - SHEET 1	I	16.11.2021
E031	TYPICAL SLAB ON GROUND DETAILS	G	28.10.2021
E032	TYPICAL BORED PIER DETAILS - SHEET 1	B	06.05.2021
E033	TYPICAL BORED PIER DETAILS - SHEET 2	H	28.10.2021
E034	TYPICAL BLOCKWORK DETAILS - SHEET 1	A	10.05.2021
E035	TYPICAL BLOCKWORK DETAILS - SHEET 2	A	10.05.2021
E036	MINIMUM FORMWORK REQUIREMENTS - GROUND FLOOR TRANSFER	A	10.05.2021
E040	BACKPROPPING DETAILS & PLANS - SHEET 1	A	10.09.2021
E041	BACKPROPPING DETAILS & PLANS - SHEET 2	A	10.09.2021
E042	BACKPROPPING DETAILS & PLANS - SHEET 3	A	10.09.2021
E050	BASEMENT P1 LOADING PLAN	B	26.10.2021
E051	GROUND FLOOR LOADING PLAN	D	06.12.2021
E052	LEVEL 1 LOADING PLAN	B	24.06.2022
E053	LEVEL 2 LOADING PLAN	B	24.06.2022
E054	LEVELS 4, 6, 8 AND 10 LOADING PLAN	B	24.06.2022
E055	LEVELS 3, 5, 7, 9 AND 11 LOADING PLAN	B	24.06.2022
E056	LEVEL 12 LOADING PLAN	B	28.07.2022
E057	LEVEL 13 LOADING PLAN	B	28.07.2022
E058	LEVEL 14 LOADING PLAN	B	28.07.2022
E059	LEVEL 15 LOADING PLAN	B	28.07.2022
E060	LEVEL 16 LOADING PLAN	B	28.07.2022
E080	RAMP MARKING PLANS	E	28.10.2021
E081	RAMP REINFORCEMENT & DETAILS	E	16.11.2021
E100	BULK EXCAVATION MARKING PLAN	E	28.10.2021
E101	PIER RETENTION AND CAPPING BEAM MARKING PLAN	F	28.10.2021
E102	PIER RETENTION ELEVATIONS - SHEET 1	H	17.11.2021
E103	DETAILED EXCAVATION MARKING PLAN	F	28.10.2021
E200	FOOTING MARKING PLAN	N	04.11.2021
E201	BASEMENT 2 MARKING PLAN	N	17.11.2021
E202	BASEMENT 1 MARKING PLAN	K	16.11.2021
E203	GROUND FLOOR MARKING PLAN	P	02.02.2022
E204	LEVEL 1 MARKING PLAN	L	28.02.2022
E205	LEVEL 2 MARKING PLAN	G	03.05.2022
E206	LEVEL 3 MARKING PLAN	G	10.02.2022
E207	LEVEL 4 MARKING PLAN	G	10.02.2022
E208	LEVEL 5 MARKING PLAN	C	10.02.2022
E209	LEVEL 6 MARKING PLAN	C	10.02.2022
E210	LEVEL 7 MARKING PLAN	C	10.02.2022
E211	LEVEL 8 MARKING PLAN	D	03.05.2022
E212	LEVEL 9 MARKING PLAN	C	10.02.2022
E213	LEVEL 10 MARKING PLAN	C	10.02.2022
E214	LEVEL 11 MARKING PLAN	B	04.04.2022
E215	LEVEL 12 MARKING PLAN	B	04.04.2022
E216	LEVEL 13 MARKING PLAN	C	02.06.2022
E217	LEVEL 14 MARKING PLAN	F	22.08.2022
E218	LEVEL 15 MARKING PLAN	F	10.11.2022
E219	LEVEL 16 MARKING PLAN	J	02.11.2022
E220	ROOF MARKING PLAN	I	18.01.2023
E300	ROOF TOP AND BOTTOM REINFORCEMENT PLAN	E	09.11.2022
E400	LIFT/STAIR AND CRANE FOUNDATION REINFORCEMENT PLANS	C	17.08.2021
E500	TYPICAL PRECAST WALL DETAILS	B	01.02.2022
E501	TYPICAL PRECAST SHEAR WALL DETAILS	B	11.10.2021
E502	TYPICAL PRECAST PANEL LAYOUTS	B	01.02.2022
E503	TYPICAL FORMED WALL DETAILS	E	21.07.2022
E504	TYPICAL AFS WALL DETAILS	A	10.05.2021
E520	BASEMENT SLAB DETAILS - SHEET 1	F	30.09.2021
E521	BASEMENT SLAB DETAILS - SHEET 2	I	17.11.2021
E530	GROUND SLAB DETAILS - SHEET 1	F	02.02.2022

INDESCO DRAWING LIST			
SHEET NUMBER	SHEET NAME	CURRENT REVISION	CURRENT REVISION DATE
E531	GROUND SLAB DETAILS - SHEET 2	G	22.12.2021
E532	GROUND SLAB DETAILS - SHEET 3	I	01.02.2022
E533	GROUND SLAB DETAILS - SHEET 4	K	18.01.2022
E540	LEVEL 1 & 2 SLAB DETAILS - SHEET 1	G	28.02.2022
E541	LEVEL 1 & 2 SLAB DETAILS - SHEET 2	H	28.02.2022
E542	LEVEL 1 & 2 SLAB DETAILS - SHEET 3	F	28.02.2022
E543	LEVEL 1 & 2 SLAB DETAILS - SHEET 4	A	27.01.2022
E550	TYPICAL SUSPENDED SLAB DETAILS - SHEET 1	I	01.07.2022
E551	TYPICAL SUSPENDED SLAB DETAILS - SHEET 2	A	08.04.2022
E552	TYPICAL SUSPENDED SLAB DETAILS - SHEET 3	K	10.11.2022
E560	THRUST BLOCK DETAILS	B	05.10.2022
E560.1	THRUST BLOCK DETAILS	B	18.01.2023
E600	PRECAST KEYPLAN - SHEET 1	A	25.10.2021
E601	PRECAST ELEVATIONS - SHEET 1	G	28.07.2022
E602	PRECAST ELEVATIONS - SHEET 2	H	28.07.2022
E603	PRECAST ELEVATIONS - SHEET 3	G	28.07.2022
E604	PRECAST ELEVATIONS - SHEET 4	A	28.07.2022
E620	BASEMENT WALL ELEVATIONS	D	16.11.2021
E630	SUBSTATION MARKING PLAN AND ELEVATIONS	H	02.09.2022
E650	TRANSFER WALL KEYPLAN AND ELEVATIONS	E	02.06.2022
E700	POOL MARKING PLAN AND SECTIONS	A	28.07.2022
E701	POOL DETAILS	A	28.07.2022
E702	POOL REINFORCEMENT & WALL ELEVATIONS	A	28.07.2022
E800	LIFT AND STAIR WALL ELEVATIONS - SHEET 1	G	21.07.2022
E801	LIFT AND STAIR WALL ELEVATIONS - SHEET 2	K	21.07.2022
E802	LIFT AND STAIR WALL TIE PLANS - SHEET 1	C	11.10.2021
E803	LIFT AND STAIR WALL TIE PLANS - SHEET 2	C	11.10.2021
E804	LIFT AND STAIR WALL TIE PLANS - SHEET 3	B	11.10.2021
E805	LIFT AND STAIR WALL TIE PLANS - SHEET 4	C	09.02.2022
E806	LIFT AND STAIR WALL TIE PLANS - SHEET 5	B	28.07.2022
E807	LIFT AND STAIR WALL TIE PLANS - SHEET 6	B	28.07.2022
E810	TYPICAL STAIR DETAILS	E	15.11.2021
E820	LIFT/STAIR CORE PULL OUT BAR PLAN - SHEET 1	C	28.07.2022
E821	LIFT/STAIR CORE PULL OUT BAR PLAN - SHEET 2	A	28.07.2022
E900	PERSPECTIVES	A	28.07.2022

Structural Certification

Block / Lot: 04 **Section / DP:** 12 **Suburb:** Canberra City

Lessee of Permit Holders Name: Meriton Group

I certify to the best of my knowledge through periodic inspections and instructions the following:

- That all pad footings were installed based on a 2500kpa bearing pressure as confirmed on site by the geotechnical engineer;
- That all structural elements required to have a fire rating comply with the Fire Resistance Levels (FRL) listed in specification C1.1 Table 3 of the Building Code of Australia (BCA 2019 Amendment 1) for a Class 3, 6 and 7a and as per the Fire Engineering Report by Scientific Fire Services, reference number 268021 Revision 7, dated 23rd June 2023; and
- The building, as constructed, complies with Part B of the BCA 2019 Amendment 1 and the relevant Australian standards.

Building Component	Standard Of Performance
Structural design actions General principles	AS/NZS 1170.0 – 2002
Structural design actions Permanent, imposed and other actions	AS/NZS 1170.1 – 2002
Structural design actions Wind actions	AS/NZS 1170.2 – 2011
Structural design actions Snow and ice actions	AS/NZS 1170.3 – 2003
Structural design actions Earthquake actions in Australia	AS 1170.4 – 2007
Concrete Structures	AS/NZS 3600-2018
Masonry Structures	As 3700-2018
Steel Structures	AS/NZS 4100-1998
Piling Code	AS 2159-2009
Structure	BCA Part B-2019 Volume 1, Amendment 1
Handrails/Balustrades – Loading	AS/NZS 1170.1-2002
Fire Rating Requirements	BCA Part C – 2019 Volume 1 Amendment 1

This certificate does not remove responsibility of the builder and certifier for works that have been completed outside my knowledge.

This certificate excludes timber elements to AS1684.

I confirm that the current works have been carried out in accordance with s.47(1)(a) of the Building Act 2004 and that the building as erected or altered is structurally sufficient, sound and stable for the purposes for which it is to be occupied or used.

Signature: Sch 2 s 2.2(a)(ii) **Date:** 10 August 2023 **Job#:** 7774

Name of Engineer: Sch 2 s 2.2(a)(ii)

Qualifications: BE (Hons) MIEAust CPEng NER
Technical Director
 NSW Registration | DEP0000150 | PRE0000142
 QLD Registration | PE22076
 VIC Registration – | PE0001388

Report on
Limited Geotechnical Investigation

Proposed Meriton Suites Canberra
Block 4 Section 12, Canberra City

Prepared for
Karimbla Constructions Services (NSW) Pty Ltd

Project 94370.00
December 2019

Integrated Practical Solutions





Douglas Partners

Geotechnics | Environment | Groundwater

Document History

Document details

Project No.	94370.00	Document No.	R.001.Rev0
Document title	Report on Limited Geotechnical Investigation Proposed Meriton Suites Canberra		
Site address	Block 4 Section 12, Canberra City		
Report prepared for	Karimbla Constructions Services (NSW) Pty Ltd		
File name	94370.00.R.001.Rev0. Geotech		

Document status and review

Status	Prepared by	Reviewed by	Date issued
Draft A	Alexandra Radulovich	Michael Jones	10/12/2019
Revision 0	Alexandra Radulovich	Michael Jones	19/12/2019

Distribution of copies

Status	Electronic	Paper	Issued to
Draft A	1	0	Karimbla Constructions Services (NSW) Pty Ltd
Revision 0	1	0	Karimbla Constructions Services (NSW) Pty Ltd

The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

	Signature	Date
Author	Sch 2 s 2.2(a)(ii)	19/12/2019
Reviewer		19/12/2019



Douglas Partners Pty Ltd
ABN 75 053 980 117
www.douglaspartners.com.au
Unit 2, 73 Sheppard Street
Hume ACT 2620
PO Box 1487
Fyshwick ACT 2609
Phone (02) 6260 2788

Table of Contents

	Page
1. Introduction.....	1
2. Site Location and Description	2
3. Site Geology.....	2
4. Field Work Methods	3
5. Field Work Results	3
5.1 Subsurface Strata	3
5.2 Groundwater	4
6. Laboratory Testing	5
7. Proposed Development.....	5
8. Comments.....	5
8.1 Excavation Conditions	5
8.2 Groundwater Control During Excavation	6
8.3 Vibration Induced by Excavation Plant	6
8.4 Basement Wall Temporary Support.....	8
8.5 Basement Wall Permanent Support	8
8.6 Footing Systems	8
8.7 Earthquake Site Class	9
8.8 Ground Slabs and Drainage	9
9. References	10
10. Limitations	10
Appendix A: About This Report	
Appendix B: Drawing 1 – Test Location Plan	
Appendix C: Explanatory Notes Borehole Logs and Core Photographs (Bores 1 – 4 and 1A)	

Report on Limited Geotechnical Investigation Proposed Meriton Suites Canberra Block 4 Section 12, Canberra City

1. Introduction

This report presents the results of a limited geotechnical investigation undertaken by Douglas Partners Pty Ltd (DP) for proposed Meriton suites at Block 4 Section 12, Canberra City. The investigation was commissioned in an email dated 11 November 2019 from Mr Richard Smith of Meriton Group on behalf of Karimbla Constructions Services (NSW) Pty Ltd and was undertaken in accordance with DP's proposal CAN190303 (Rev2) dated 8 November 2019.

It is understood the existing five storey building and single level basement carpark will be demolished and replaced by a 14 storey building with two levels of basement car parking.

The aim of the investigation was to determine the site subsurface conditions present below basement floor level at the test locations, and to prepare a report of the investigation which was to include comments on:

- Site geology and subsurface strata encountered including the type and condition of the soils and fill, the type, weathering and strength of bedrock, groundwater presence (if encountered);
- Excavation conditions, temporary support, batter slopes and retaining walls;
- Footing systems for the proposed building, including types, allowable bearing pressures and shaft adhesion;
- Earthquake site factor in respect of AS1170.4;
- Preparation of ground slab and pavement subgrades and recommended design CBR values; and
- Basement slab and retaining wall drainage.

The geotechnical investigation included the drilling of four cored boreholes, strength testing of recovered rock core samples, and post-drilling measurement of depth to groundwater. The details of the field work are presented in this report, together with comments and recommendations on the items listed above.

This report must be read in conjunction with the notes *About this Report* which are included in Appendix A.

2. Site Location and Description

The site is located at Block 4 Section 12, Canberra City and covers a rectangular shaped area of about 1,724 m². It is bounded by Allara Street to the southeast, Nangari Street to the southwest, Raboul Lane to the northwest and a construction site for a new development to the northeast. The site is shown in Figure 1 below.



Figure 1: Site location from www.actmapi.gov.au.

The entry ramp is located at western boundary of the site, towards the northern end. The basement has a head height of approximately 3.1 m and is currently used for car parking. A grease tap and a number of buried services are located below the basement floor.

3. Site Geology

Reference to BMR (1992) indicates that the site is underlain by sedimentary rocks of the Canberra Formation that typically comprise mudstone, siltstone and shale with minor volcanic beds. The Canberra Formation is gently folded on an approximately north-south direction which is known to have produced

a prominent steeply dipping north-south fracture cleavage in the rock mass. Bedding planes tend to be indistinct, but in the City East area these tend to dip 10 – 30° in an easterly direction. The field investigation confirmed the presence of siltstone underlying the site.

4. Field Work Methods

The subsurface investigation was carried out on 16 and 17 November 2019 and 13 December 2019 and comprised the core drilling of three boreholes (Bores 1 – 3 and 1A) to depths of 1.0 – 10.2 m within the basement using a XE100 drilling rig and one borehole (Bore 4) at street level using a DT300 HPD tracked rig to 12.0 m depth. Bore 1 was terminated at 1.0 m depth due to the presence of buried concrete, likely associated with a pit for a nearby service. Bore 1A was drilled to full depth in its place. The approximate locations of the boreholes are shown on Drawing 1 in Appendix B.

The basement slab at (Bores 1 – 3 and 1A) was first core drilled prior to inserting a 100 mm diameter continuous spiral flighted auger to advance through the basecourse materials, overburden soils and more weathered bedrock to 2.0 m depth in Bore 1A and auger refusal at 1.0 m and 0.8 m depth in Bores 2 and 3, respectively. Bore 4 was auger drilled to refusal at 2.0 m depth. The bores were then continued into the bedrock using NMLC diamond core drilling equipment, which provides core of about 50 mm diameter. The rock cores were placed in metal core trays, visually logged on site by our geotechnical engineer, and then taken to our Hume, ACT office for photographing and point-load strength testing.

A slotted 50mm diameter uPVC groundwater observation well was installed to the full depth of Bore 3 for the post-investigation monitoring of depth to groundwater. The other three boreholes were reinstated.

The test location coordinates and surface levels relative to AHD are provided on the borehole logs and were estimated from site measurements then related to the ACT government website www.actmap.gov.au and are approximate only and not to be relied on.

5. Field Work Results

5.1 Subsurface Strata

The borehole logs are presented in Appendix C together with photographs of the rock cores. Notes defining classification methods and descriptive terms used on the logs are also included in Appendix C.

The typical subsurface profile encountered by the investigation can be summarised as follows:

- CONCRETE FLOOR SLAB: 120 – 160 mm thick in Bores 1 – 3 and 1A.
- PAVEMENT MATERIALS: 120 mm thick asphalt overlying 480 mm thick road base gravel in Bore 4
- FILL: typically comprising fine to coarse grained sand, gravelly sand and silty sand to depths of 0.2 – 0.6 m and gravelly clay fill in Bores 1A and 4 only to depths of 0.6 m and 1.1 m, respectively.

- CLAY: medium to high plasticity, estimated stiff clay to depths of 0.4 – 1.8 m. The silty clay in Bores 5 and 6 was noted as possible fill.
- SILTSTONE BEDROCK – Initially low and medium strength, highly and moderately weathered siltstone bedrock in Bores 1A, 2 and 3 below depths of 0.4 – 1.8 m, becoming high and very high strength, slightly weathered to fresh rock from 2.2 – 3.9 m.

Table 1 below provides a summary of the bedrock encountered in the boreholes.

Table 1 – Summary of Bedrock Depths

Bore No	Depth to Bedrock (m)	Depth to High Strength Rock (m)	Depth to Very High Strength Rock (m)
1	NE	NE	NE
1A	1.0	3.6	5.0
2	0.8	1.0	NE (high to very from 1.7)
3	0.4	3.9	NE (high to very from 6.0)
4	1.8	2.2	From 2.2 – 6.0 m and 8.0 – 8.5 m

5.2 Groundwater

No free groundwater was encountered during the augering phase of each borehole and use of water as a drilling fluid precluded groundwater observations during the coring of the bedrock. The depth to water was measured post investigation via the observation well installed in Bore 3 to allow time for the drilling water to dissipate into the strata. Purging of the piezometer was undertaken after measuring the water level on 20/11/2019. Table 2 below summarises the measured depths to, and corresponding estimated reduced levels, of the groundwater.

Table 2: Groundwater Recording

Bore	Groundwater Depth and Estimated Reduced Level			
	20/11/2019		18/12/2019	
	Depth (m)	RL (m)*	Depth (m)	RL (m)*
3	5.8	553.2	9.45	549.55

*Survey data was not available at the time of reporting, the surface level was estimated from www.actmapi.gov.au and must be considered approximate.

It is expected that the higher groundwater level measured on 20/11/2019 could be a result of drilling water leaching into joints in the bedrock which has subsequently dissipated.

It should be noted groundwater conditions rarely remain constant and can change seasonally due to variations in rainfall, temperature and soil permeability. For these reasons, it is noted that the moisture condition of the site soils and water levels may vary considerably from the time of the investigation compared to at the time of construction.

6. Laboratory Testing

A total of 58 point load strength tests were undertaken on samples of the siltstone bedrock core, with 37 in the diametral direction and 21 in the axial direction. Due to some steep jointing in the rock, fewer tests were undertaken in the axial direction. The test results gave $I_{s(50)}$ values ranging between 0.4 MPa and 7.6 MPa, which based on the approximate relationship $q_u = 20 \times I_{s(50)}$, indicated unconfined compressive strengths (q_u) between around 8 MPa and 150 MPa. It is noted during two of the point load tests, the bedrock failed along a plane of pre-existing weakness (i.e. an insipient or healed joint) with an $I_{s(50)}$ value of 0.1 MPa and 0.2 MPa.

7. Proposed Development

It is understood that the existing five storey building and single level basement carpark will be demolished and replaced by a 14 level building which is to include two basement levels for car parking. Further design details were not known at the time of reporting. It is anticipated that the existing basement will need to be deepened by about 3 m to achieve two basements levels.

8. Comments

8.1 Excavation Conditions

Due to the minimal weaker, weathered profile within the bedrock (i.e. high and very high strength, slightly weathered to fresh bedrock from depths of 0.8 – 3.6 m) in conjunction with a wide spacing between discontinuities (particularly in the vicinity of Bores 2 and 4), excavations to achieve design level are expected to be extremely difficult. Large excavators fitted with toothed buckets and single tyne rippers will be required for up to medium strength and rock hammers required for high and greater strength rock. Very slow progress must be expected.

A specialist high torque piling rig with rock coring equipment will be required to achieve embedment within the rock. It is strongly recommended that potential piling contractors view the cored rock to make their own assessment for anticipating piling difficulties. It would be expected that the less fractured high and very high strength rock (particularly in the vicinity of Bore 2 below 1.0 m depth and Bore 4 below 4.3 m depth) will require rock coring to penetrate the rock, at very slow progress.

8.2 Groundwater Control During Excavation

A two level basement construction, i.e. extending an estimated 3 m depth below existing basement level and around 6 m below ground level, could potentially encounter the groundwater table which would be expected at a similar level the water level as that in Lake Burley Griffin which is approximately at RL 556 m AHD. However, the measured groundwater levels are well below anticipated basement level, this could be due to the fieldwork being undertaken during a dry period.

Whilst no requirement for tanking of the basement floor is anticipated, it would be prudent to install a system of subfloor drains to intercept groundwater seepage or localised flows of short term duration following storm events.

Additionally, perched seepages could occur into excavations at higher levels than encountered by the investigation, either from fractures in the bedrock or possibly from backfill along any intercepted inground drainage or services trenches. Such seepages would likely be minor and of short duration, but could re-establish or increase in intensity following rain. High level seepage water flows encountered during basement excavations should be able to be controlled by gravity draining to a temporary collection sump in the excavation floor from where the water can be de-silted and pumped out into the stormwater system.

8.3 Vibration Induced by Excavation Plant

Vibration and noise associated with rock excavation, particularly the use of rock hammers may result in complaints from neighbours and restrictions to equipment operating on site. It is recommended that dilapidation surveys be carried out on nearby structures likely to be susceptible to vibration damage to provide a baseline for comparison in the event of claims of damage resulting from the excavation process.

The recommended maximum peak particle velocity from AS 2187 Explosives Code for various structures subject to vibration is:

- 10 mm/sec, for houses and low rise residential buildings;
- 25 mm/sec, for commercial and industrial buildings or structures of reinforced concrete or steel construction.

The adjacent buildings are of commercial-type construction and as such, a maximum peak particle velocity of 25 mm/sec is recommended for this site, unless subject to further restriction by the local regulatory authorities.

Recent monitoring by DP suggests that minor cosmetic damage can occur to structures at levels of vibration less than 10 mm/sec. If it is desired that no damage occur to adjacent buildings, a lower level of vibration should be required by the excavation contractor. For these circumstances, a peak particle velocity of 5 mm/sec is recommended.

Vibration monitoring carried out by DP has indicated the following relationships (Table 2) for peak particle velocity versus distance for various hammer types.

Table 3 – Measurement Relationship Between Hammer Weight and Distance from Monitor

Hammer Type	Distance (m)	Peak Particle Velocity (mm/s)
Krupp 300 or equivalent	1.0	15
	1.5	10
	2.0	7
Krupp 600 or equivalent	3.5	10
	6	4 – 5
	9	2
Krupp 900 or equivalent	6	20
	9	10 – 11
	20	4

It is noted that, people may find vibration levels above about 3 – 5 mm/sec as being strongly perceptible to disturbing, even though they may not cause damage to structures. Hence, complaints from neighbours are possible and some reassurance, possibly by vibration monitoring, is likely to be necessary.

Consequently, the excavation process should include:

- Notification of neighbouring occupiers of the proposed timing of the excavation so that any vibration sensitive items can be secured;
- Excavation of loose or rippable bedrock blocks by bucket or single tyne attachments prior to commencement of rock hammering;
- Progressive breakage from open excavated faces;
- Selective breakage along open joints, where these are present;
- Use of rock hammers in short bursts to prevent generation of resonant frequencies;
- Orientation of the rock hammer pick away from property boundaries and into the existing open excavation;
- The movement of large blocks away from the structures prior to breaking up for transport from site;
- Commencement of excavation as far away from other structures as possible and monitoring vibration whilst working towards these buildings.

The use of rock sawing or grinding equipment at and adjacent to the site boundaries could also be considered, noting that this equipment also reduces impact damage, overbreak and loosening of the rock mass, typically resulting in reduced requirement for rock support measures.

8.4 Basement Wall Temporary Support

It is recommended that further assessment or clarification on the materials used and construction techniques for the existing basement walls must be undertaken as this could impact on likely temporary and/or long term support measures. It is also recommended that clarification on the conceptual long term support measures for the basement excavation be obtained. It is expected that the procedure to provide temporary and/or long term support to the existing and deepened basement walls will be complex and that further assessment will be required.

In any case, to enable the deepening of the current basement level, the existing basement walls must be structurally supported prior to removal of existing supporting basement and ground floor slabs or else support measures installed prior to this.

The comments provided below are to be considered preliminary until further details on the above information is obtained by Douglas Partners.

Attention to detail will be required in design and construction of the support system to account for possible difficulties including limited head room for drilling of anchor holes, some unknown soil and/or rock conditions at these higher levels not investigated, and the possible presence of existing ground services or other structures at higher levels.

8.5 Basement Wall Permanent Support

As the basement wall will eventually be laterally supported by the floor slabs of the new building, the slabs must be capable of resisting the imposed lateral soil/rock pressures. These would in part be dictated by the type of support system adopted.

Drainage must be provided behind the basement walls, so it is suggested that the structural engineer determine whether the existing basement wall has any backfill drainage provisions. Typically vertical strip drains would be installed on the rock face and connected into pipe work at the base of the wall leading under the basement slab to a sump and pump out unit. Alternatively, the basement can be constructed as a fully tanked, water proofed structure capable of resisting possible hydrostatic pressures, including uplift, in addition to the imposed lateral soil/rock pressures.

8.6 Footing Systems

Following completion of excavation to the proposed basement level (i.e. estimated to be 3 m below current basement level and 6 m below ground level at the eastern side of the building) it is anticipated that medium to very high strength siltstone bedrock would be exposed over the majority of the basement floor. Suggested design allowable bearing pressures for various footing types (including bored piers) and strata categories likely to be encountered are shown in Table 4.

Table 4: Recommended Design Allowable Bearing Pressures

Founding Stratum	Allowable End-Bearing Pressure (kPa)		Allowable Shaft Adhesion (kPa) ^{#1}
	Pads and Strip Footings	Bored Piers ^{#2}	
Medium strength rock	3000	3000	300
High strength rock	5000	5000	500
Very high strength rock	7000	7000	700

^{#1}Compression loading only and ignores the impact of any surrounding piles. Reduction will be required should adjacent piles be within the zone of influence of each other.

^{#2}Minimum depth of 2 m below surrounding ground

It is suggested that a schedule of footing sizes based on the above parameters be prepared and the strength of rock exposed confirmed following completion of bulk excavations. This would be particularly critical at the south-western part of the site where testing was not possible with the existing building in use.

Total settlement of individual footings designed in accordance with the above recommended bearing pressures, is expected to be less than 5 mm.

All excavations for footings must be inspected by an experienced geotechnical engineer to check that suitable founding strata has been reached, that the excavation bases have been cleared of loose soil, rock or other debris, and that the footings will not be destabilised by any adjacent excavations.

8.7 Earthquake Site Class

The site subsurface profile following excavation of the basement would be equivalent to Sub-Soil Class B_e in respect of AS1170.4-2007 "Structural Design Actions, Part 4: Earthquake Actions in Australia (Ref 2). The acceleration coefficient hazard factor "z" for the Canberra area is 0.08.

8.8 Ground Slabs and Drainage

As outlined in Section 8.5, it is anticipated that high strength siltstone bedrock would be exposed over the majority of the basement floor with some areas of very high strength rock exposed. Based on this, a CBR of 10% would be considered suitable for the exposed in-situ rock. It is anticipated that some overbreak in the rock may occur during excavation, any uneven areas should be filled with compacted road base or crushed rock gravel.

For a ground slab at basement level, consideration should be given to providing a layer of crushed rock over the subgrade. This would provide a trafficable surface during wet weather, when the siltstone rock will become slippery. It also could form part of an under slab drainage blanket. To serve this dual function, the particle size grading of the material should be such that the material is both free draining, and structurally stable under construction vehicle loadings.

A sump and pump out unit should be installed in the basement to control any seepage water collected by the basement wall backfill drains. It is suggested that waterproofing treatment be provided to the ground slab and to the exterior surface of the basement walls.

9. References

AS 1170.4-2007, *Structural Design Actions – Part 4: Earthquake Actions in Australia*, Standards Australia.

BMR (1992), *Geology of Canberra 1:100 000 Geological Series Sheet 8727*, Bureau of Mineral Resources, Geology and Geophysics.

10. Limitations

Douglas Partners (DP) has prepared this report for this project at Block 4 Section 12, Canberra City in accordance with DP's proposal CAN190303 (Rev2) dated 8 November 2019 and acceptance received from Mr Richard Smith of Meriton Group on behalf of Karimbla Constructions Services (NSW) Pty Ltd on 14 October 2019. This report is provided for the exclusive use of Icon SI (Aust) Pty Ltd and Karimbla Constructions Services (NSW) Pty Ltd for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

This report must be read in conjunction with all the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

The scope for work for this investigation/report did not include the assessment of surface or sub-surface materials or groundwater for contaminants, within or adjacent to the site. Should evidence of filling of unknown origin be noted in the report, and in particular the presence of building demolition materials, it should be recognised that there may be some risk that such filling may contain contaminants and hazardous building materials.

The contents of this report do not constitute formal design components such as are required, by the Health and Safety Legislation and Regulations, to be included in a Safety Report specifying the hazards likely to be encountered during construction and the controls required to mitigate risk. This design process requires risk assessment to be undertaken, with such assessment being dependent upon factors relating to likelihood of occurrence and consequences of damage to property and to life. This, in turn, requires project data and analysis presently beyond the knowledge and project role respectively of DP. DP may be able, however, to assist the client in carrying out a risk assessment of potential hazards contained in the Comments section of this report, as an extension to the current scope of works, if so requested, and provided that suitable additional information is made available to DP. Any such risk assessment would, however, be necessarily restricted to the geotechnical components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

Douglas Partners Pty Ltd

Appendix A

About this Report

About this Report

Douglas Partners



Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;

- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

Appendix B



Drawing 1 – Test Location Plan

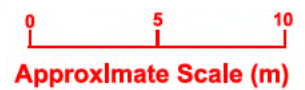


Locality Plan



LEGEND

-  Approximate location of borehole
-  Approximate location of site boundary



Note: Base drawing taken from NearMAPS.com



TITLE: Test Location Plan
Geotechnical Investigation
Block 4 Section 12, Canberra City



OFFICE: Canberra
 DRAWN BY: APH
 DATE: 18.12.2019

CLIENT: Karimbla Construction Services (NSW) Pty Ltd

PROJECT No: 94370.00

DRAWING No: 1

REVISION: 1

SCALE: As shown

Appendix C

Explanatory Notes
Borehole Logs and Core Photographs (Bores 1 – 3 and 1A)



Sampling

Sampling is carried out during drilling or test pitting to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and, depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are taken by pushing a thin-walled sample tube into the soil and withdrawing it to obtain a sample of the soil in a relatively undisturbed state. Such samples yield information on structure and strength, and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Test Pits

Test pits are usually excavated with a backhoe or an excavator, allowing close examination of the in-situ soil if it is safe to enter into the pit. The depth of excavation is limited to about 3 m for a backhoe and up to 6 m for a large excavator. A potential disadvantage of this investigation method is the larger area of disturbance to the site.

Large Diameter Augers

Boreholes can be drilled using a rotating plate or short spiral auger, generally 300 mm or larger in diameter commonly mounted on a standard piling rig. The cuttings are returned to the surface at intervals (generally not more than 0.5 m) and are disturbed but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers, and is usually supplemented by occasional undisturbed tube samples.

Continuous Spiral Flight Augers

The borehole is advanced using 90-115 mm diameter continuous spiral flight augers which are withdrawn at intervals to allow sampling or in-situ testing. This is a relatively economical means of drilling in clays and sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are disturbed and may be mixed with soils from the sides of the hole. Information from the drilling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively low

reliability, due to the remoulding, possible mixing or softening of samples by groundwater.

Non-core Rotary Drilling

The borehole is advanced using a rotary bit, with water or drilling mud being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from the rate of penetration. Where drilling mud is used this can mask the cuttings and reliable identification is only possible from separate sampling such as SPTs.

Continuous Core Drilling

A continuous core sample can be obtained using a diamond tipped core barrel, usually with a 50 mm internal diameter. Provided full core recovery is achieved (which is not always possible in weak rocks and granular soils), this technique provides a very reliable method of investigation.

Standard Penetration Tests

Standard penetration tests (SPT) are used as a means of estimating the density or strength of soils and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, Methods of Testing Soils for Engineering Purposes - Test 6.3.1.

The test is carried out in a borehole by driving a 50 mm diameter split sample tube under the impact of a 63 kg hammer with a free fall of 760 mm. It is normal for the tube to be driven in three successive 150 mm increments and the 'N' value is taken as the number of blows for the last 300 mm. In dense sands, very hard clays or weak rock, the full 450 mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form.

- In the case where full penetration is obtained with successive blow counts for each 150 mm of, say, 4, 6 and 7 as:
4,6,7
N=13
- In the case where the test is discontinued before the full penetration depth, say after 15 blows for the first 150 mm and 30 blows for the next 40 mm as:
15, 30/40 mm

Sampling Methods

The results of the SPT tests can be related empirically to the engineering properties of the soils.

Dynamic Cone Penetrometer Tests / Perth Sand Penetrometer Tests

Dynamic penetrometer tests (DCP or PSP) are carried out by driving a steel rod into the ground using a standard weight of hammer falling a specified distance. As the rod penetrates the soil the number of blows required to penetrate each successive 150 mm depth are recorded. Normally there is a depth limitation of 1.2 m, but this may be extended in certain conditions by the use of extension rods. Two types of penetrometer are commonly used.

- Perth sand penetrometer - a 16 mm diameter flat ended rod is driven using a 9 kg hammer dropping 600 mm (AS 1289, Test 6.3.3). This test was developed for testing the density of sands and is mainly used in granular soils and filling.
- Cone penetrometer - a 16 mm diameter rod with a 20 mm diameter cone end is driven using a 9 kg hammer dropping 510 mm (AS 1289, Test 6.3.2). This test was developed initially for pavement subgrade investigations, and correlations of the test results with California Bearing Ratio have been published by various road authorities.



Description and Classification Methods

The methods of description and classification of soils and rocks used in this report are generally based on Australian Standard AS1726:2017, Geotechnical Site Investigations. In general, the descriptions include strength or density, colour, structure, soil or rock type and inclusions.

Soil Types

Soil types are described according to the predominant particle size, qualified by the grading of other particles present:

Type	Particle size (mm)
Boulder	>200
Cobble	63 - 200
Gravel	2.36 - 63
Sand	0.075 - 2.36
Silt	0.002 - 0.075
Clay	<0.002

The sand and gravel sizes can be further subdivided as follows:

Type	Particle size (mm)
Coarse gravel	19 - 63
Medium gravel	6.7 - 19
Fine gravel	2.36 - 6.7
Coarse sand	0.6 - 2.36
Medium sand	0.21 - 0.6
Fine sand	0.075 - 0.21

Definitions of grading terms used are:

- Well graded - a good representation of all particle sizes
- Poorly graded - an excess or deficiency of particular sizes within the specified range
- Uniformly graded - an excess of a particular particle size
- Gap graded - a deficiency of a particular particle size with the range

The proportions of secondary constituents of soils are described as follows:

In fine grained soils (>35% fines)

Term	Proportion of sand or gravel	Example
And	Specify	Clay (60%) and Sand (40%)
Adjective	>30%	Sandy Clay
With	15 - 30%	Clay with sand
Trace	0 - 15%	Clay with trace sand

In coarse grained soils (>65% coarse)

- with clays or silts

Term	Proportion of fines	Example
And	Specify	Sand (70%) and Clay (30%)
Adjective	>12%	Clayey Sand
With	5 - 12%	Sand with clay
Trace	0 - 5%	Sand with trace clay

In coarse grained soils (>65% coarse)

- with coarser fraction

Term	Proportion of coarser fraction	Example
And	Specify	Sand (60%) and Gravel (40%)
Adjective	>30%	Gravelly Sand
With	15 - 30%	Sand with gravel
Trace	0 - 15%	Sand with trace gravel

The presence of cobbles and boulders shall be specifically noted by beginning the description with 'Mix of Soil and Cobbles/Boulders' with the word order indicating the dominant first and the proportion of cobbles and boulders described together.

Soil Descriptions

Cohesive Soils

Cohesive soils, such as clays, are classified on the basis of undrained shear strength. The strength may be measured by laboratory testing, or estimated by field tests or engineering examination. The strength terms are defined as follows:

Description	Abbreviation	Undrained shear strength (kPa)
Very soft	VS	<12
Soft	S	12 - 25
Firm	F	25 - 50
Stiff	St	50 - 100
Very stiff	VSt	100 - 200
Hard	H	>200
Friable	Fr	-

Cohesionless Soils

Cohesionless soils, such as clean sands, are classified on the basis of relative density, generally from the results of standard penetration tests (SPT), cone penetration tests (CPT) or dynamic penetrometers (PSP). The relative density terms are given below:

Relative Density	Abbreviation	Density Index (%)
Very loose	VL	<15
Loose	L	15-35
Medium dense	MD	35-65
Dense	D	65-85
Very dense	VD	>85

Soil Origin

It is often difficult to accurately determine the origin of a soil. Soils can generally be classified as:

- Residual soil - derived from in-situ weathering of the underlying rock;
- Extremely weathered material – formed from in-situ weathering of geological formations. Has soil strength but retains the structure or fabric of the parent rock;
- Alluvial soil – deposited by streams and rivers;

- Estuarine soil – deposited in coastal estuaries;
- Marine soil – deposited in a marine environment;
- Lacustrine soil – deposited in freshwater lakes;
- Aeolian soil – carried and deposited by wind;
- Colluvial soil – soil and rock debris transported down slopes by gravity;
- Topsoil – mantle of surface soil, often with high levels of organic material.
- Fill – any material which has been moved by man.

Moisture Condition – Coarse Grained Soils

For coarse grained soils the moisture condition should be described by appearance and feel using the following terms:

- Dry (D) Non-cohesive and free-running.
- Moist (M) Soil feels cool, darkened in colour.
Soil tends to stick together.
Sand forms weak ball but breaks easily.
- Wet (W) Soil feels cool, darkened in colour.
Soil tends to stick together, free water forms when handling.

Moisture Condition – Fine Grained Soils

For fine grained soils the assessment of moisture content is relative to their plastic limit or liquid limit, as follows:

- 'Moist, dry of plastic limit' or 'w < PL' (i.e. hard and friable or powdery).
- 'Moist, near plastic limit' or 'w ≈ PL' (i.e. soil can be moulded at moisture content approximately equal to the plastic limit).
- 'Moist, wet of plastic limit' or 'w > PL' (i.e. soils usually weakened and free water forms on the hands when handling).
- 'Wet' or 'w ≈ LL' (i.e. near the liquid limit).
- 'Wet' or 'w > LL' (i.e. wet of the liquid limit).



Rock Strength

Rock strength is defined by the Unconfined Compressive Strength and it refers to the strength of the rock substance and not the strength of the overall rock mass, which may be considerably weaker due to defects.

The Point Load Strength Index $Is_{(50)}$ is commonly used to provide an estimate of the rock strength and site specific correlations should be developed to allow UCS values to be determined. The point load strength test procedure is described by Australian Standard AS4133.4.1-2007. The terms used to describe rock strength are as follows:

Strength Term	Abbreviation	Unconfined Compressive Strength MPa	Point Load Index * $Is_{(50)}$ MPa
Very low	VL	0.6 - 2	0.03 - 0.1
Low	L	2 - 6	0.1 - 0.3
Medium	M	6 - 20	0.3 - 1.0
High	H	20 - 60	1 - 3
Very high	VH	60 - 200	3 - 10
Extremely high	EH	>200	>10

* Assumes a ratio of 20:1 for UCS to $Is_{(50)}$. It should be noted that the UCS to $Is_{(50)}$ ratio varies significantly for different rock types and specific ratios should be determined for each site.

Degree of Weathering

The degree of weathering of rock is classified as follows:

Term	Abbreviation	Description
Residual Soil	RS	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported.
Extremely weathered	XW	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible
Highly weathered	HW	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.
Moderately weathered	MW	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable, but shows little or no change of strength from fresh rock.
Slightly weathered	SW	Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.
Fresh	FR	No signs of decomposition or staining.
<i>Note: If HW and MW cannot be differentiated use DW (see below)</i>		
Distinctly weathered	DW	Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching or may be decreased due to deposition of weathered products in pores.

Rock Descriptions

Degree of Fracturing

The following classification applies to the spacing of natural fractures in diamond drill cores. It includes bedding plane partings, joints and other defects, but excludes drilling breaks.

Term	Description
Fragmented	Fragments of <20 mm
Highly Fractured	Core lengths of 20-40 mm with occasional fragments
Fractured	Core lengths of 30-100 mm with occasional shorter and longer sections
Slightly Fractured	Core lengths of 300 mm or longer with occasional sections of 100-300 mm
Unbroken	Core contains very few fractures

Rock Quality Designation

The quality of the cored rock can be measured using the Rock Quality Designation (RQD) index, defined as:

$$\text{RQD \%} = \frac{\text{cumulative length of 'sound' core sections} \geq 100 \text{ mm long}}{\text{total drilled length of section being assessed}}$$

where 'sound' rock is assessed to be rock of low strength or stronger. The RQD applies only to natural fractures. If the core is broken by drilling or handling (i.e. drilling breaks) then the broken pieces are fitted back together and are not included in the calculation of RQD.

Stratification Spacing

For sedimentary rocks the following terms may be used to describe the spacing of bedding partings:

Term	Separation of Stratification Planes
Thinly laminated	< 6 mm
Laminated	6 mm to 20 mm
Very thinly bedded	20 mm to 60 mm
Thinly bedded	60 mm to 0.2 m
Medium bedded	0.2 m to 0.6 m
Thickly bedded	0.6 m to 2 m
Very thickly bedded	> 2 m

Symbols & Abbreviations

Douglas Partners



Introduction

These notes summarise abbreviations commonly used on borehole logs and test pit reports.

Drilling or Excavation Methods

C	Core drilling
R	Rotary drilling
SFA	Spiral flight augers
NMLC	Diamond core - 52 mm dia
NQ	Diamond core - 47 mm dia
HQ	Diamond core - 63 mm dia
PQ	Diamond core - 81 mm dia

Water

▷	Water seep
▽	Water level

Sampling and Testing

A	Auger sample
B	Bulk sample
D	Disturbed sample
E	Environmental sample
U ₅₀	Undisturbed tube sample (50mm)
W	Water sample
pp	Pocket penetrometer (kPa)
PID	Photo ionisation detector
PL	Point load strength Is(50) MPa
S	Standard Penetration Test
V	Shear vane (kPa)

Description of Defects in Rock

The abbreviated descriptions of the defects should be in the following order: Depth, Type, Orientation, Coating, Shape, Roughness and Other. Drilling and handling breaks are not usually included on the logs.

Defect Type

B	Bedding plane
Cs	Clay seam
Cv	Cleavage
Cz	Crushed zone
Ds	Decomposed seam
F	Fault
J	Joint
Lam	Lamination
Pt	Parting
Sz	Sheared Zone
V	Vein

Orientation

The inclination of defects is always measured from the perpendicular to the core axis.

h	horizontal
v	vertical
sh	sub-horizontal
sv	sub-vertical

Coating or Infilling Term

cln	clean
co	coating
he	healed
inf	infilled
stn	stained
ti	tight
vn	veneer

Coating Descriptor

ca	calcite
cbs	carbonaceous
cly	clay
fe	iron oxide
mn	manganese
slt	silty

Shape

cu	curved
ir	irregular
pl	planar
st	stepped
un	undulating

Roughness

po	polished
ro	rough
sl	slickensided
sm	smooth
vr	very rough


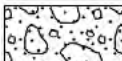
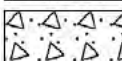

Other

fg	fragmented
bnd	band
qtz	quartz

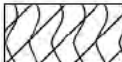


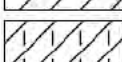
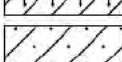
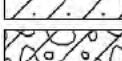


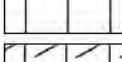
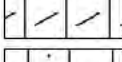
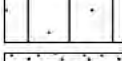
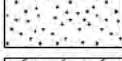
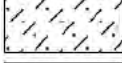
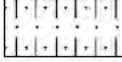

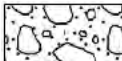

Symbols & Abbreviations

Graphic Symbols for Soil and Rock




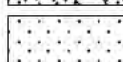

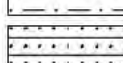


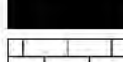
General

	Asphalt
	Road base
	Concrete
	Filling

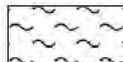
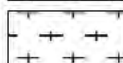
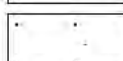
Soils

	Topsoil
	Peat
	Clay
	Silty clay
	Sandy clay
	Gravelly clay
	Shaly clay
	Silt
	Clayey silt
	Sandy silt
	Sand
	Clayey sand
	Silty sand
	Gravel
	Sandy gravel
	Cobbles, boulders
	Talus

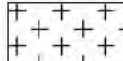
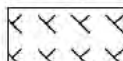
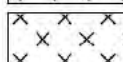
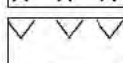

Sedimentary Rocks

	Boulder conglomerate
	Conglomerate
	Conglomeratic sandstone
	Sandstone
	Siltstone
	Laminite
	Mudstone, claystone, shale
	Coal
	Limestone

Metamorphic Rocks

	Slate, phyllite, schist
	Gneiss
	Quartzite

Igneous Rocks

	Granite
	Dolerite, basalt, andesite
	Dacite, epidote
	Tuff, breccia
	Porphyry

BOREHOLE LOG

CLIENT: Karimbla Constructions Services (NSW) Pty Ltd	SURFACE LEVEL: TBC	BORE No: 1
PROJECT: Proposed Meriton Suites Canberra	EASTING: 693995	PROJECT No: 94370.00
LOCATION: Block 4 Section 12, Canberra City	NORTHING: 6093508	DATE: 16/11/2019
	DIP/AZIMUTH: 90°/-	SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering					Graphic Log	Rock Strength					Water	Fracture Spacing (m)	Discontinuities		Sampling & In Situ Testing														
			EW	HW	MW	SW	FS		FR	Ex	Low	Very Low	Low			Medium	High	Very High	Ex High	0.01	0.05	0.10	0.50	1.00	B - Bedding	J - Joint	S - Shear	F - Fault	Type	Core Rec. %	RQD %	Test Results & Comments
			B - Bedding		J - Joint		S - Shear		F - Fault		Type	Core Rec. %	RQD %			Test Results & Comments																
	0.16	REINFORCED CONCRETE: 160mm thick																														
	0.3	FILL/Gravelly SAND (SW): well graded, fine to coarse grained sand, grey-brown, fine to coarse, sub-rounded gravel, FILL																							D							
	0.6	FILL/Silty SAND (SM): poorly graded, fine grained rounded sand, red-brown, (possible natural)																							D							
	1.0	CLAY (CH): high plasticity, yellow-brown, with silt and fine to coarse, sub-rounded gravel, moist, w-PL, (possible FILL) Bore discontinued at 1.0m -Bore terminated due to concrete																														
	2																															
	3																															
	4																															
	5																															

RIG: XE100 Drilling Rig **DRILLER:** Terratest **LOGGED:** AZR **CASING:** HQ to 1.0m

TYPE OF BORING: Diatube coring to 0.16m, solid flight auger to refusal at 1.0m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Location coordinates are in MGA94 Zone 55.

SAMPLING & IN SITU TESTING LEGEND		
A Auger sample	G Gas sample	PID Photo ionisation detector (ppm)
B Bulk sample	P Piston sample	PL(A) Point load axial test 1s(50) (MPa)
BLK Block sample	U _s Tube sample (x mm dia.)	PL(D) Point load diametral test 1s(50) (MPa)
C Core drilling	W Water sample	pp Pocket penetrometer (kPa)
D Disturbed sample	W Water seep	sp Standard penetration test
E Environmental sample	W Water level	S Shear vane (kPa)

DOUGLAS PARTNERS PTY LTD

PROPOSED MULTI-STOREY DEVELOPMENT
BLOCK 4 SECTION 12, CANBERRA CITY

BORE: 1A DEPTH: 2.0 m - 10.2 m PROJECT: 94370.00 November 2019



DOUGLAS PARTNERS PTY LTD

PROPOSED MULTI-STOREY DEVELOPMENT
BLOCK 4 SECTION 12, CANBERRA CITY

BORE: 2 DEPTH: 1.0 m – 9.9 m PROJECT: 94370.00 November 2019



DOUGLAS PARTNERS PTY LTD

PROPOSED MULTI-STOREY DEVELOPMENT
BLOCK 4 SECTION 12, CANBERRA CITY

BORE: 3 DEPTH: 0.8 m – 9.7 m PROJECT: 94370.00 November 2019

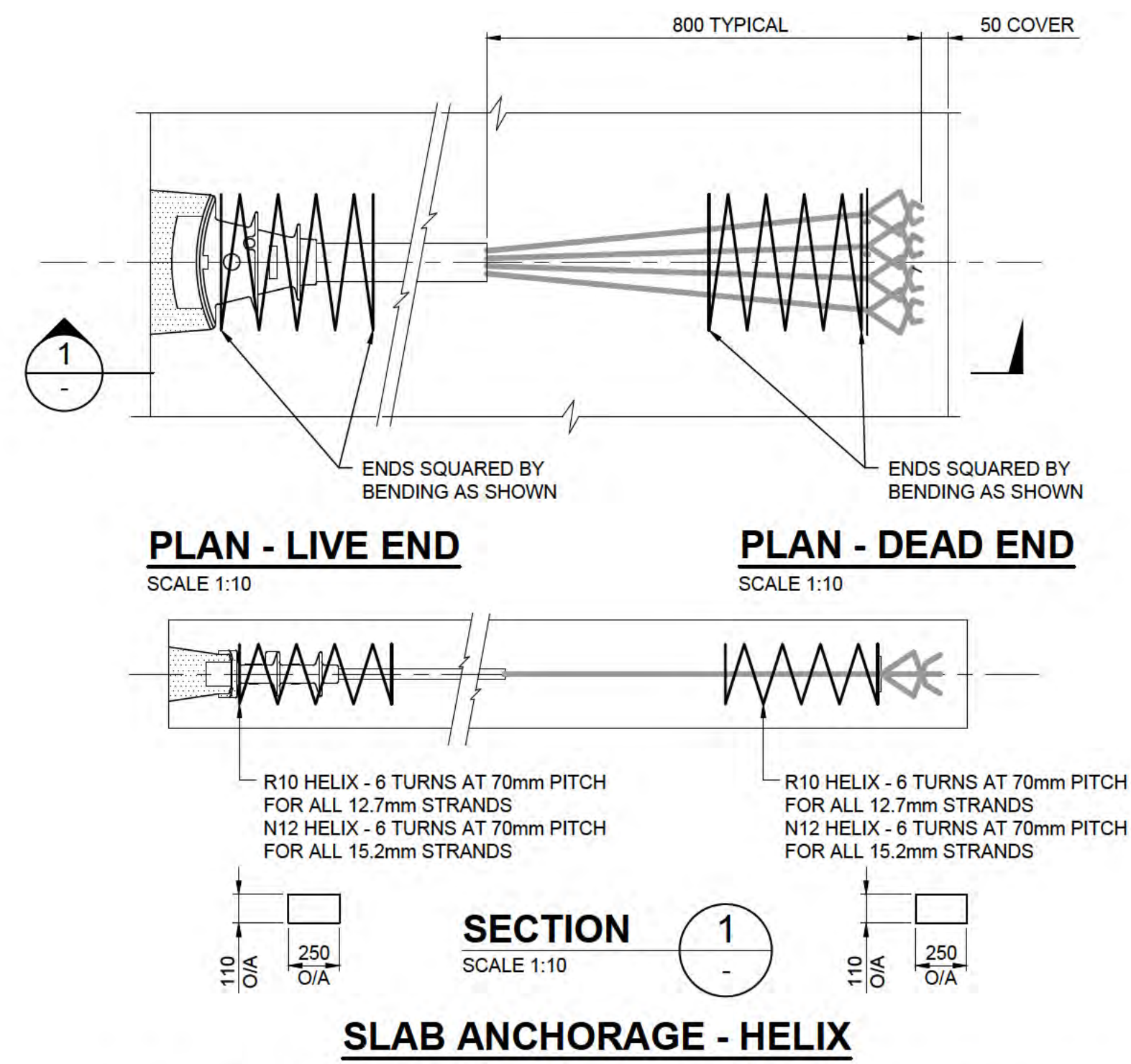


DOUGLAS PARTNERS PTY LTD

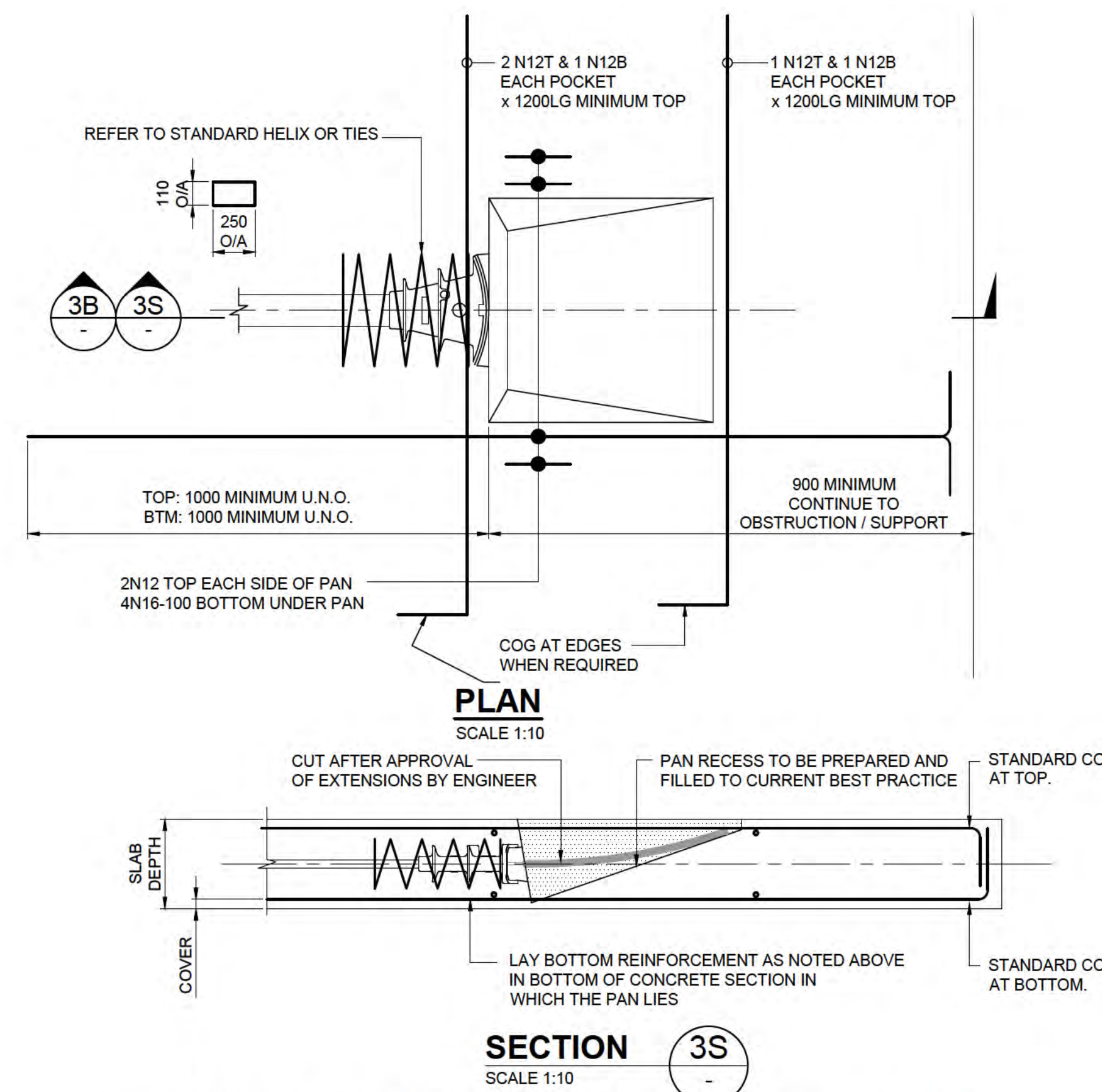
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BLOCK 4 SECTION 12, CANBERRA CITY

BORE: 4 DEPTH: 2.0 m – 12.0 m PROJECT: 94370.00 December 2019

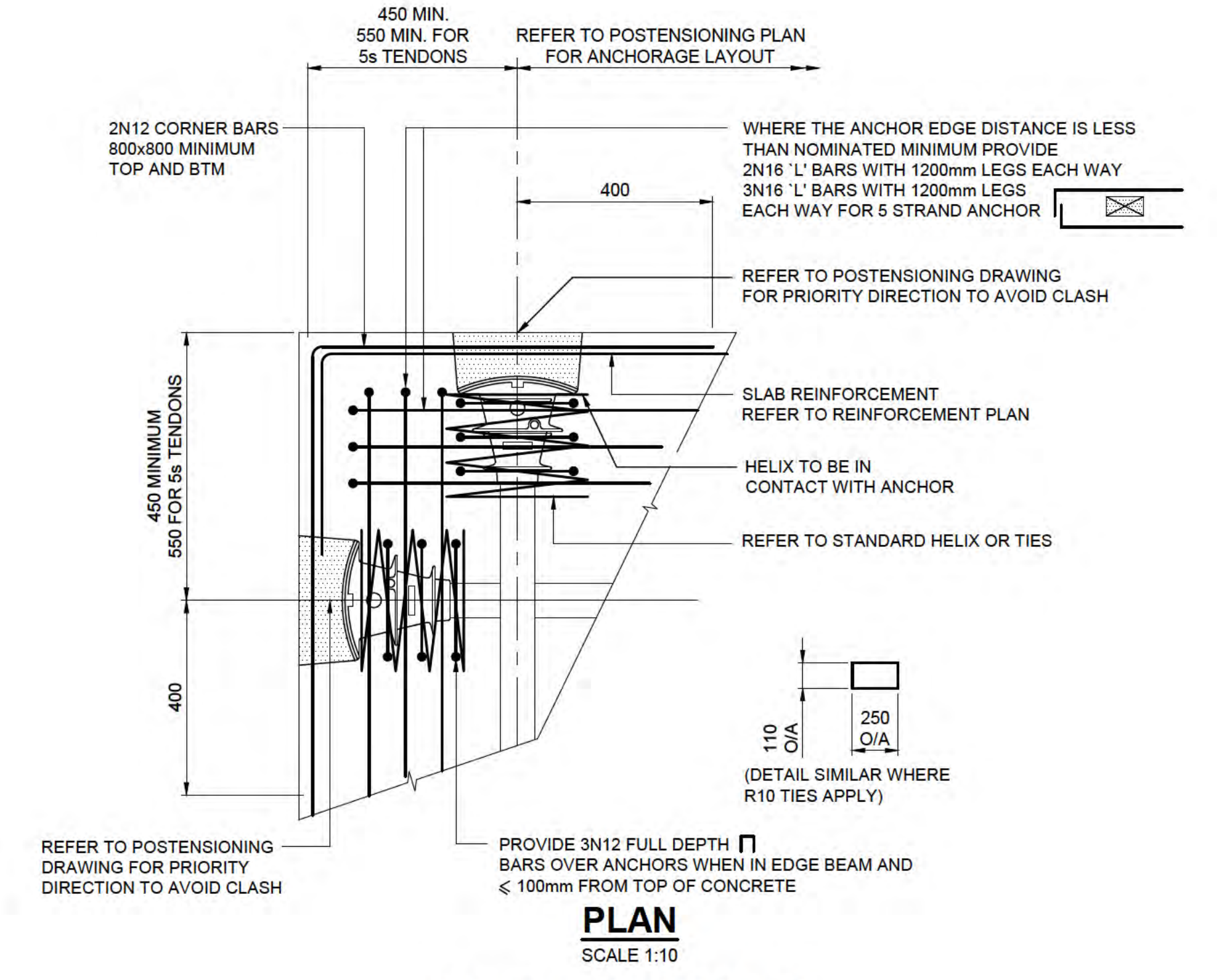




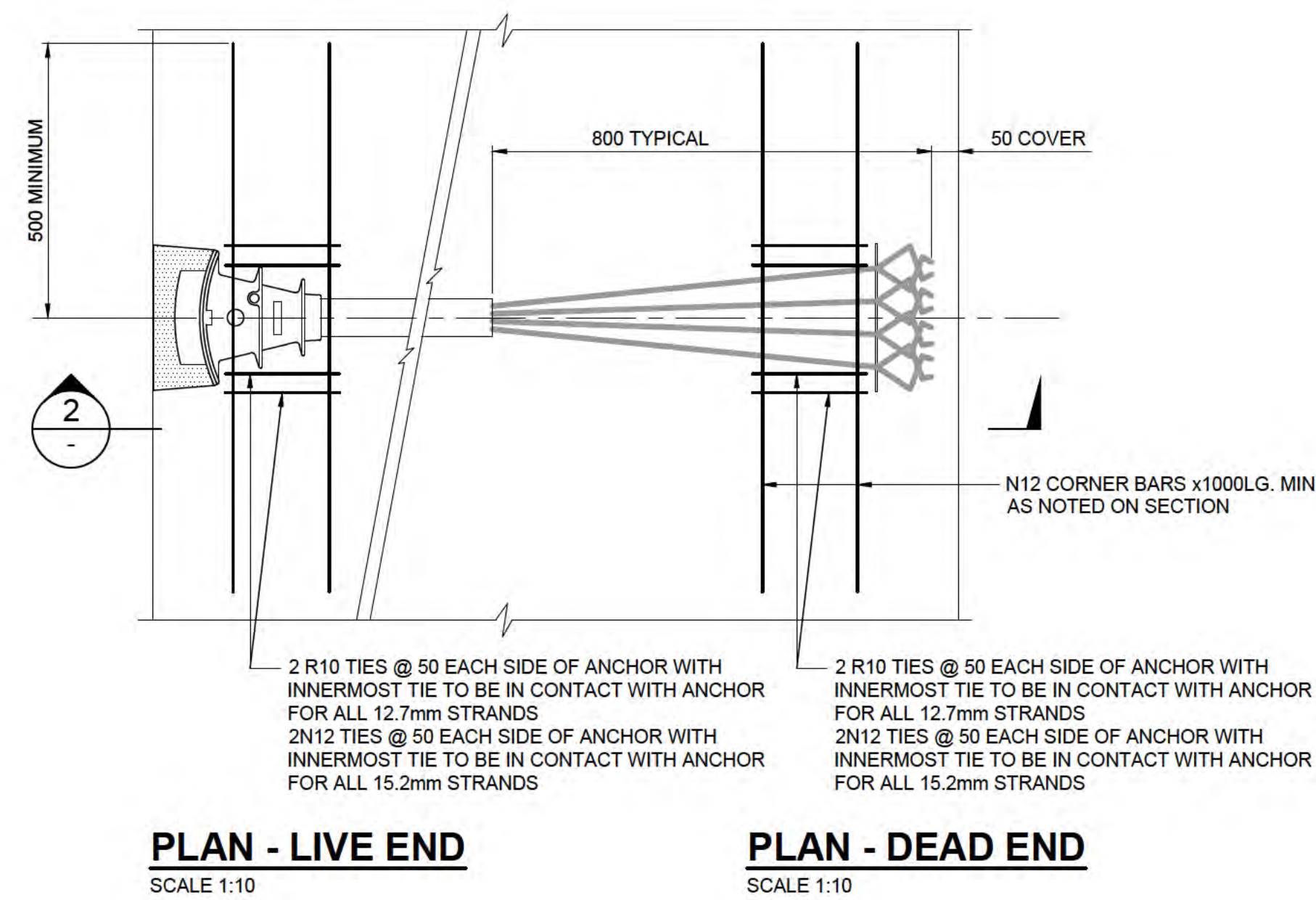
FOR ANCHORAGES IN BANDS & SLABS
170mm THICK AND OVER 30mm COVER MAX.



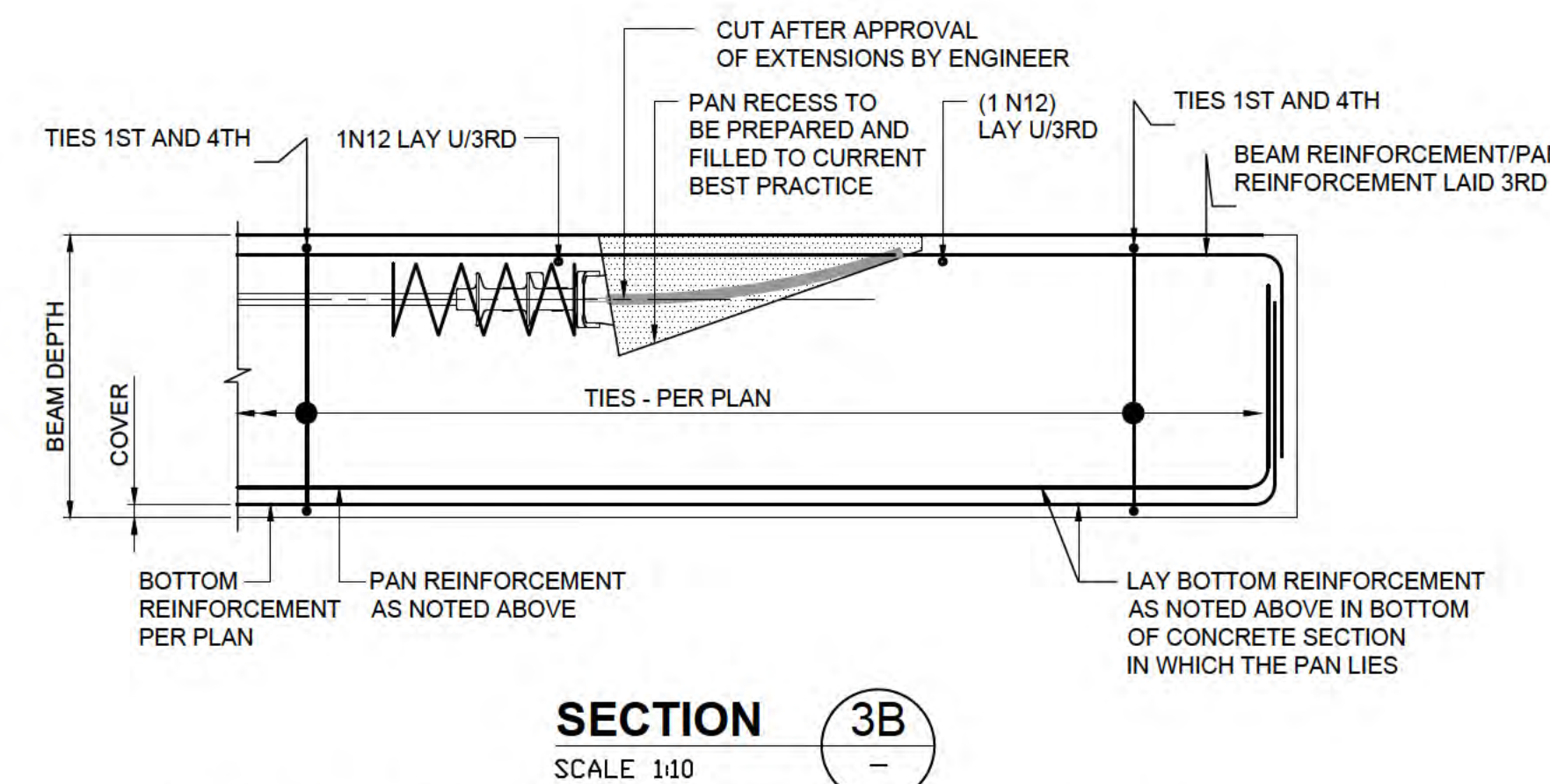
INTERNAL STRESSING POCKET - SLAB



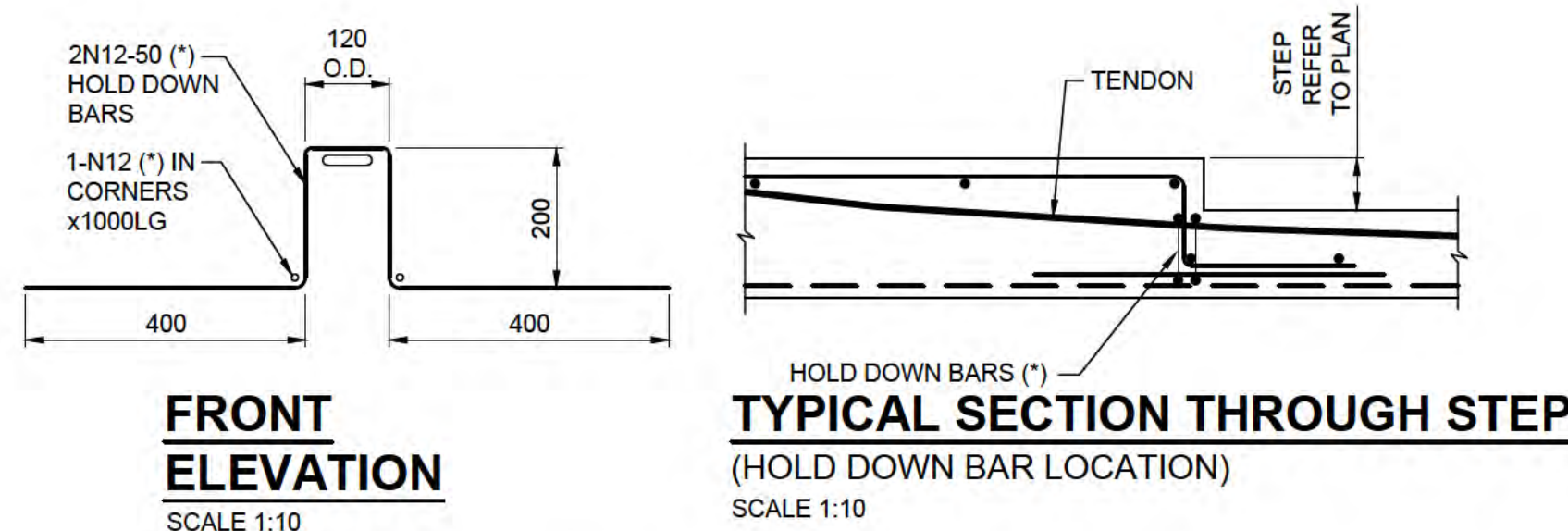
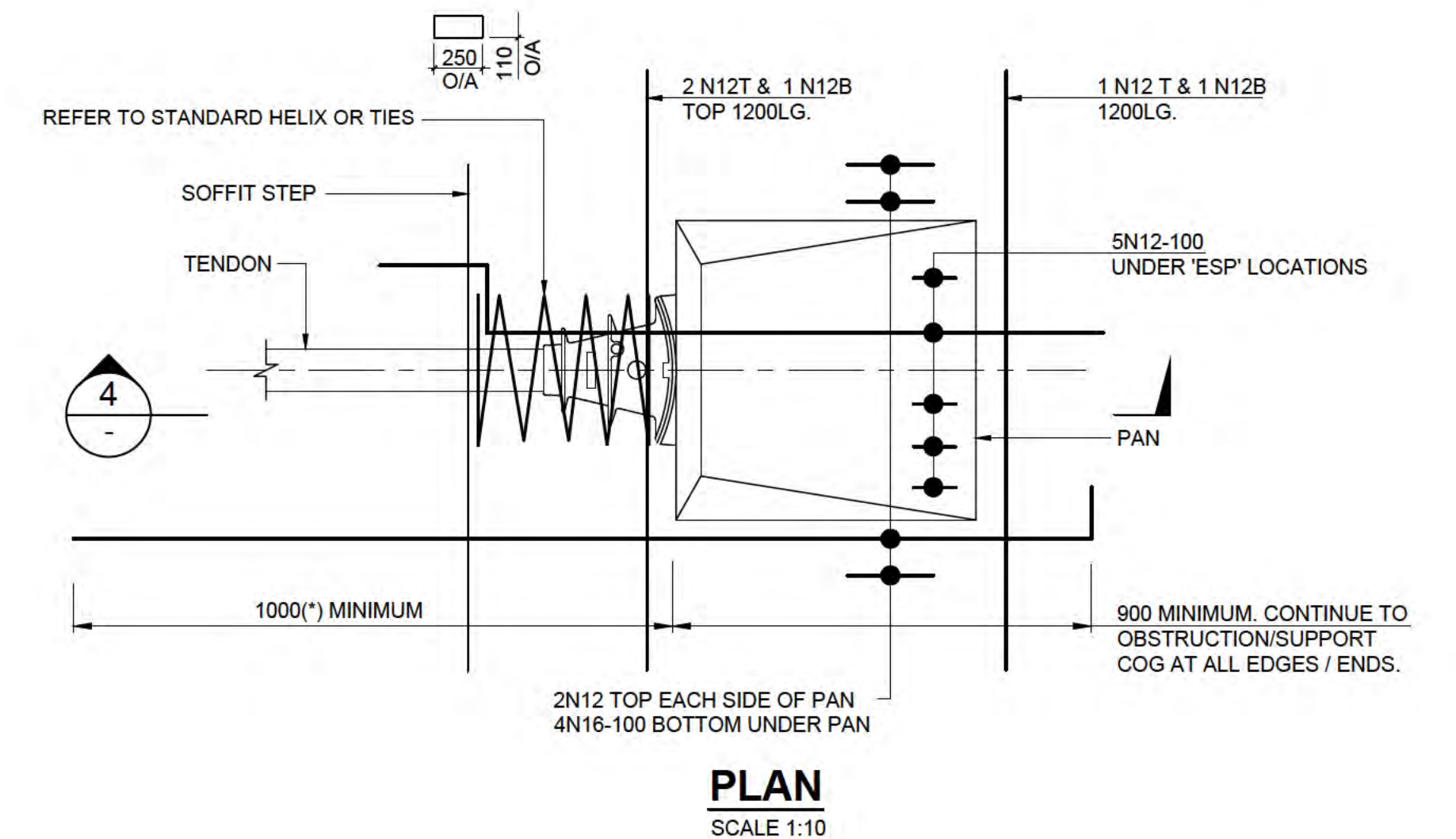
CORNER DETAIL
(SIMILAR DETAILS FOR DEAD ENDS)



FOR ANCHORAGES IN BANDS & SLABS
UNDER 170mm THICK EXTERNAL OR WHERE COVER DOES NOT ALLOW HELIX ANTIBURST

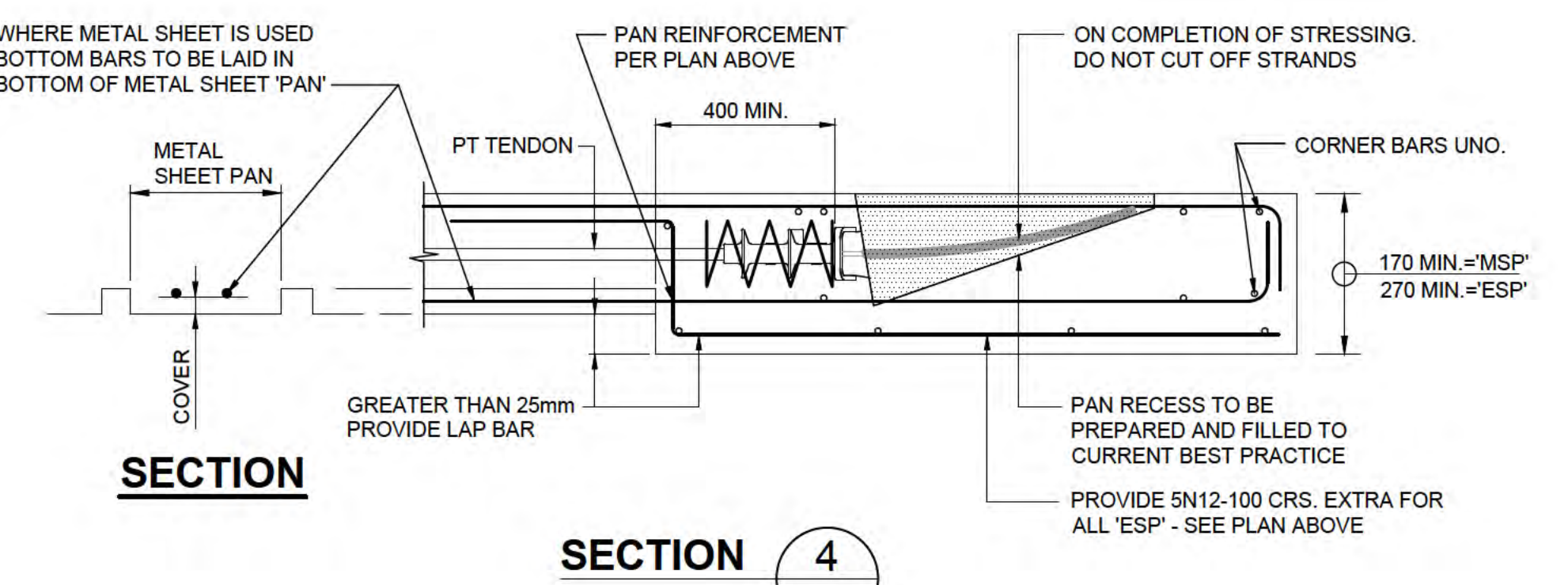


INTERNAL STRESSING POCKET BEAM/SLAB 300mm THICK OR GREATER



HOLD DOWN BAR DETAIL (*)

POSITION AS NOTED ON PLAN THUS - REFER POST-TENSIONING PLAN



'ESP' EXTERNAL STRESSING POCKETS and 'MSP' INTERNAL SLAB STRESSING POCKET WHERE METAL SHEET FORMWORK

Key Plan:



REV.	BY	DATE	DESCRIPTION
A	AL	10.01.2022	ISSUED FOR CONSTRUCTION
01	AL	27.10.2021	ISSUED FOR APPROVAL

DESIGNED	DRAWN	CHECKED	DATE ISSUED
DS	AL	BC	10/1/2021

Project	MERITON SUITES CANBERRA 40 ALLARA STREET, CANBERRA ACT 2061
Title	PT ANTIBURST DRAWING
Status	CONSTRUCTION
Project No.	211651
Drawing No.	PT0001
Rev.	A

**POST-TENSIONED SLAB AND BEAM
CONSTRUCTION FLOOR DESIGN PARAMETERS**

DESIGN LOADING: LIVE LOAD REDUCTIONS MAY BE USED WHERE ALLOWABLE BY AS1170, AND WHERE APPROVED BY THE PROJECTS CONSULTING ENGINEER

FLOOR LOADS: REFER TO STRUCTURAL 17091-S04-103

CONCRETE: S4.0
MIN. 22MPa AFTER 4 DAYS

FIRE RATING: UNLESS NOTED OTHERWISE SHALL BE: 2 HOURS MAX.

DEFLECTION LIMITATION:
TOTAL DEFLECTION - SPANS L/300 OR 25mm (TYPICAL U.N.O)
TOTAL DEFLECTION - CANTILEVERS L/125 OR 25mm (TYPICAL U.N.O)
INCREMENTAL DEFLECTION: L/500 OR 25mm

NOTES: SEE ADJACENT

IMPORTANT NOTES

12.7 DIA. STRAND	SLAB SYSTEM
FINAL STRESS	AT CONCRETE STRENGTH = 40 MPa MIN, INCREASE LOAD IN EACH STRAND TO 156 KN U.N.O.

CUT CROSS RODS TO ALLOW MAXIMUM TENDON DRAPE - TYPICAL

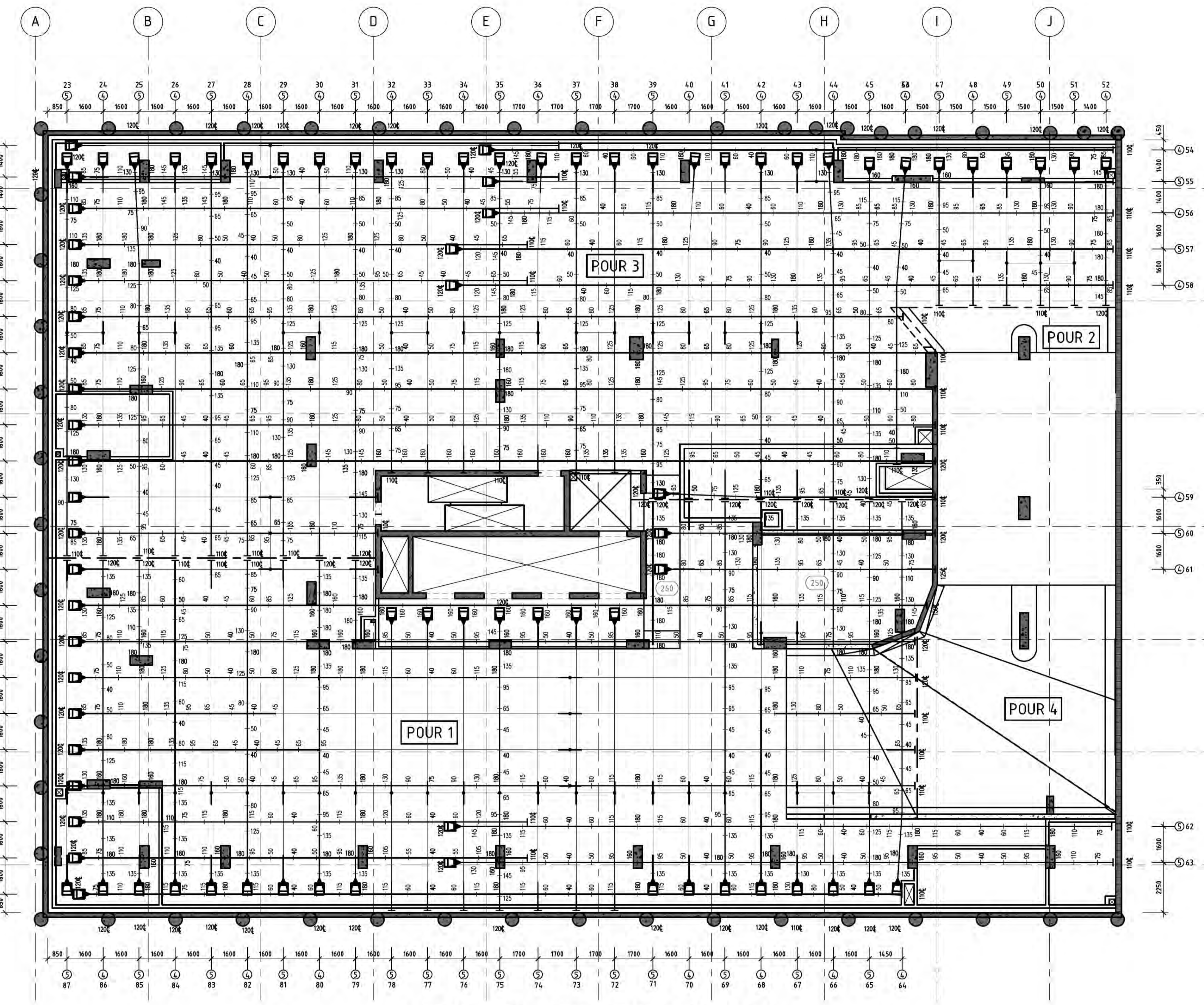
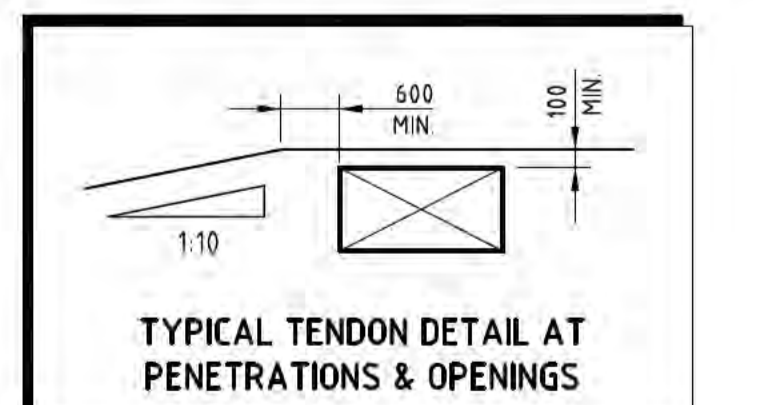
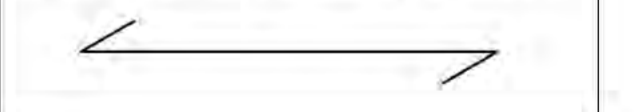
NOTE: LOCATION OF POST TENSIONING IS REPRESENTATIVE OF PROJECT STRUCTURE & SERVICES LOCATIONS IN THE LIKE, NOTE, ON-SITE LOCALISED RE-POSITIONING OF TENDONS MAY BE REQUIRED TO ALLOW FOR ANY DISCREPANCIES HIGHLIGHTED BETWEEN CONSULTANT'S & THE PT CONTRACTOR'S DRAWINGS

PRESTRESSING SYMBOLS

- * 100 DENOTES PROFILE TO BE READ FROM TOP OF SLAB
- LIVE END PAN ANCHORAGE.
- ⊗ LIVE END PAN ANCHORAGE, WITHOUT EXTRA PAN RED, TOP RED TO BE CUT TO FIT PANS
- ▶ LIVE END ANCHORAGE
- ◀ LIVE END ANCHORAGE TO BE STRESSED FROM UNDERSIDE (SOFFIT)
- DEAD END ANCHORAGE
- ▣ SWAGED DEAD END ANCHORAGE
- DENOTES TENDON NUMBER
- ⑤ DENOTES No. STRANDS IN TENDON
- 12.7 DENOTES 12.7dia. STRANDS IN TENDON
- HOLDING DOWN BARS
- DENOTES ANCHORAGE HEIGHT FROM THE CENTRE
- DENOTES "PIG TAIL" TERMINATION DEAD END ANCHORAGE
- DENOTES 'x' No. OF STRANDS

FOR CONSTRUCTION

NOTE: TENDONS IN THIS DIRECTION HAVE PRIORITY



BASEMENT 01 - POST TENSIONING PLAN

ALL SLABS TO BE 220mm DEPTH U.N.O

DRAWING REFERENCE:
THE DRAWING IS BASED ON THE FOLLOWING INFORMATION AS PROVIDED TO PT WORKS.
CONSULTANT: INDESCO
DRAWING No: E202
REVISION: J

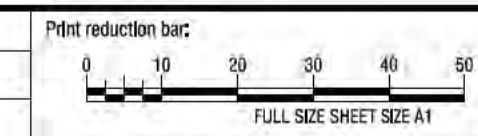
Key Plan:



KARIMBLA
CONSTRUCTION SERVICES (NSW)
PTY LIMITED
Level 11, 528 Kent Street, Sydney NSW 2000
Tel: (02) 9287 2888 Fax: (02) 9287 2777

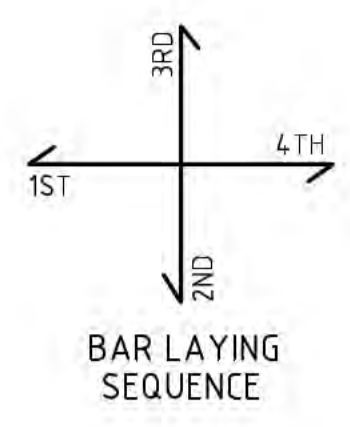
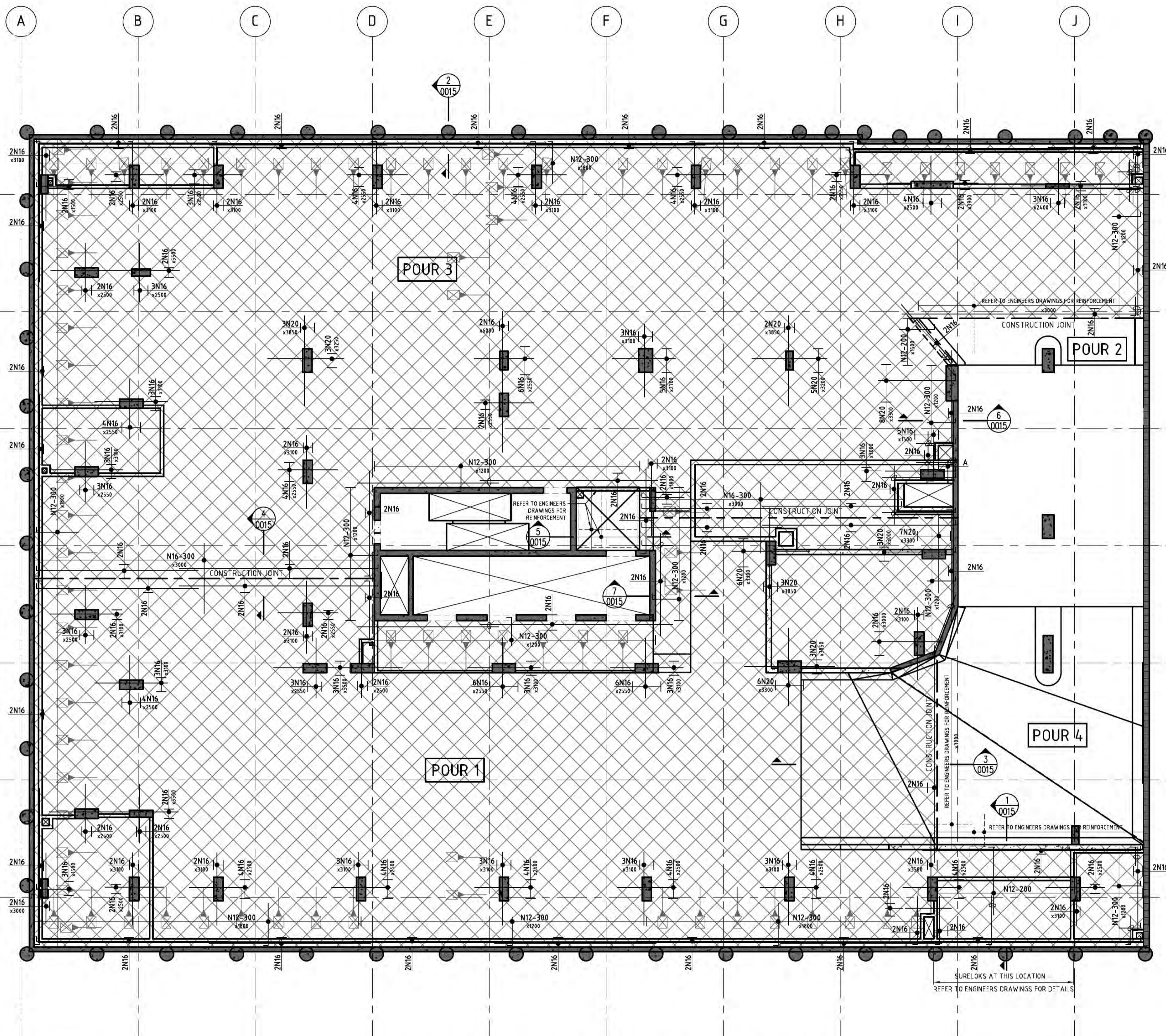
PTWORKS
Post Tensioning Contractor & Engineering Consultant

NO.	BY	DATE	DESCRIPTION
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02	A.L.	27.10.2021	RE-ISSUED FOR APPROVAL
01	A.L.	01.10.2021	ISSUED FOR APPROVAL



DESIGNED	DS
DRAWN	AL
CHECKED	BC
DATE ISSUED	OCT-2021

Project: MÉRITON SUITES CANBERRA, 40 ALLARA STREET, CANBERRA ACT 2061			
Title:	BASEMENT 01 POST TENSIONING PLAN		
Status:	CONSTRUCTION	Project No.:	211651
Rev.:	A	Drawing No.:	PT0011



A	N12-300	
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NOTE
SCHEDULER TO ADJUST STIRRUP HEIGHTS TO MATCH STEPS AND FOLDS

REINFORCEMENT NOTES

- CONCRETE STRENGTH F_c SHALL BE 40MPa INTERNAL AND 40MPa EXTERNAL U.N.O.
- REINFORCEMENT 'CALL UP' NOTATION
- 4 N16-300 T, EXT, (x) (x) — in lieu of mesh (excluded).
 — not part of Reinf. allowance
 — extra additional bars
 — bar layer - (refer below)
 — bar spacing centers - (if shown)
 — bar diameter
 — number of bars
 — BAR TYPES: (TO AUSTRALIAN STANDARD AS 1302)
 N = DENOTES TOP REINFORCEMENT
 B = DENOTES BOTTOM REINFORCEMENT
 T&B = DENOTES BARS IN BOTH LAYERS
- LAPS IN REINFORCEMENT SHALL BE:

LAP	BAR TYPE & DIAMETER					
	N12	N16	N20	N24	N28	N32
	500	700	1100	1450	1900	2300

NB: WHERE BARS OF DIFFERENT DIAMETERS LAP THE LESSER OF THE TWO SHALL BE USED. THE MINIMUM LAP FOR ALL FABRIC (MESH) REINFORCEMENT SHALL BE TWO TRANSVERSE BARS PLUS 25 mm.
- COVER TO REINFORCEMENT U.N.O.

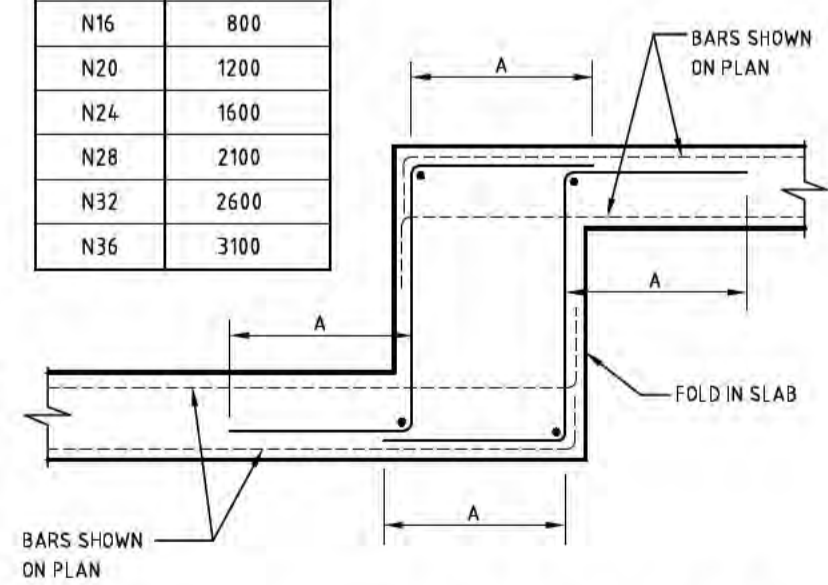
F _c 40MPa	SLAB		BEAMS	
	INTERNAL	EXTERNAL EXPOSURE	INTERNAL	EXTERNAL EXPOSURE
TOP	20	20	20	20x
BOTTOM	20	20	20	20x
SIDES	20	20	20	20x

* MIN. APPLY INTERNAL COVER WHERE GREATER
- FOR ALL DESIGNATED REINFORCEMENT & PLACEMENT OF LAPS PERTAINING TO THIS DRAWING, REFER TO RELEVANT PLANS, ELEVATIONS, SECTIONS, DETAILS & ASSOCIATED NOTES.
NOT SHOWN ON THIS DRAWING ARE THE FOLLOWING ITEMS (61) THROUGH (61) BUT, THESE SHALL BE PROVIDED IN ALL CIRCUMSTANCES AS REQUIRED U.N.O.
- (61a) FOR ALL EXTRA REINFORCEMENT NOT SHOWN ON PLAN REFER TO SLAB SECTIONS & TYPICAL DETAILS. REINFORCEMENT TAGGED ON SECTION MAY NOT BE SHOWN ON PLAN.
- (61b) REFER DRAWING PT001 FOR TYPICAL ANTI-BURST REINFORCEMENT REQUIREMENTS FOR POST TENSIONING ELEMENTS.
- (61c) PROVIDE N12-600 U.N.D. DISTRIBUTION BARS ONLY AS OTHERWISE NECESSARY TO SUPPORT MAIN REINFORCEMENT. ALL ADDITIONAL DISTRIBUTION REINFORCEMENT IS TO BE EXCLUDED FROM PT CONTRACTOR REINF. ALLOWANCE.
- (61d) TRIMMER BARS: PROVIDE REINFORCEMENT ONLY WHERE A PENETRATION IS GREATER THAN 300mm x 300mm & UP TO & INCLUDING 900mm x 900mm. SUCH PENETRATIONS DENOTED ON PLAN AS (T.P.) SHALL HAVE THE FOLLOWING MINIMUM REINFORCEMENT:

500 MIN. TYP.
(T.P.)
2N16 BARS PLACED TOP & BOTTOM TO ALL SIDES.
EXTEND ALL BARS AS SHOWN.
- THE TOP REINFORCEMENT SHALL NOT BE INSTALLED UNTIL TENDONS ARE PLACED IN ACCORDANCE WITH POST TENSIONING DOCUMENTATION.
- DENOTES SL.82 MESH BOTTOM

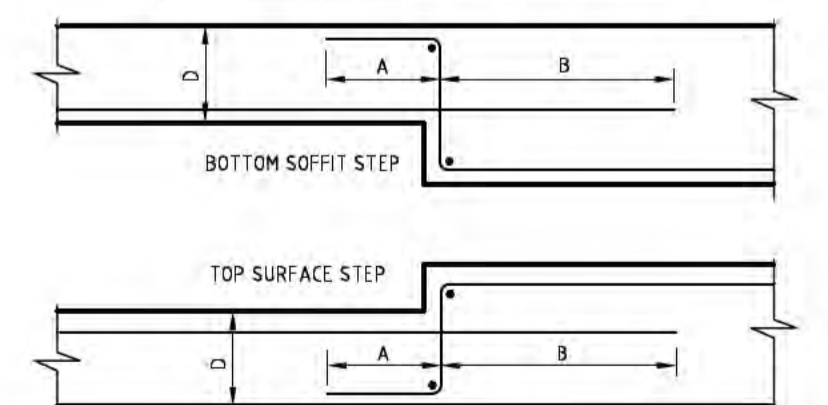
FOR CONSTRUCTION

BAR DIA.	A
N12	500
N16	800
N20	1200
N24	1600
N28	2100
N32	2600
N36	3100



TYPICAL REINFORCEMENT LEG LENGTH AT FOLDS U.N.O.

BAR DIA.	A	B
N12	500 - D	500
N16	800 - D	800
N20	1200 - D	1200
N24	1600 - D	1600
N28	2100 - D	2100
N32	2600 - D	2600
N36	3100 - D	3100



TYPICAL REINFORCEMENT BAR LAP AT STEPS U.N.O.

TYPICAL ARRANGEMENT OF BOTTOM REINFORCEMENT AT STEPS < 50

BASEMENT 01 - BOTTOM REINFORCEMENT PLAN

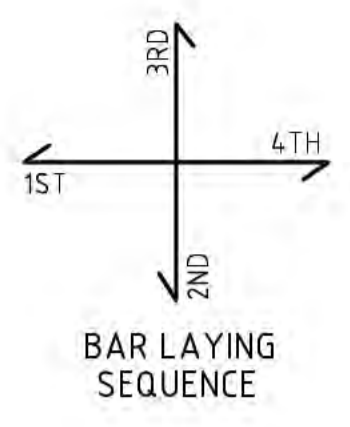
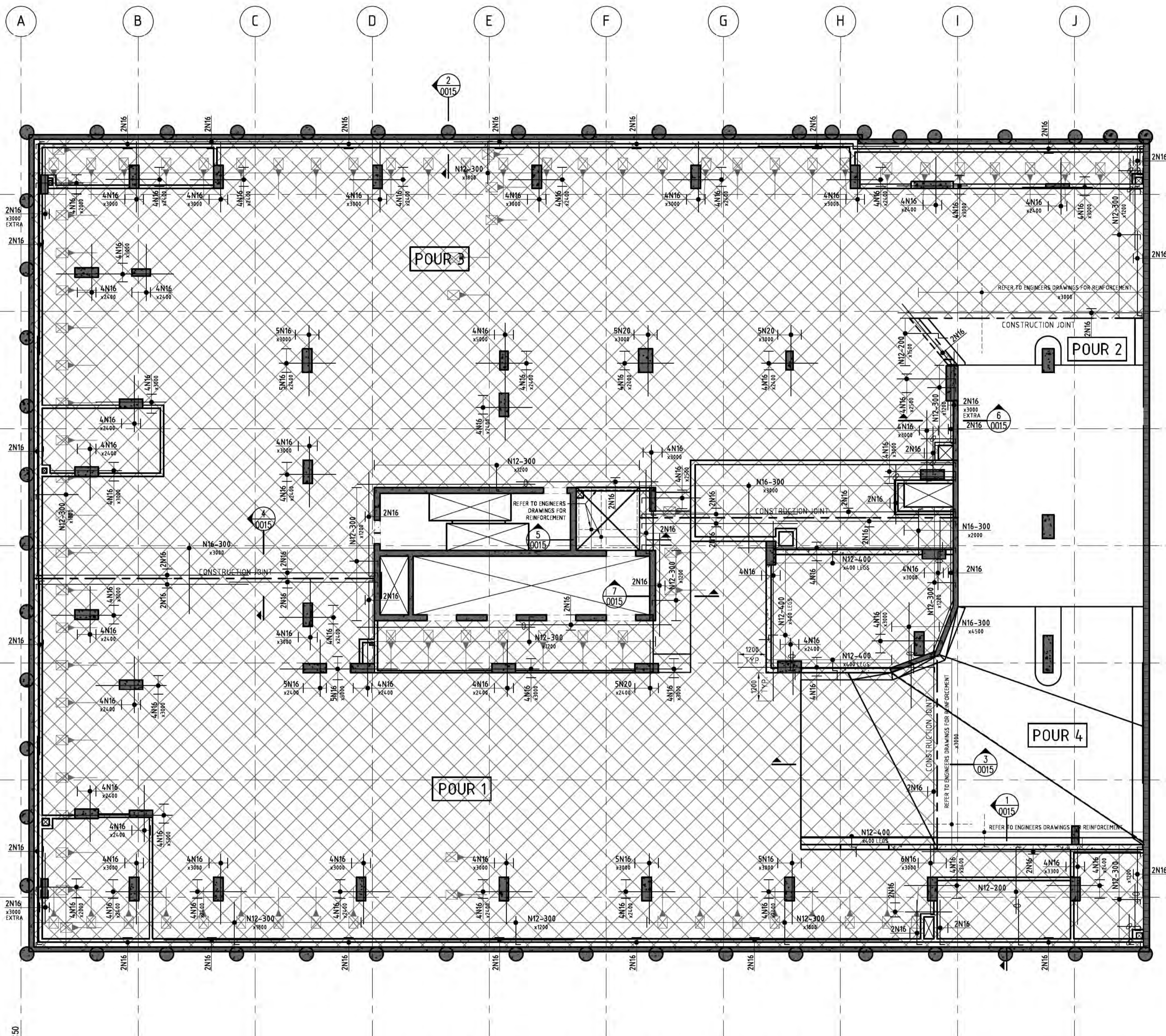
NET REINFORCEMENT QUANTITIES

AS SHOWN ON PLAN	9.08 TONNES
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NOTES:

- NET QUANTITIES DO NOT INCLUDE ROLLING MARGIN OR WASTAGE.
- REINFORCEMENT MARKED THUS IS TO BE SCHEDULED SEPARATELY *
- STEEL SCHEDULER TO NOTIFY BUILDER & PTWORKS IF SUPPLIED QUANTITIES DIFFER FROM ABOVE.

	<p>KARIMBLA CONSTRUCTION SERVICES (NSW) PTY LIMITED</p> <p>Level 11, 528 Kent Street, Sydney NSW 2000 Tel: (02) 9287 2888 Fax: (02) 9287 2177</p>	<p>PTWORKS Post Tensioning Contractor & Engineering Consultant</p>	Project: MERITON SUITES CANBERRA, 40 ALLARA STREET, CANBERRA ACT 2061 Title: BASEMENT 01 BOTTOM REINFORCEMENT PLAN Status: CONSTRUCTION	Project No. 211651 Drawing No. PT0013 Rev. A													
			REVISIONS <table border="1"> <thead> <tr> <th>No.</th> <th>BY</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>01</td> <td>A.L.</td> <td>01.10.2021</td> <td>ISSUED FOR APPROVAL</td> </tr> <tr> <td>02</td> <td>A.L.</td> <td>27.10.2021</td> <td>RE-ISSUED FOR APPROVAL</td> </tr> <tr> <td>03</td> <td>A.L.</td> <td>04.11.2021</td> <td>ISSUED FOR CONSTRUCTION</td> </tr> </tbody> </table>	No.	BY	DATE	DESCRIPTION	01	A.L.	01.10.2021	ISSUED FOR APPROVAL	02	A.L.	27.10.2021	RE-ISSUED FOR APPROVAL	03	A.L.
No.	BY	DATE	DESCRIPTION														
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02	A.L.	27.10.2021	RE-ISSUED FOR APPROVAL														
03	A.L.	04.11.2021	ISSUED FOR CONSTRUCTION														



REINFORCEMENT NOTES

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 - 4 N16-300 T, EXT, (x) (x) — in lieu of mesh (excluded)
 - not part of Reinf. allowance
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 - bar diameter
 - number of bars
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 - N = DENOTES HOT ROLLED DEFORMED BAR (500 MPa)
 - R = DENOTES STRUCTURAL GRADE PLAIN BAR (250 MPa)
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 - B = DENOTES BOTTOM REINFORCEMENT
 - T&B = DENOTES BARS IN BOTH LAYERS
- LAPS IN REINFORCEMENT SHALL BE:

LAP	BAR TYPE & DIAMETER					
	N12	N16	N20	N24	N28	N32
	500	700	1100	1450	1900	2300

NB WHERE BARS OF DIFFERENT DIAMETERS LAP THE LESSER OF THE TWO SHALL BE USED. THE MINIMUM LAP FOR ALL FABRIC (MESH) REINFORCEMENT SHALL BE TWO TRANSVERSE BARS PLUS 25 mm.
- COVER TO REINFORCEMENT U.N.O.

F _c 40MPa	SLAB		BEAMS	
	INTERNAL	EXTERNAL EXPOSURE	INTERNAL	EXTERNAL EXPOSURE
TOP	20	20	20	20x
BOTTOM	20	20	20	20x
SIDES	20	20	20	20x

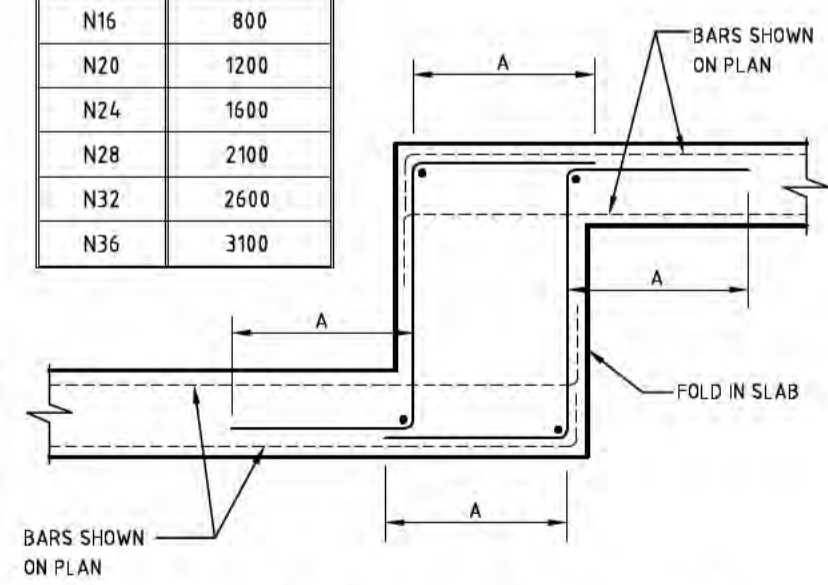
* MIN. APPLY INTERNAL COVER WHERE GREATER
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- (a) FOR ALL EXTRA REINFORCEMENT NOT SHOWN ON PLAN REFER TO SLAB SECTIONS & TYPICAL DETAILS. REINFORCEMENT TAGGED ON SECTION MAY NOT BE SHOWN ON PLAN.
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- (c) PROVIDE N12-600 U.N.O. DISTRIBUTION BARS ONLY AS OTHERWISE NECESSARY TO SUPPORT MAIN REINFORCEMENT. ALL ADDITIONAL DISTRIBUTION REINFORCEMENT IS TO BE EXCLUDED FROM PT CONTRACTOR REINF. ALLOWANCE.
- (d) TRIMMER BARS: PROVIDE REINFORCEMENT ONLY WHERE A PENETRATION IS GREATER THAN 300mm x 300mm & UP TO & INCLUDING 900mm x 900mm. SUCH PENETRATIONS DENTED ON PLAN AS (T.P.) SHALL HAVE THE FOLLOWING MINIMUM REINFORCEMENT:

500 MIN. TYP.
(T.P.)
2N16 BARS PLACED TOP & BOTTOM TO ALL SIDES. EXTEND ALL BARS AS SHOWN.
- THE TOP REINFORCEMENT SHALL NOT BE INSTALLED UNTIL TENDONS ARE PLACED IN ACCORDANCE WITH POST TENSIONING DOCUMENTATION.
- DENOTES SL.82 MESH TOP

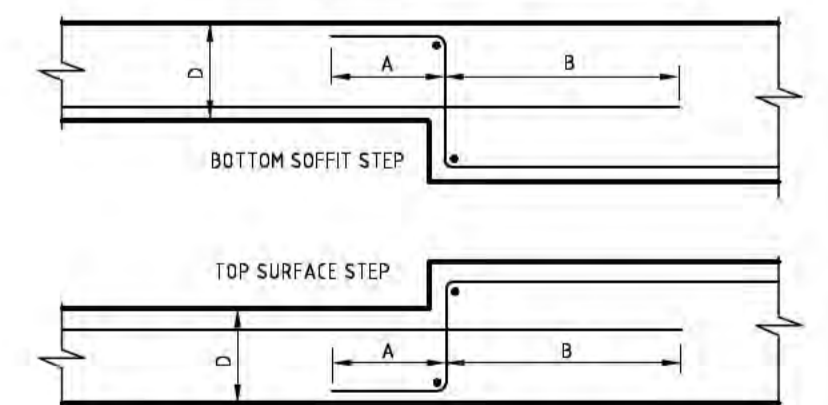
FOR CONSTRUCTION

BAR DIA	A	B
N12	500 - D	500
N16	800 - D	800
N20	1200 - D	1200
N24	1600 - D	1600
N28	2100 - D	2100
N32	2600 - D	2600
N36	3100 - D	3100

BAR DIA	A
N12	500
N16	800
N20	1200
N24	1600
N28	2100
N32	2600
N36	3100



TYPICAL REINFORCEMENT LEG LENGTH AT FOLDS U.N.O.



TYPICAL REINFORCEMENT BAR LAP AT STEPS U.N.O.

BASEMENT 01 - TOP REINFORCEMENT PLAN

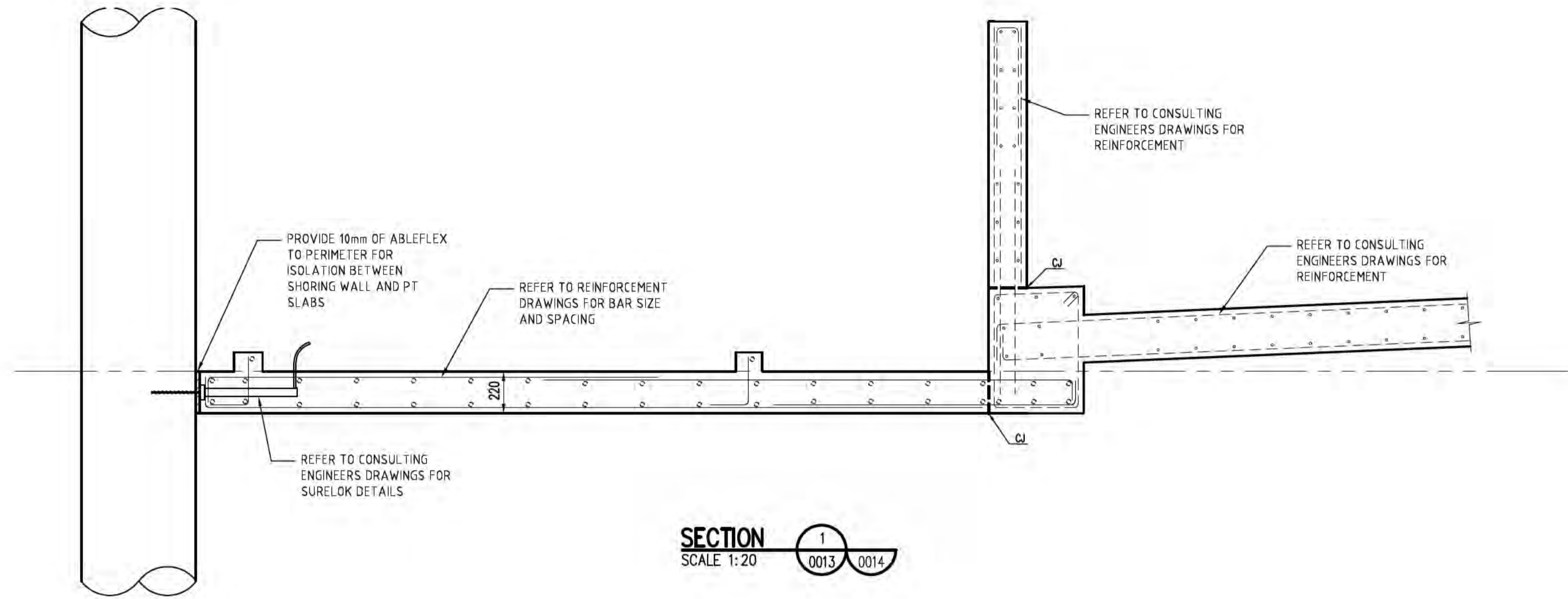
NET REINFORCEMENT QUANTITIES

AS SHOWN ON PLAN	9.71 TONNES
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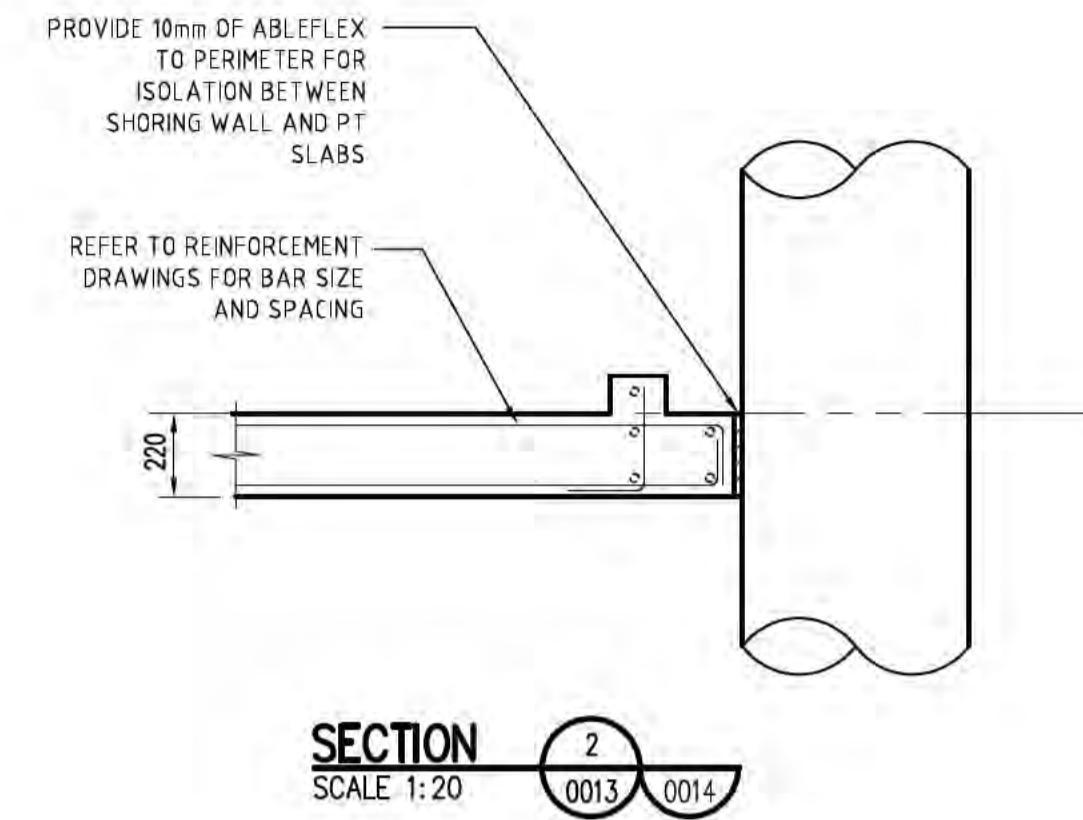
NOTES:

- NET QUANTITIES DO NOT INCLUDE ROLLING MARGIN OR WASTAGE.
- REINFORCEMENT MARKED THUS IS TO BE SCHEDULED SEPARATELY *
- STEEL SCHEDULER TO NOTIFY BUILDER & PTWORKS IF SUPPLIED QUANTITIES DIFFER FROM ABOVE.

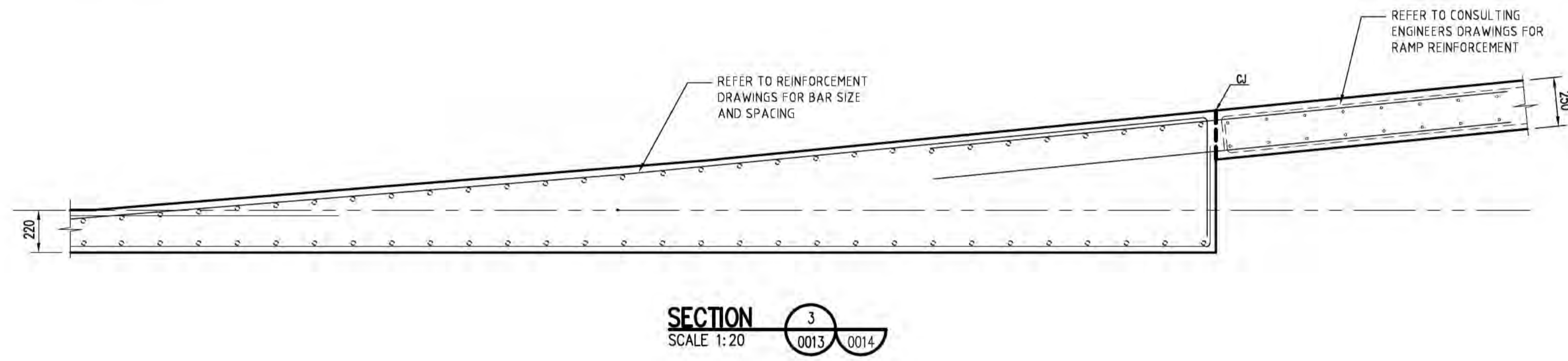
TYPICAL ARRANGEMENT OF TOP REINFORCEMENT AT STEPS <50



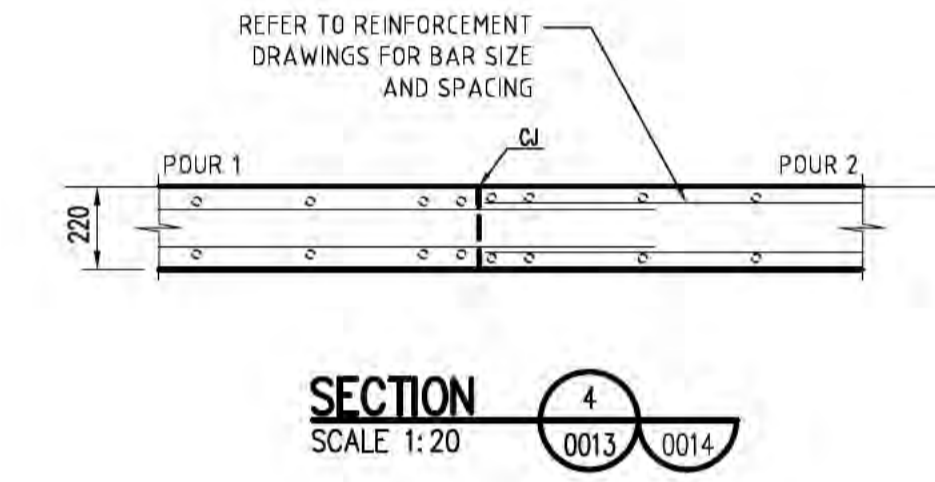
SECTION 1
SCALE 1:20



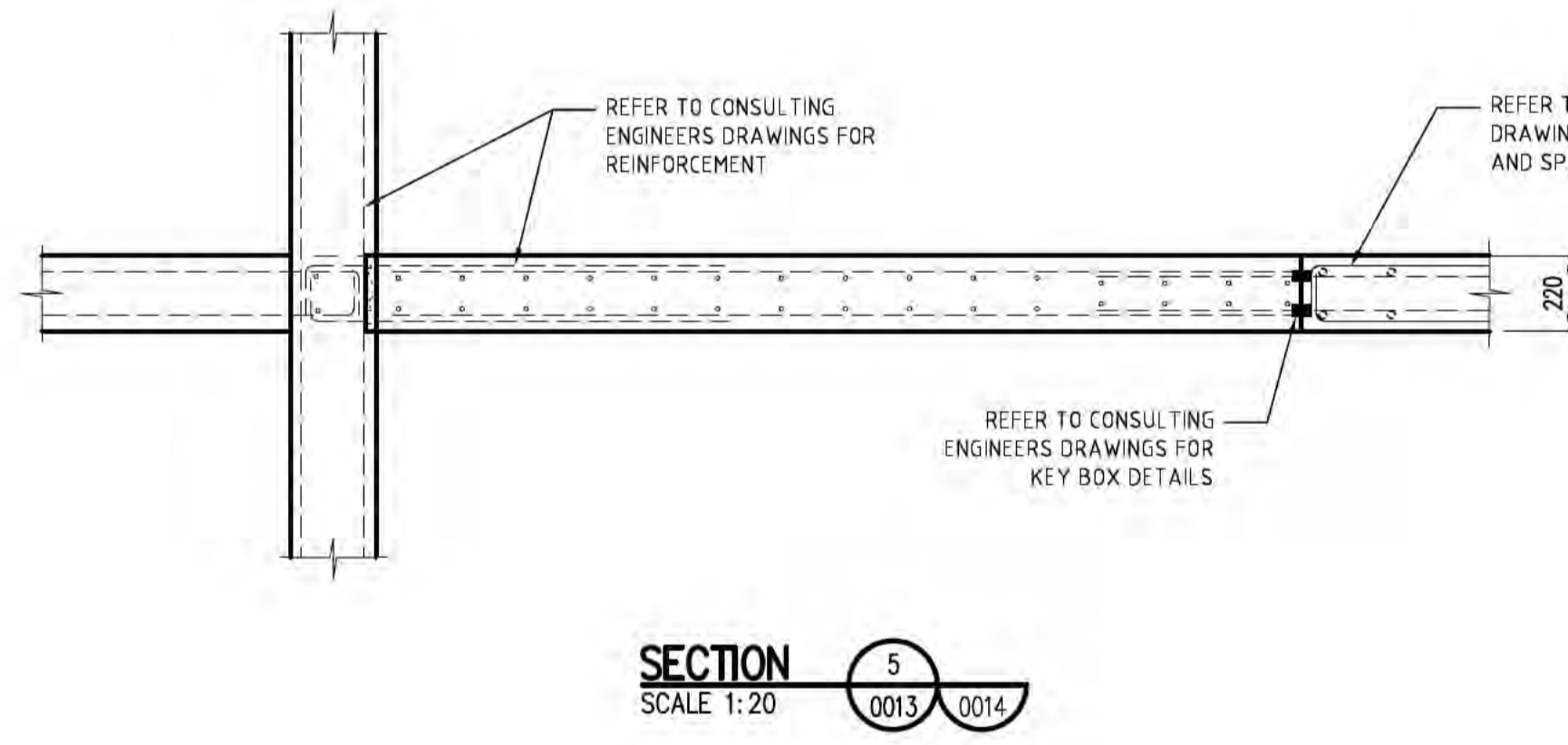
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SCALE 1:20



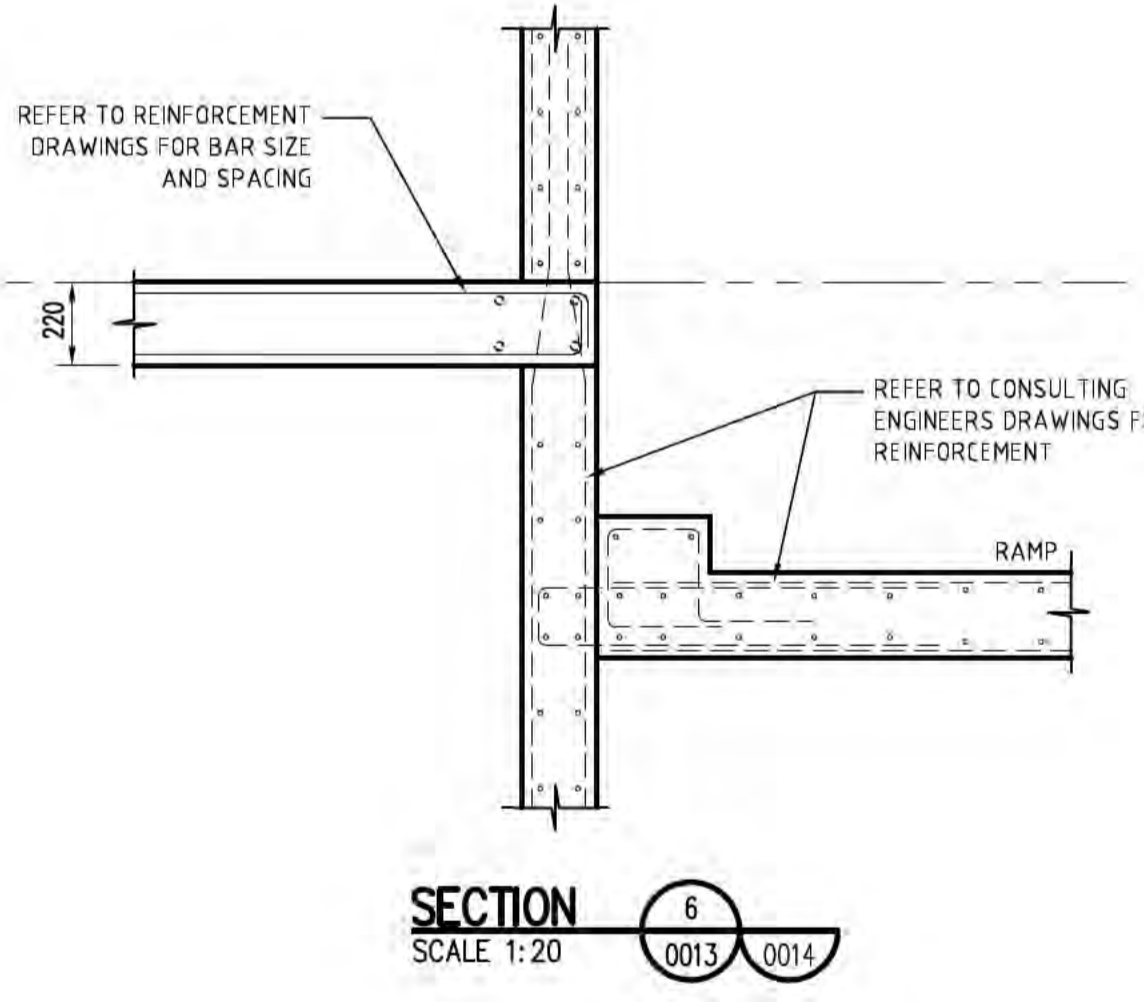
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SCALE 1:20



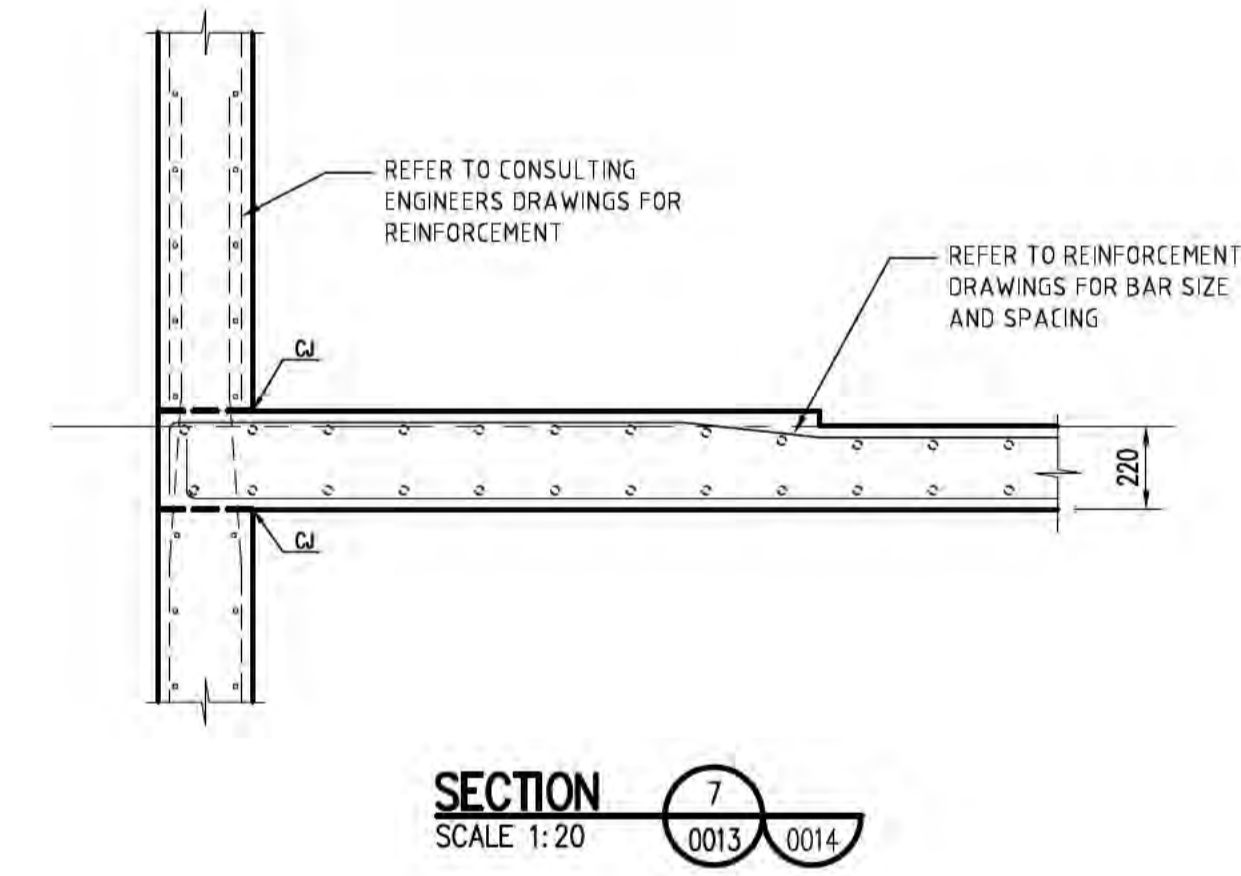
SECTION 4
SCALE 1:20



SECTION 5
SCALE 1:20



SECTION 6
SCALE 1:20



SECTION 7
SCALE 1:20

BASEMENT 01 - SECTIONS

FOR CONSTRUCTION

Key Plan: 	 Level 11, 528 Kent Street, Sydney NSW 2000 Tel: (02) 9287 2888 Fax: (02) 9287 2177		REVISIONS <table border="1"> <tr><td>No.</td><td>BY</td><td>DATE</td><td>DESCRIPTION</td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table>	No.	BY	DATE	DESCRIPTION					Print reduction bar: 	Project: MÉRITON SUITES CANBERRA, 40 ALLARA STREET, CANBERRA ACT 2061
				No.	BY	DATE	DESCRIPTION						
POST TENSION CONTRACTOR DRAWINGS DESIGNED: DS DRAWN: AL CHECKED: BC DATE ISSUED: OCT-2021	Title: BASEMENT 01 SECTIONS	Status: CONSTRUCTION	Project No.: 211651	Drawing No.: PT0015	Rev.: A								

**POST-TENSIONED SLAB AND BEAM
CONSTRUCTION FLOOR DESIGN PARAMETERS**

DESIGN LOADING: LIVE LOAD REDUCTIONS MAY BE USED WHERE ALLOWABLE BY AS1170, AND WHERE APPROVED BY THE PROJECTS CONSULTING ENGINEER

FLOOR LOADS: REFER TO STRUCTURAL 17091-S04-103

CONCRETE: GENERALLY 40MPa

FIRE RATING: UNLESS NOTED OTHERWISE SHALL BE: 2 HOURS MAX.

DEFLECTION LIMITATION:
 TOTAL DEFLECTION - SPANS L/500 OR 20mm
 TOTAL DEFLECTION - CANTILEVERS L/375
 INCREMENTAL DEFLECTION: L/750

NOTES: SEE ADJACENT

IMPORTANT NOTES

12.7 DIA. STRAND	SLAB SYSTEM
FINAL STRESS	AT CONCRETE STRENGTH = 40 MPa MIN, INCREASE LOAD IN EACH STRAND TO 156 KN U.N.O.

CUT CROSS RODS TO ALLOW MAXIMUM TENDON DRAPE - TYPICAL

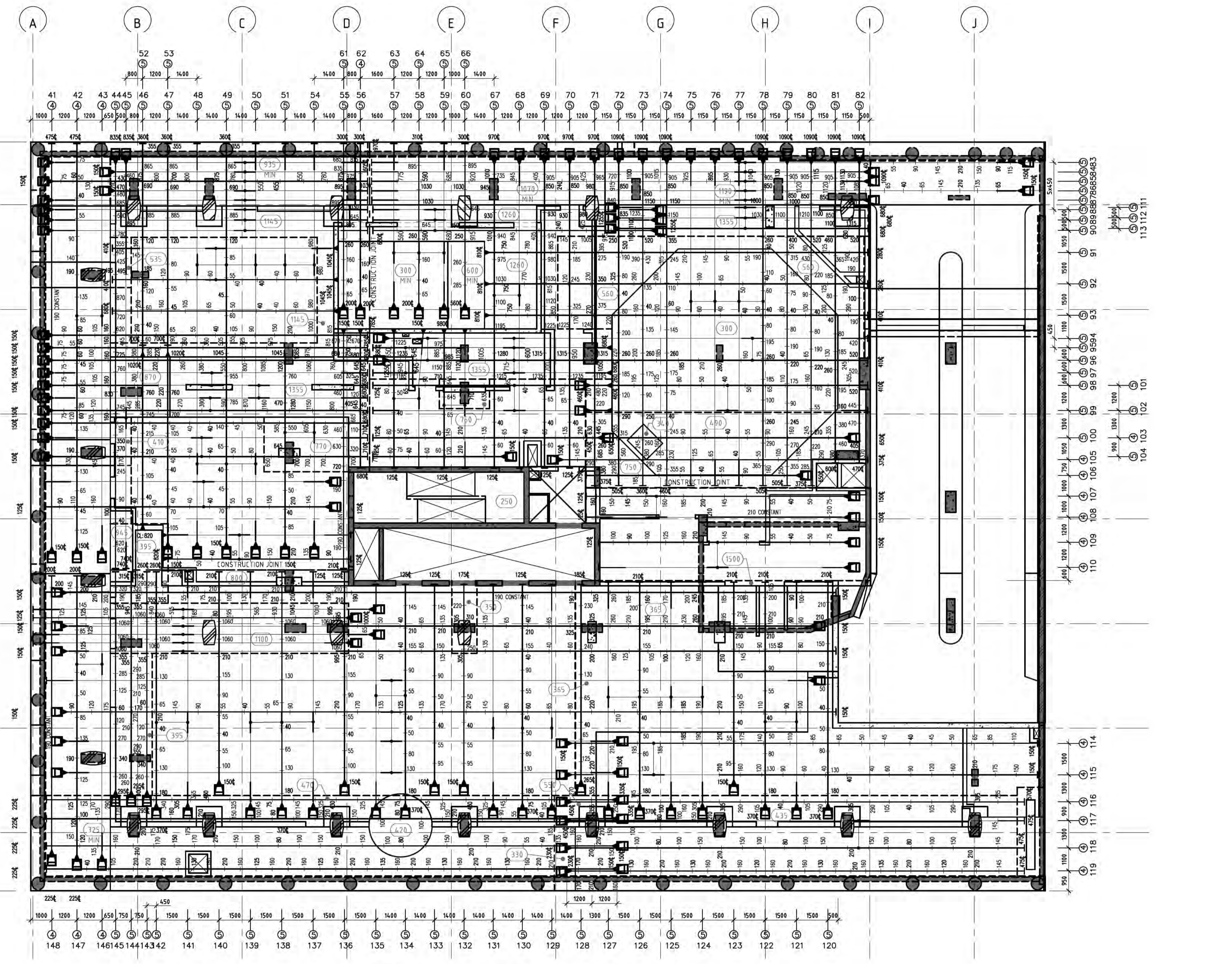
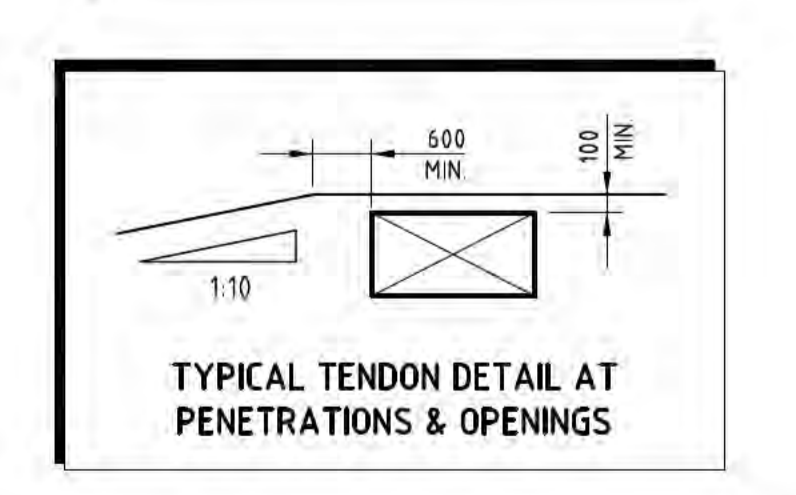
NOTE:
 LOCATION OF POST TENSIONING IS REPRESENTATIVE OF PROJECT STRUCTURE & SERVICES LOCATIONS IN THE LIKE, NOTE, ON-SITE LOCALISED RE-POSITIONING OF TENDONS MAY BE REQUIRED TO ALLOW FOR ANY DISCREPANCIES HIGHLIGHTED BETWEEN CONSULTANT'S & THE PT CONTRACTOR'S DRAWINGS

PRESTRESSING SYMBOLS

- * 100 DENOTES PROFILE TO BE READ FROM TOP OF SLAB
- ☒ LIVE END PAN ANCHORAGE.
- ☒ LIVE END PAN ANCHORAGE WITHOUT EXTRA PAN RED, TOP RED TO BE CUT TO FIT PANS
- ▶ LIVE END ANCHORAGE
- ◀ LIVE END ANCHORAGE TO BE STRESSED FROM UNDERSIDE (SOFFIT)
- DEAD END ANCHORAGE
- ◻ SWAGED DEAD END ANCHORAGE
- DENOTES TENDON NUMBER
- ⑤ DENOTES No. STRANDS IN TENDON
- 12.7 DENOTES 12.7dia. STRANDS IN TENDON
- ⊥ HOLDING DOWN BARS
- DENOTES ANCHORAGE HEIGHT FROM THE CENTRE
- DENOTES "PIG TAIL" TERMINATION DEAD END ANCHORAGE
- DENOTES 'x' NO. OF STRANDS

FOR CONSTRUCTION

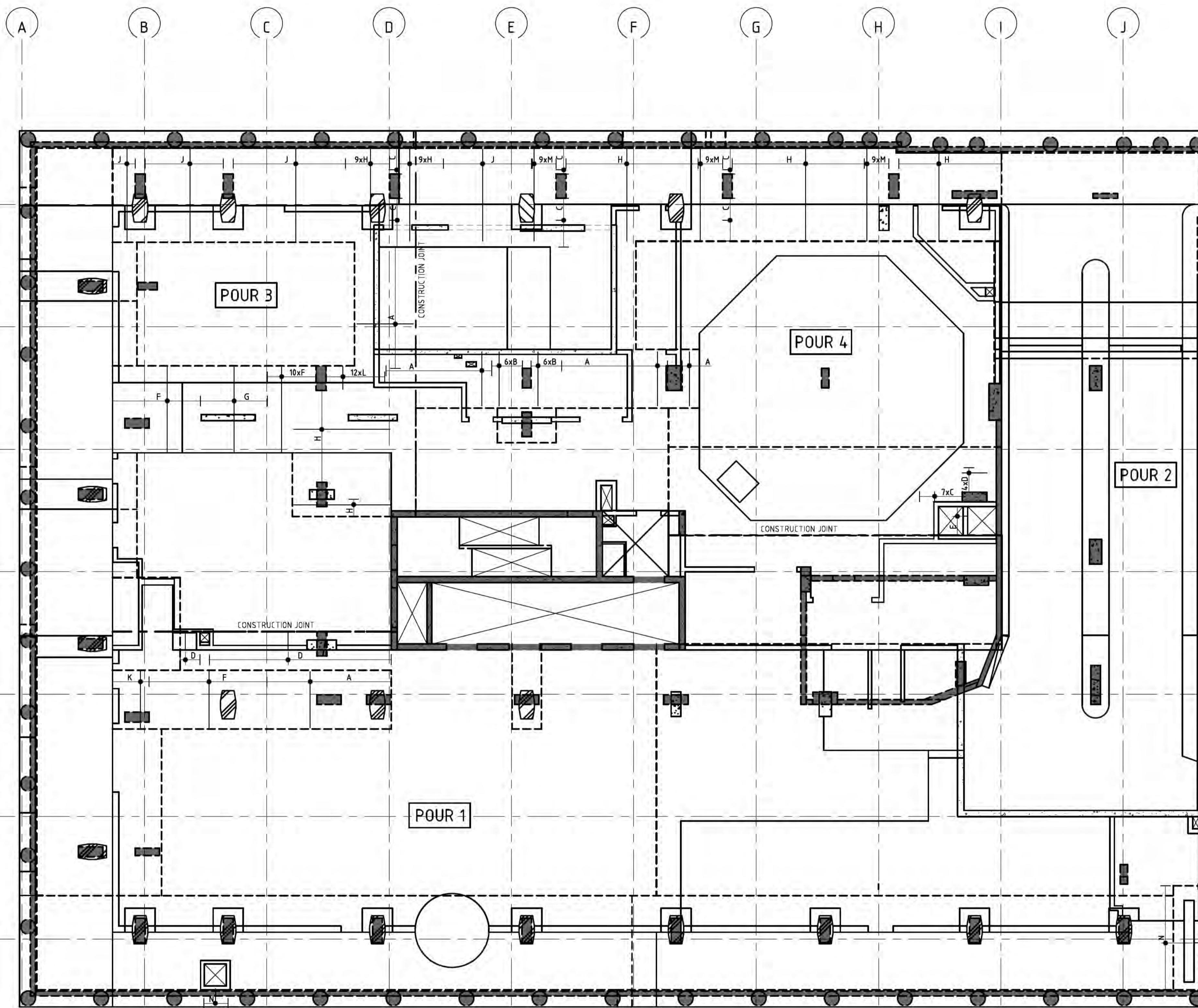
NOTE: TENDONS IN THIS DIRECTION HAVE PRIORITY



GROUND FLOOR - POST TENSIONING PLAN

ALL SLABS TO BE 250mm DEPTH U.N.O

			Print reduction bar: 	Project: MÉRITON SUITES CANBERRA, 40 ALLARA STREET, CANBERRA ACT 2061												
				Title: GROUND FLOOR POST TENSIONING PLAN												
REVISIONS: <table border="1"> <tr> <th>No.</th> <th>BY</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> <tr> <td>A</td> <td>A.L.</td> <td>21.12.2021</td> <td>ISSUED FOR CONSTRUCTION</td> </tr> <tr> <td>01</td> <td>A.L.</td> <td>21.10.2021</td> <td>ISSUED FOR APPROVAL</td> </tr> </table>			No.	BY	DATE	DESCRIPTION	A	A.L.	21.12.2021	ISSUED FOR CONSTRUCTION	01	A.L.	21.10.2021	ISSUED FOR APPROVAL	POST TENSION CONTRACTOR DRAWINGS DESIGNED: DS DRAWN: AL CHECKED: BC DATE ISSUED: OCT-2021	Status: CONSTRUCTION Project No.: 211651 Drawing No.: PT0021 Rev.: A
No.	BY	DATE	DESCRIPTION													
A	A.L.	21.12.2021	ISSUED FOR CONSTRUCTION													
01	A.L.	21.10.2021	ISSUED FOR APPROVAL													



GROUND FLOOR - U BARS & TIES REINFORCEMENT PLAN

A	N12-300	
B	N12-250	
C	N12-250	
D	N12-250	
E	N12-250	
F	N16-200	
G	N16-250	
H	N16-200	
J	N12-300	
K	N12-250	
L	N12-200	
M	N16-125	
N	N12-300	

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- COVER TO REINFORCEMENT U.N.O.

F _C 40MPa	SLAB		BEAMS	
	INTERNAL	EXTERNAL EXPOSURE A2	INTERNAL	EXTERNAL EXPOSURE A2
TOP	20	20	20	20x
BOTTOM	20	20	20	20x
SIDES	20	20	20	20x

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NOTE
SCHEDULER TO ADJUST STIRRUP HEIGHTS TO MATCH STEPS AND FOLDS.

FOR CONSTRUCTION

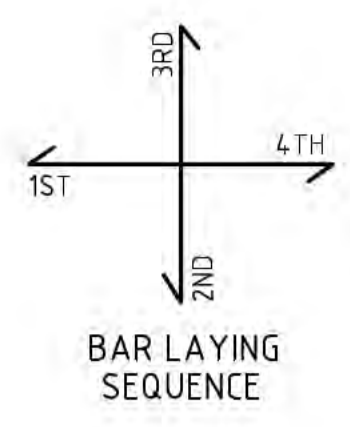
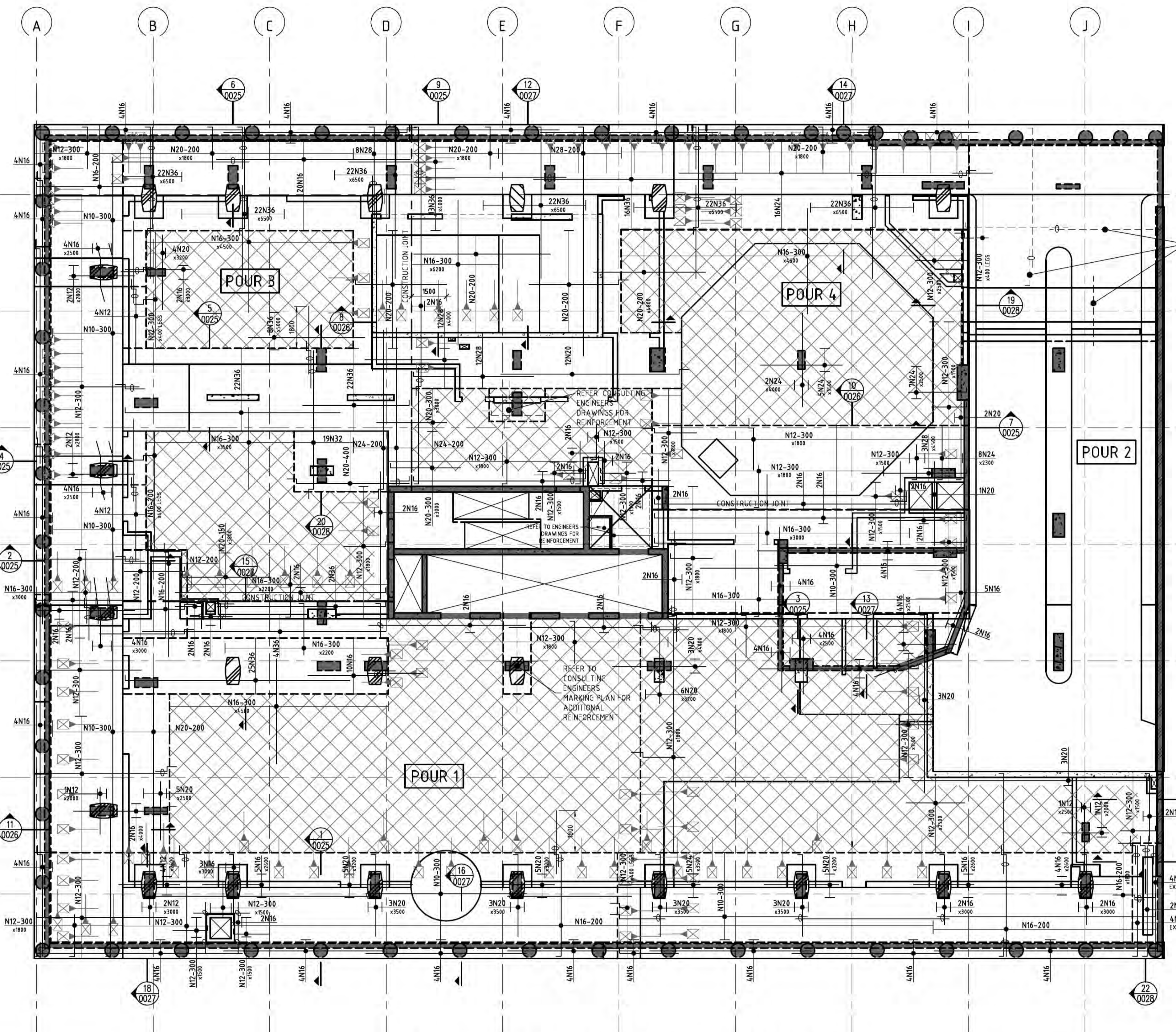
NET REINFORCEMENT QUANTITIES

AS SHOWN ON PLAN	8.44 TONNES
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NOTES:

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Key Plan:	 Karimbla Construction Services (NSW) Pty Limited Level 11, 528 Kent Street, Sydney NSW 2000 Tel: (02) 9287 2888 Fax: (02) 9287 2177	 Post Tensioning Contractor & Engineering Consultant	Print reduction bar: 	Project: MERITON SUITES CANBERRA, 40 ALLARA STREET, CANBERRA ACT 2061												
				Title: GROUND FLOOR - POUR 1 TIES & U-BARS REINFORCEMENT PLAN												
REVISIONS <table border="1"> <thead> <tr> <th>No.</th> <th>BY</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>A.L.</td> <td>21.12.2021</td> <td>ISSUED FOR CONSTRUCTION</td> </tr> <tr> <td>01</td> <td>A.L.</td> <td>21.10.2021</td> <td>ISSUED FOR APPROVAL</td> </tr> </tbody> </table>			No.	BY	DATE	DESCRIPTION	A	A.L.	21.12.2021	ISSUED FOR CONSTRUCTION	01	A.L.	21.10.2021	ISSUED FOR APPROVAL	POST TENSION CONTRACTOR DRAWINGS DESIGNED: DS DRAWN: AL CHECKED: BC DATE ISSUED: OCT-2021	Status: CONSTRUCTION Project No.: 211651 Drawing No.: PT0022 Rev.: A
No.	BY	DATE	DESCRIPTION													
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01	A.L.	21.10.2021	ISSUED FOR APPROVAL													



REINFORCEMENT NOTES

- CONCRETE STRENGTH F_c SHALL BE 40MPa INTERNAL AND 40MPa EXTERNAL U.N.O.
- REINFORCEMENT 'CALL UP' NOTATION
- 4 N16-300 T, EXT, (x) (x) — in lieu of mesh (excluded)

— not part of Reinf. allowance

— extra additional bars

— bar layer - (refer below)

— bar spacing centers - (if shown)

— bar diameter

— number of bars

— bar type - (refer below)
- BAR TYPES: (TO AUSTRALIAN STANDARD AS 1302)

N = DENOTES HOT ROLLED DEFORMED BAR (500 MPa)

R = DENOTES STRUCTURAL GRADE PLAIN BAR (250 MPa)

BAR LAYERS: (SEQUENCE AS SHOWN)

T = DENOTES TOP REINFORCEMENT

B = DENOTES BOTTOM REINFORCEMENT

T&B = DENOTES BARS IN BOTH LAYERS
- LAPS IN REINFORCEMENT SHALL BE:

LAP	BAR TYPE & DIAMETER					
	N16	N16	N20	N24	N28	N32
500	700	1100	1450	1900	2300	

NB: WHERE BARS OF DIFFERENT DIAMETERS LAP THE LESSER OF THE TWO SHALL BE USED. THE MINIMUM LAP FOR ALL FABRIC (MESH) REINFORCEMENT SHALL BE TWO TRANSVERSE BARS PLUS 25 mm.
- COVER TO REINFORCEMENT U.N.O.

F _c 40MPa	SLAB		BEAMS	
	INTERNAL EXPOSURE	EXTERNAL EXPOSURE	INTERNAL	EXTERNAL EXPOSURE
TOP	20	20	20	20x
BOTTOM	20	20	20	20x
SIDES	20	20	20	20x

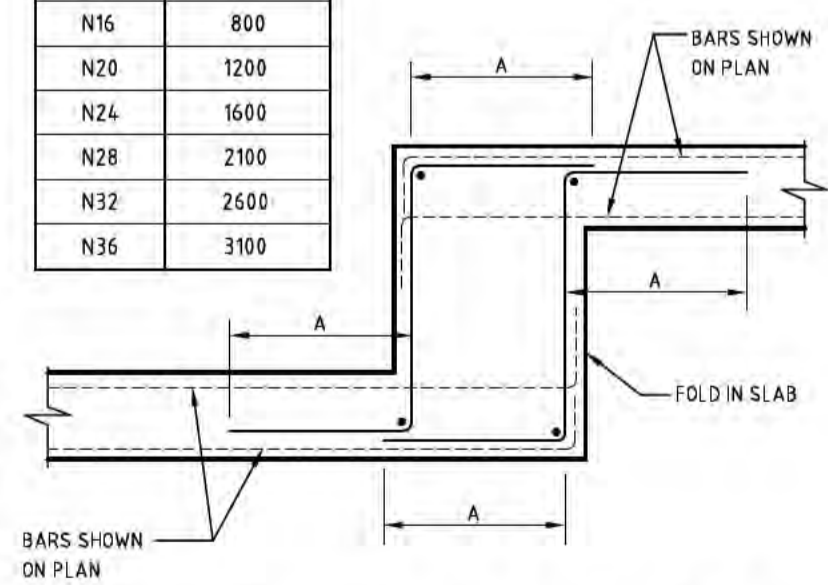
* MIN. APPLY INTERNAL COVER WHERE GREATER
- FOR ALL DESIGNATED REINFORCEMENT & PLACEMENT OF LAPS PERTAINING TO THIS DRAWING, REFER TO RELEVANT PLANS, ELEVATIONS, SECTIONS, DETAILS & ASSOCIATED NOTES. NOT SHOWN ON THIS DRAWING ARE THE FOLLOWING ITEMS (S1) THROUGH (S11) BUT, THESE SHALL BE PROVIDED IN ALL CIRCUMSTANCES AS REQUIRED U.N.O.
- FOR ALL EXTRA REINFORCEMENT NOT SHOWN ON PLAN REFER TO SLAB SECTIONS & TYPICAL DETAILS. REINFORCEMENT TAGGED ON SECTION MAY NOT BE SHOWN ON PLAN.
- REFER DRAWING PT001 FOR TYPICAL ANTI-BURST REINFORCEMENT REQUIREMENTS FOR POST TENSIONING ELEMENTS.
- PROVIDE N12-600 U.N.O. DISTRIBUTION BARS ONLY AS OTHERWISE NECESSARY TO SUPPORT MAIN REINFORCEMENT. ALL ADDITIONAL DISTRIBUTION REINFORCEMENT IS TO BE EXCLUDED FROM PT CONTRACTOR REINF. ALLOWANCE.
- TRIMMER BARS: PROVIDE REINFORCEMENT ONLY WHERE A PENETRATION IS GREATER THAN 300mm x 300mm & UP TO & INCLUDING 900mm x 900mm. SUCH PENETRATIONS DENOTED ON PLAN AS (T.P.) SHALL HAVE THE FOLLOWING MINIMUM REINFORCEMENT:

500 MIN. TYP.
(T.P.)
2N16 BARS PLACED TOP & BOTTOM TO ALL SIDES. EXTEND ALL BARS AS SHOWN.
- THE TOP REINFORCEMENT SHALL NOT BE INSTALLED UNTIL TENDONS ARE PLACED IN ACCORDANCE WITH POST TENSIONING DOCUMENTATION.
- | | |
|--|-------------------------|
| | DENOTES S12 MESH BOTTOM |
|--|-------------------------|

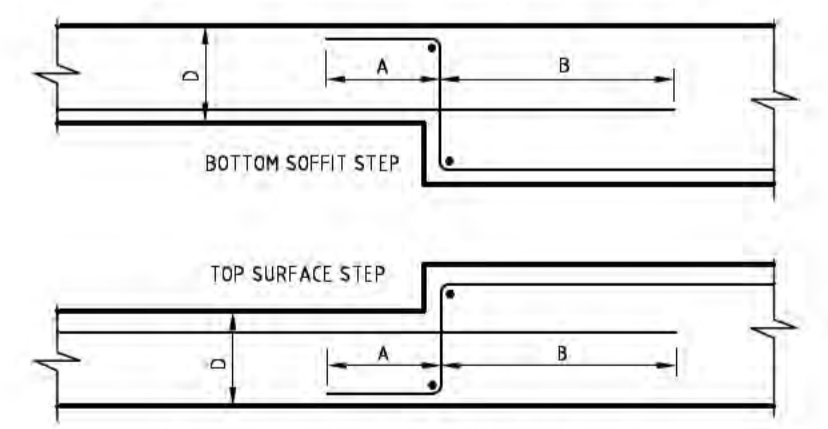
FOR CONSTRUCTION

BAR DIA.	A	B
N12	500 - D	500
N16	800 - D	800
N20	1200 - D	1200
N24	1600 - D	1600
N28	2100 - D	2100
N32	2600 - D	2600
N36	3100 - D	3100

BAR DIA.	A
N12	500
N16	800
N20	1200
N24	1600
N28	2100
N32	2600
N36	3100



TYPICAL REINFORCEMENT LEG LENGTH AT FOLDS U.N.O.



TYPICAL REINFORCEMENT BAR LAP AT STEPS U.N.O.

GROUND FLOOR - BOTTOM REINFORCEMENT PLAN

NET REINFORCEMENT QUANTITIES

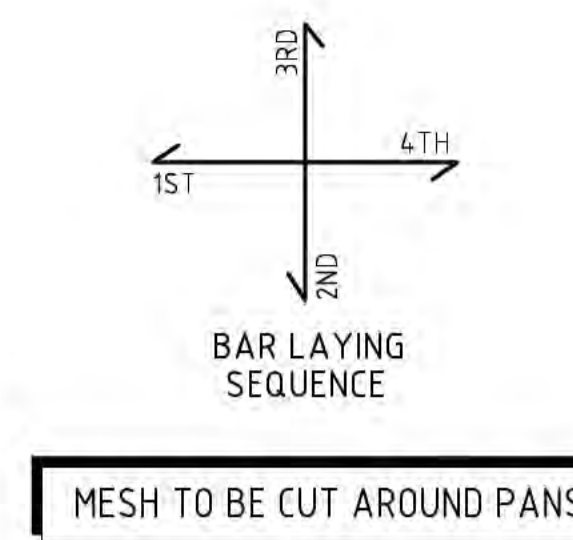
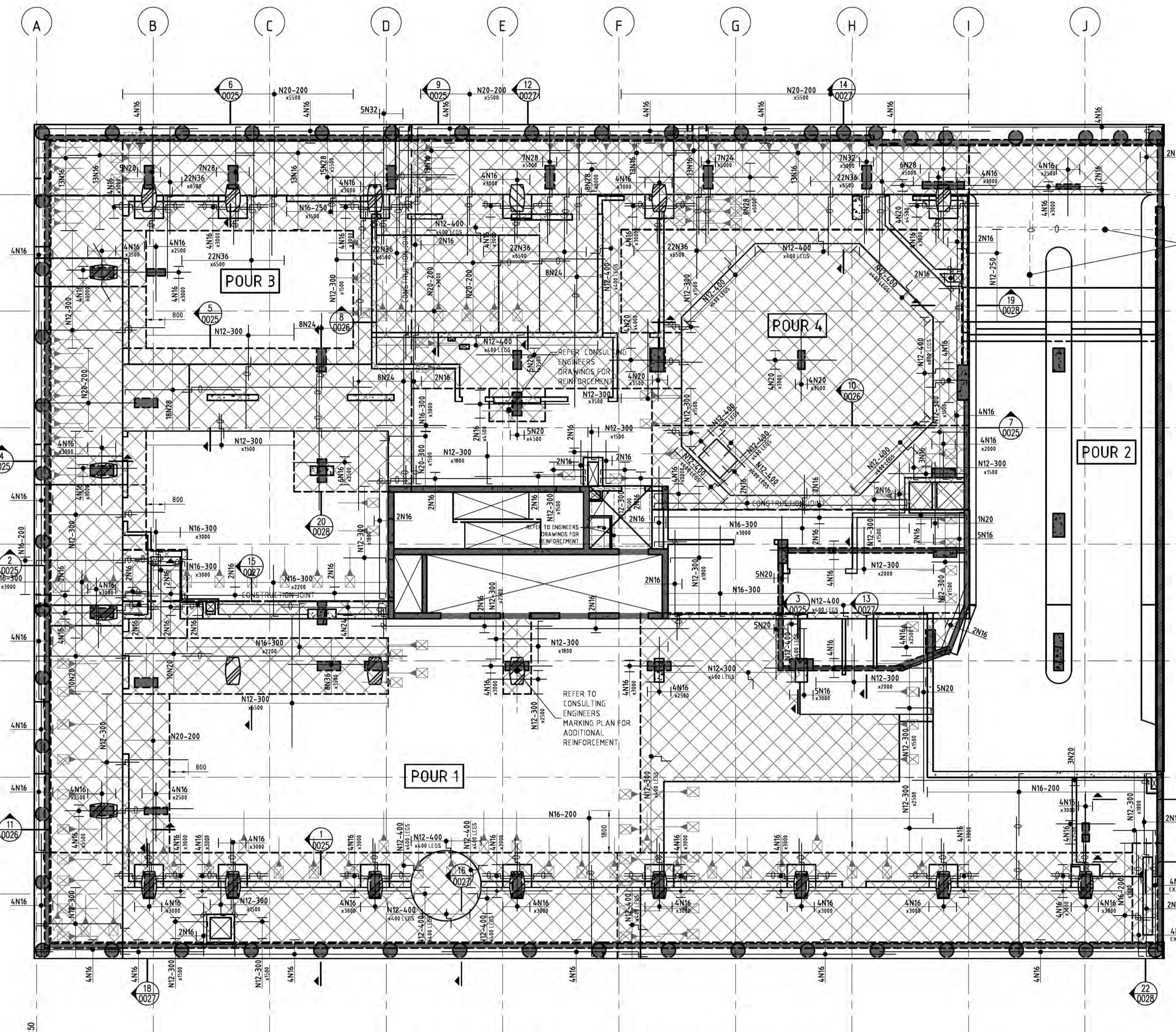
AS SHOWN ON PLAN	5157 TONNES
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NOTES:

- NET QUANTITIES DO NOT INCLUDE ROLLING MARGIN OR WASTAGE.
- REINFORCEMENT MARKED THUS IS TO BE SCHEDULED SEPARATELY *
- STEEL SCHEDULER TO NOTIFY BUILDER & PTWORKS IF SUPPLIED QUANTITIES DIFFER FROM ABOVE.

TYPICAL ARRANGEMENT OF BOTTOM REINFORCEMENT AT STEPS < 150

	<p>KARIMBLA CONSTRUCTION SERVICES (NSW) PTY LIMITED Level 11, 528 Kent Street, Sydney NSW 2000 Tel: (02) 9287 2888 Fax: (02) 9287 2777</p>	<p>PTWORKS Post Tensioning Contractor & Engineering Consultant</p>	<p>REVISIONS</p> <table border="1"> <tr> <th>No.</th> <th>BY</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> <tr> <td>A</td> <td>A.L.</td> <td>21.12.2021</td> <td>ISSUED FOR CONSTRUCTION</td> </tr> <tr> <td>01</td> <td>A.L.</td> <td>21.10.2021</td> <td>ISSUED FOR APPROVAL</td> </tr> </table>	No.	BY	DATE	DESCRIPTION	A	A.L.	21.12.2021	ISSUED FOR CONSTRUCTION	01	A.L.	21.10.2021	ISSUED FOR APPROVAL	<p>Print reduction bar:</p> <p>0 10 20 30 40 50 FULL SIZE SHEET SIZE A1</p>	<p>Project: MERITON SUITES CANBERRA, 40 ALLARA STREET, CANBERRA ACT 2061</p> <p>Title: GROUND FLOOR - POUR 1 BOTTOM REINFORCEMENT PLAN</p> <p>Status: CONSTRUCTION</p>
				No.	BY	DATE	DESCRIPTION										
A	A.L.	21.12.2021	ISSUED FOR CONSTRUCTION														
01	A.L.	21.10.2021	ISSUED FOR APPROVAL														
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DESIGNED	DS																
DRAWN	AL																
CHECKED	BC																
DATE ISSUED	OCT-2021																



REINFORCEMENT NOTES

- CONCRETE STRENGTH F_c SHALL BE 40MPa INTERNAL AND 40MPa EXTERNAL U.N.O.
- REINFORCEMENT 'CALL UP' NOTATION
- 4 N16-300 T, EXT, (x) (x) — in lieu of mesh (excluded)

— not part of Reinf. allowance

— extra additional bars

— bar layer - (refer below)

— bar spacing centers - (if shown)

— bar diameter

— number of bars

— bar type - (refer below)
- BAR TYPES (TO AUSTRALIAN STANDARD AS 1302)

N = DENOTES HOT ROLLED DEFORMED BAR (500 MPa)

R = DENOTES STRUCTURAL GRADE PLAIN BAR (250 MPa)

BAR LAYERS (SEQUENCE AS SHOWN)

T = DENOTES TOP REINFORCEMENT

B = DENOTES BOTTOM REINFORCEMENT

T&B = DENOTES BARS IN BOTH LAYERS
- LAPS IN REINFORCEMENT SHALL BE:

LAP	BAR TYPE & DIAMETER					
	N12	N16	N20	N24	N28	N32
500	700	1100	1450	1900	2300	

NB WHERE BARS OF DIFFERENT DIAMETERS LAP THE LESSER OF THE TWO SHALL BE USED. THE MINIMUM LAP FOR ALL FABRIC (MESH) REINFORCEMENT SHALL BE TWO TRANSVERSE BARS PLUS 25 mm.
- COVER TO REINFORCEMENT U.N.O.

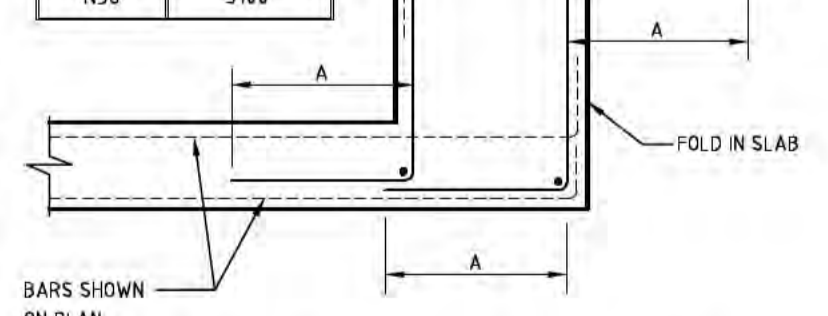
F _c 40MPa	SLAB		BEAMS	
	INTERNAL	EXTERNAL	INTERNAL	EXTERNAL
TOP	20	20	20	20x
BOTTOM	20	20	20	20x
SIDES	20	20	20	20x

* MIN. APPLY INTERNAL COVER WHERE GREATER
- FOR ALL DESIGNATED REINFORCEMENT & PLACEMENT OF LAPS PERTAINING TO THIS DRAWING, REFER TO RELEVANT PLANS, ELEVATIONS, SECTIONS, DETAILS & ASSOCIATED NOTES. NOT SHOWN ON THIS DRAWING ARE THE FOLLOWING ITEMS (S1) THROUGH (S11) BUT, THESE SHALL BE PROVIDED IN ALL CIRCUMSTANCES AS REQUIRED U.N.O.
- FOR ALL EXTRA REINFORCEMENT NOT SHOWN ON PLAN REFER TO SLAB SECTIONS & TYPICAL DETAILS. REINFORCEMENT TAGGED ON SECTION MAY NOT BE SHOWN ON PLAN.
- REFER DRAWING PT001 FOR TYPICAL ANTI-BURST REINFORCEMENT REQUIREMENTS FOR POST TENSIONING ELEMENTS.
- PROVIDE N12-600 U.N.D. DISTRIBUTION BARS ONLY AS OTHERWISE NECESSARY TO SUPPORT MAIN REINFORCEMENT. ALL ADDITIONAL DISTRIBUTION REINFORCEMENT IS TO BE EXCLUDED FROM PT CONTRACTOR REINF. ALLOWANCE.
- TRIMMER BARS. PROVIDE REINFORCEMENT ONLY WHERE A PENETRATION IS GREATER THAN 300mm x 300mm & UP TO & INCLUDING 900mm x 900mm. SUCH PENETRATIONS DENOTED ON PLAN AS (T.P.) SHALL HAVE THE FOLLOWING MINIMUM REINFORCEMENT:
- THE TOP REINFORCEMENT SHALL NOT BE INSTALLED UNTIL TENDONS ARE PLACED IN ACCORDANCE WITH POST TENSIONING DOCUMENTATION.
- DENOTES 500MM MESH TOP

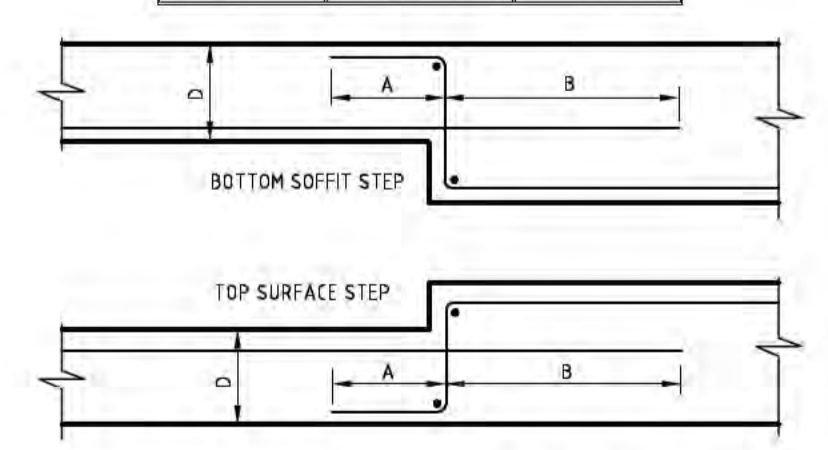
FOR CONSTRUCTION

BAR DIA	A	B
N12	500 - D	500
N16	800 - D	800
N20	1200 - D	1200
N24	1600 - D	1600
N28	2100 - D	2100
N32	2600 - D	2600
N36	3100 - D	3100

BAR DIA	A
N12	500
N16	800
N20	1200
N24	1600
N28	2100
N32	2600
N36	3100



TYPICAL REINFORCEMENT LEG LENGTH AT FOLDS U.N.O.



TYPICAL REINFORCEMENT BAR LAP AT STEPS U.N.O.

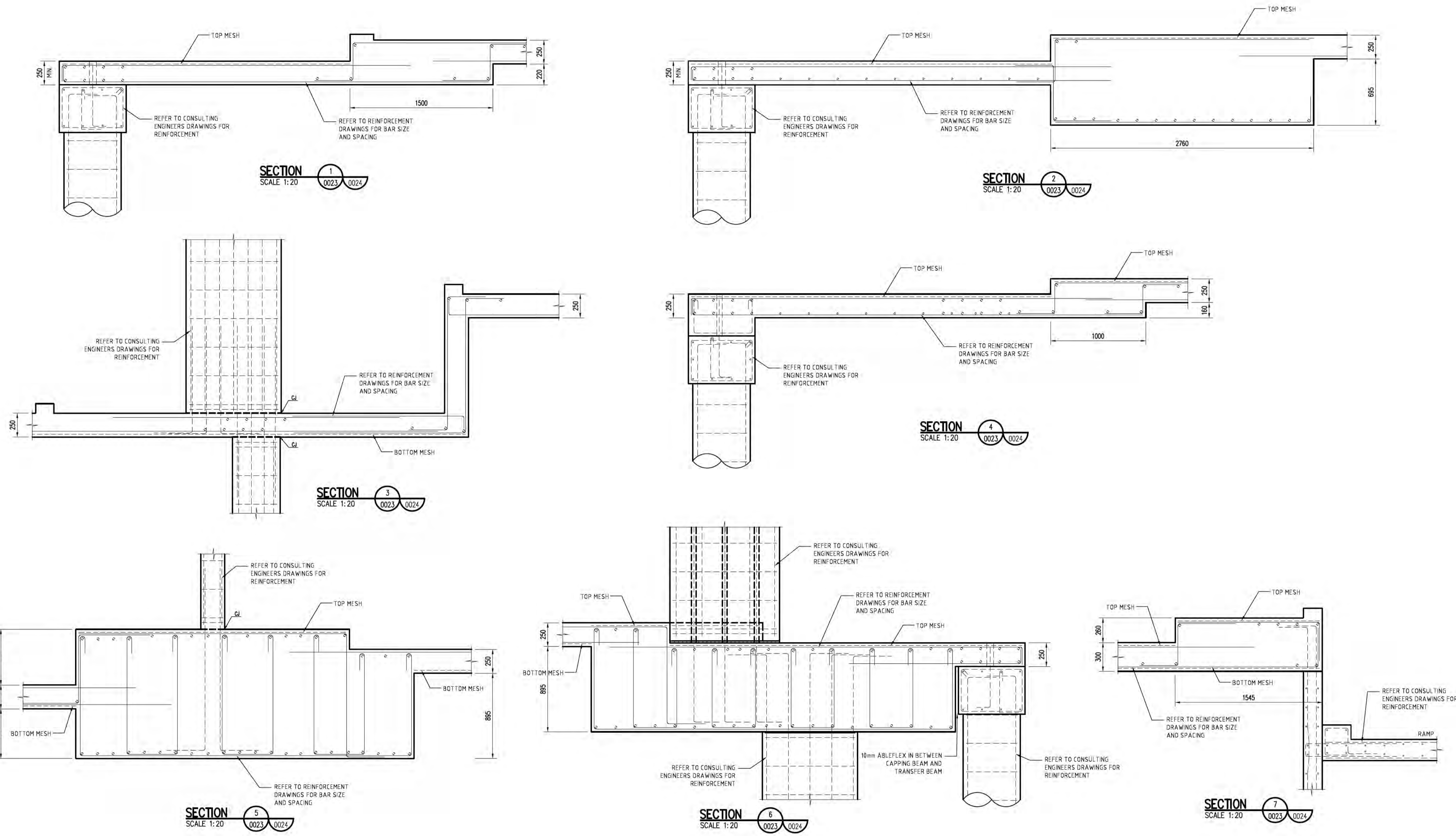
GROUND FLOOR - TOP REINFORCEMENT PLAN

NET REINFORCEMENT QUANTITIES	
AS SHOWN ON PLAN	34.07 TONNES

NOTES

- NET QUANTITIES DO NOT INCLUDE ROLLING MARGIN OR WASTAGE.
- REINFORCEMENT MARKED THUS IS TO BE SCHEDULED SEPARATELY *
- STEEL SCHEDULER TO NOTIFY BUILDER & PTWORKS IF SUPPLIED QUANTITIES DIFFER FROM ABOVE.

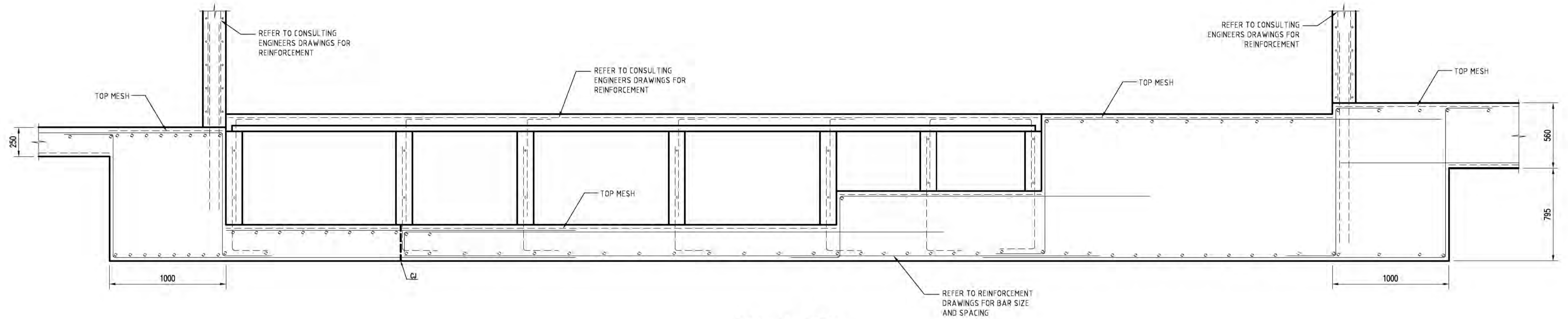
TYPICAL ARRANGEMENT OF TOP REINFORCEMENT AT STEPS <50



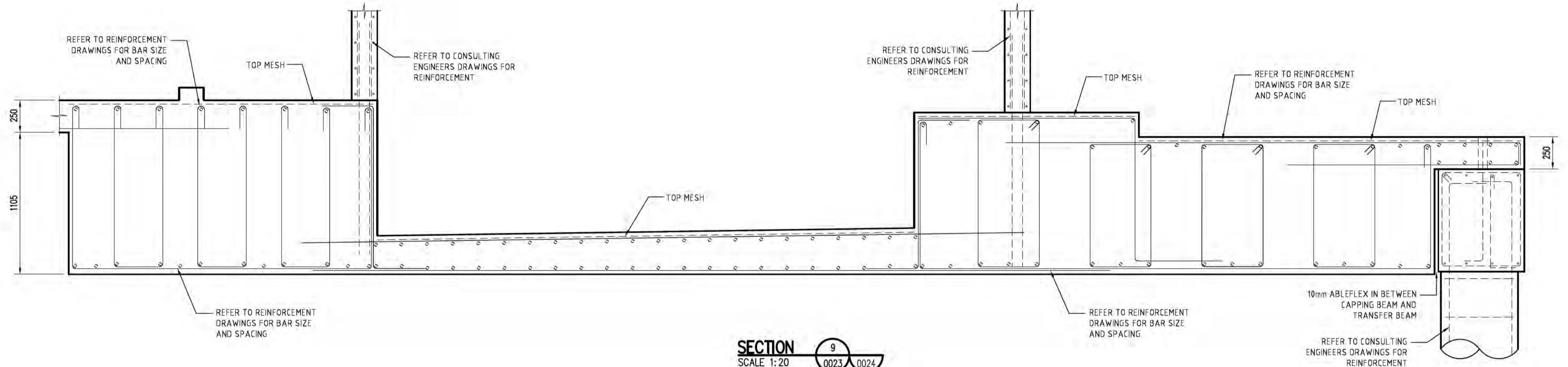
GROUND FLOOR - SECTIONS SHEET 1

FOR CONSTRUCTION

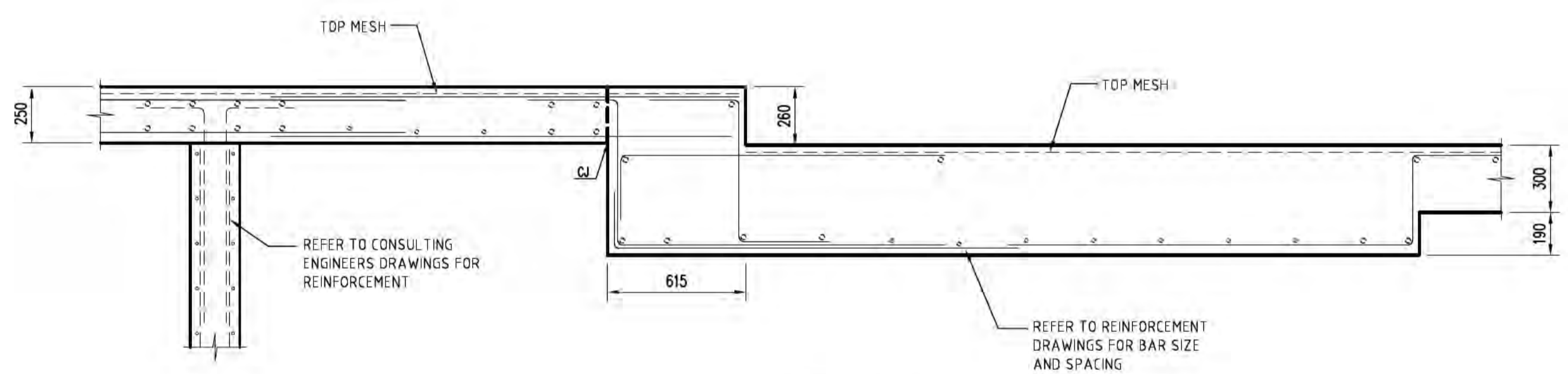
Key Plan: 	 KARIMBLA CONSTRUCTION SERVICES (NSW) PTY LIMITED <small>Level 11, 528 Kent Street, Sydney NSW 2000 Tel: (02) 9287 2888 Fax: (02) 9287 2777</small>	 PTWORKS Post Tensioning Contractor & Engineering Consultant	Print reduction bar: <small>FULL SIZE SHEET SIZE A1</small>	Project: MÉRITON SUITES CANBERRA, 40 ALLARA STREET, CANBERRA ACT 2061								
				Title: GROUND FLOOR SECTIONS - SHEET 1								
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Status: CONSTRUCTION			Project No.: 211651	Drawing No.: PT0025	Rev.: A							



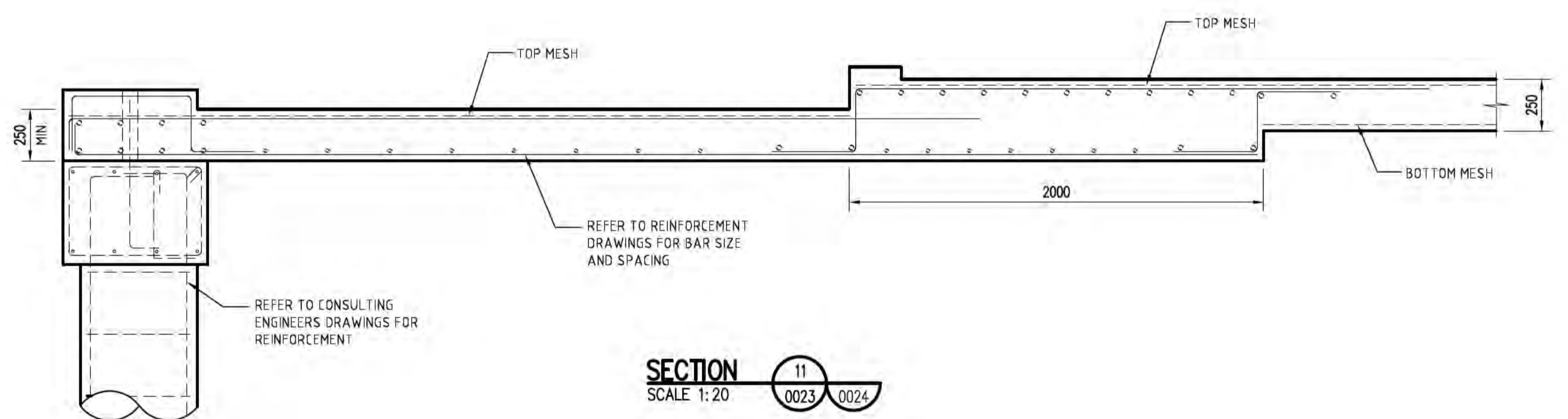
SECTION 8
SCALE 1:20



SECTION 9
SCALE 1:20



SECTION 10
SCALE 1:20

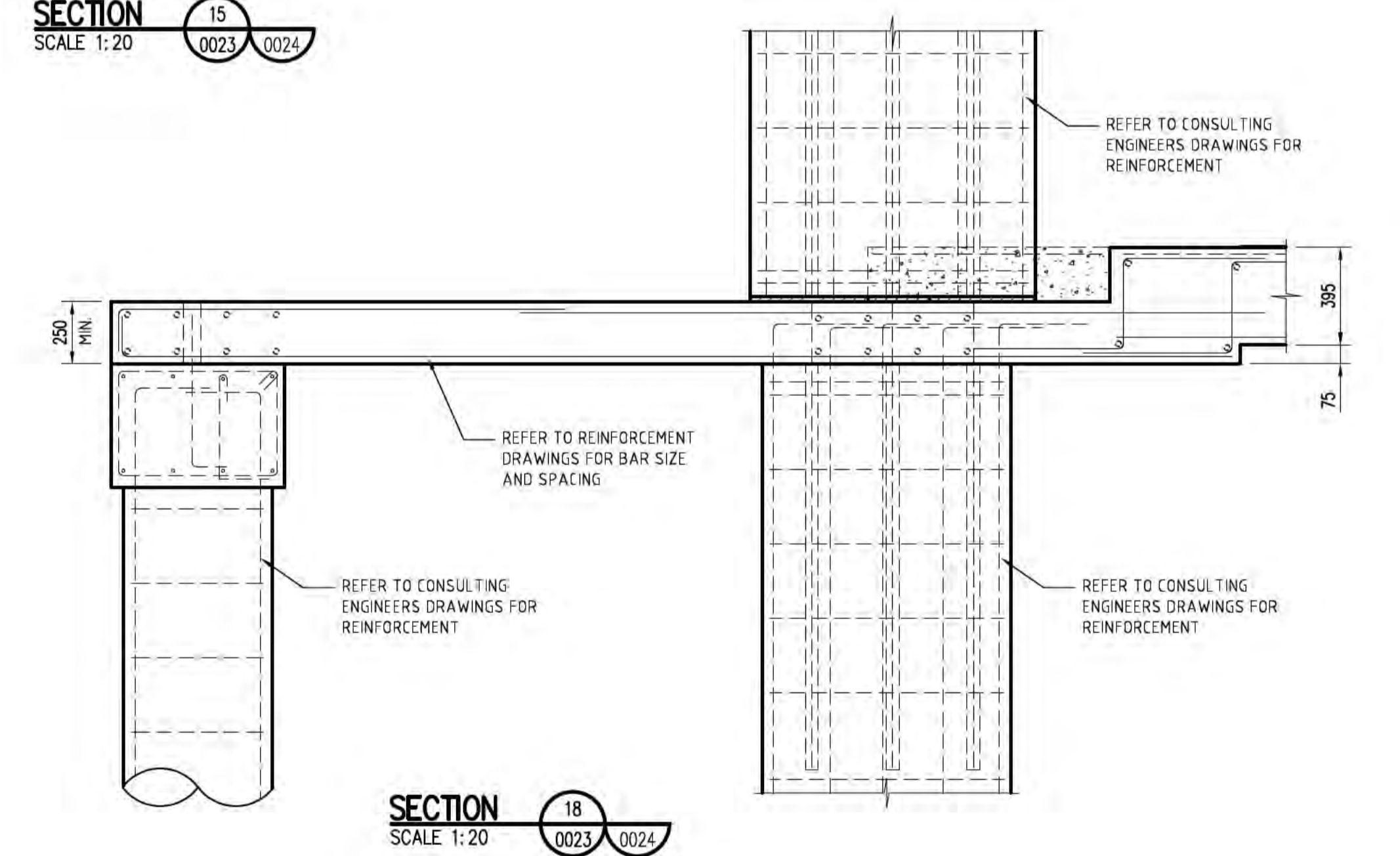
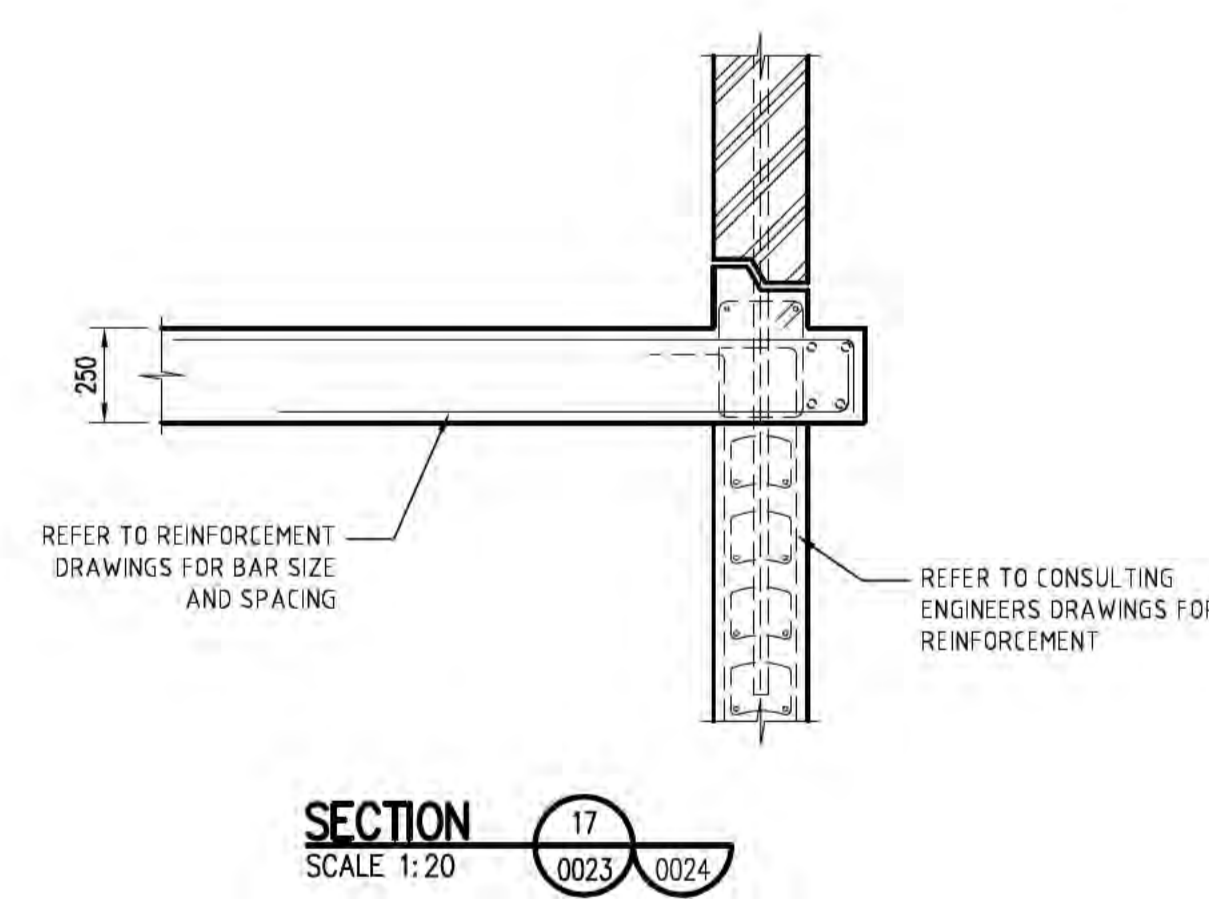
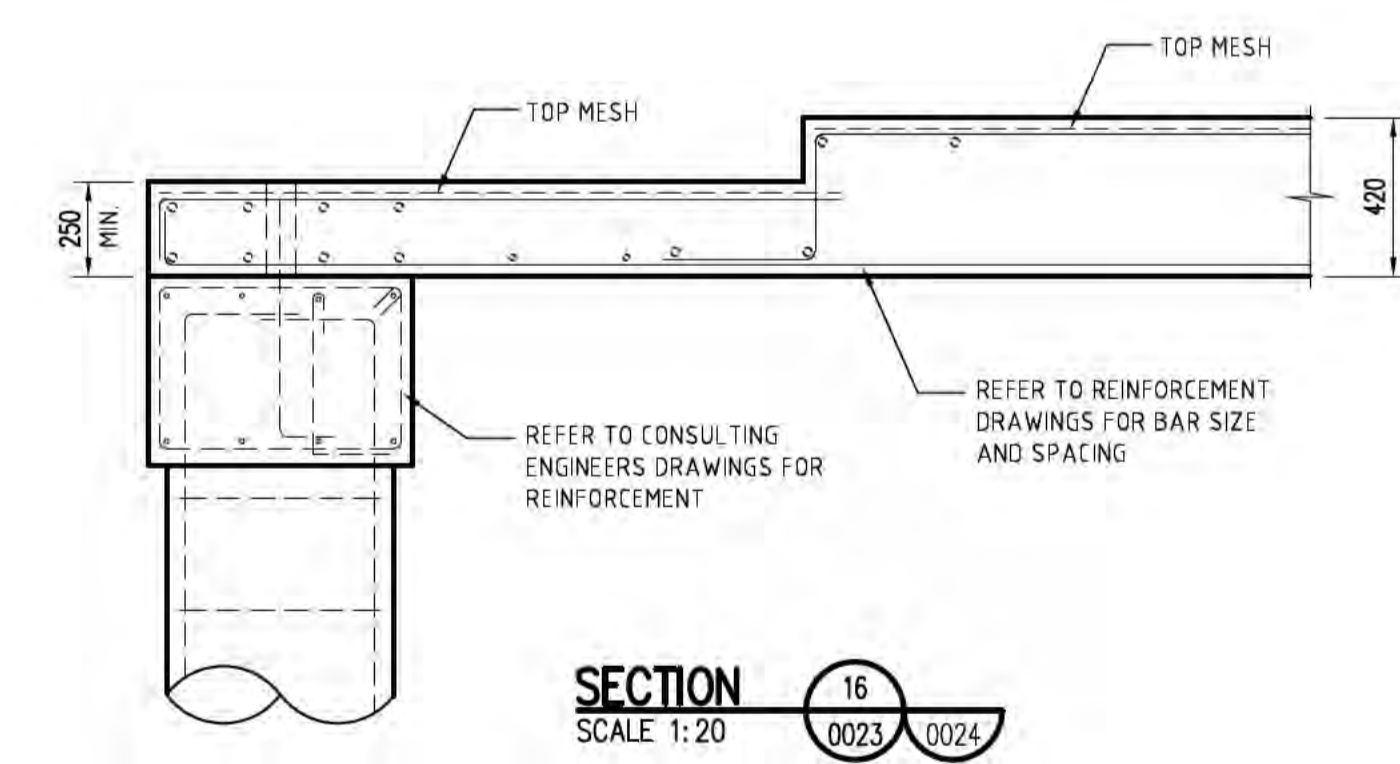
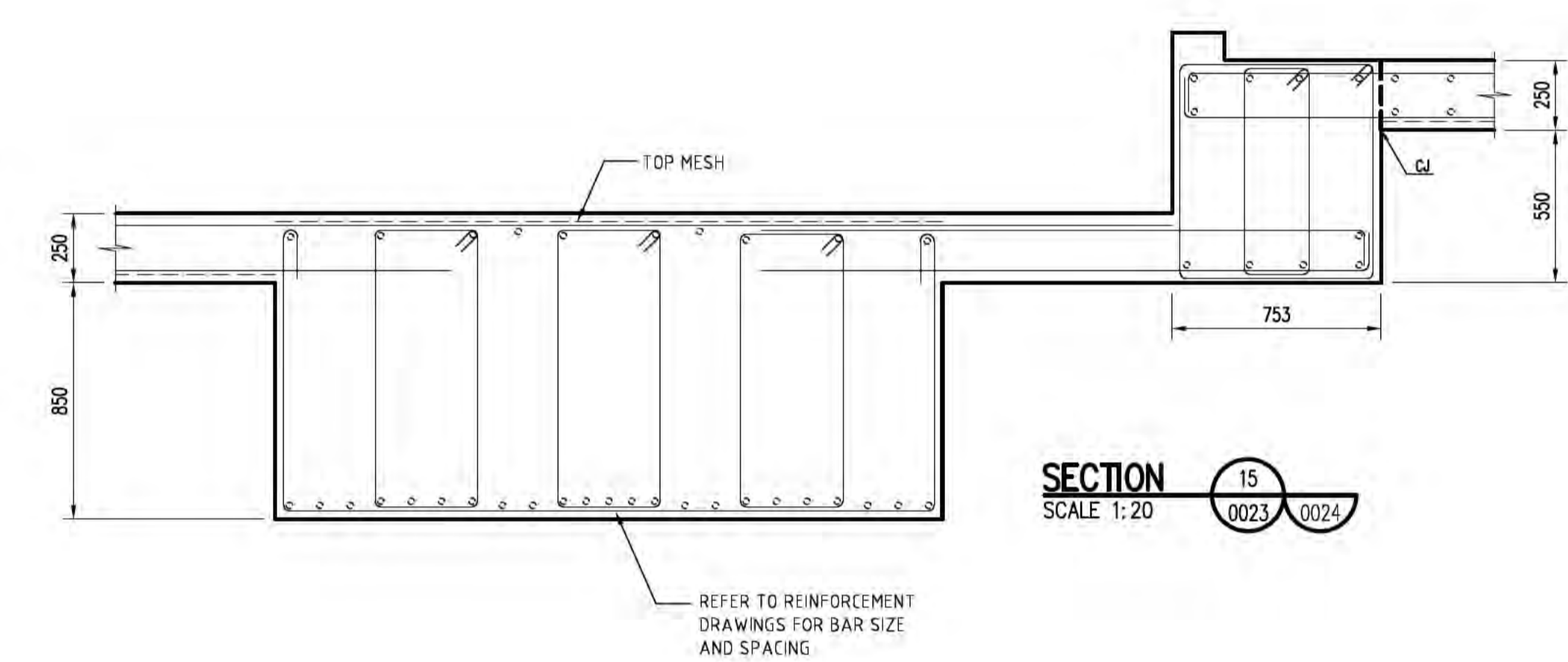
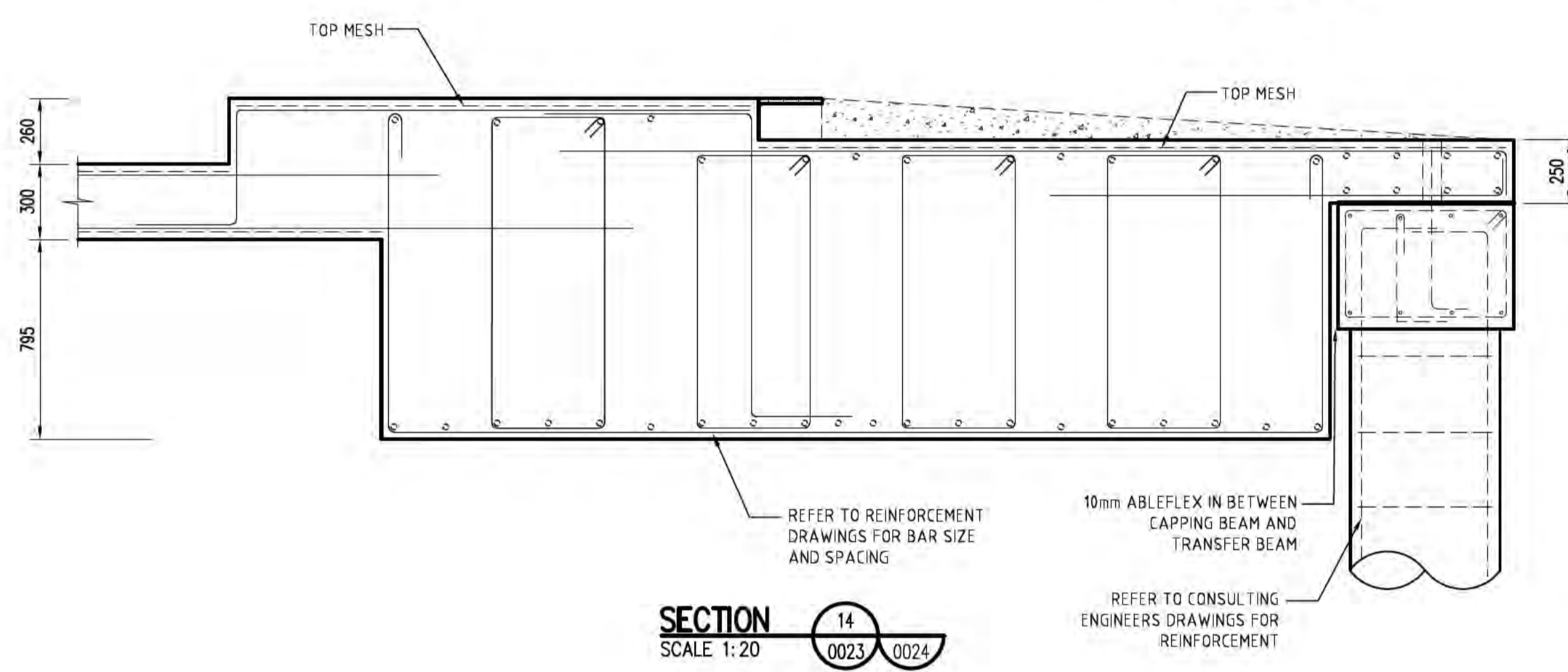
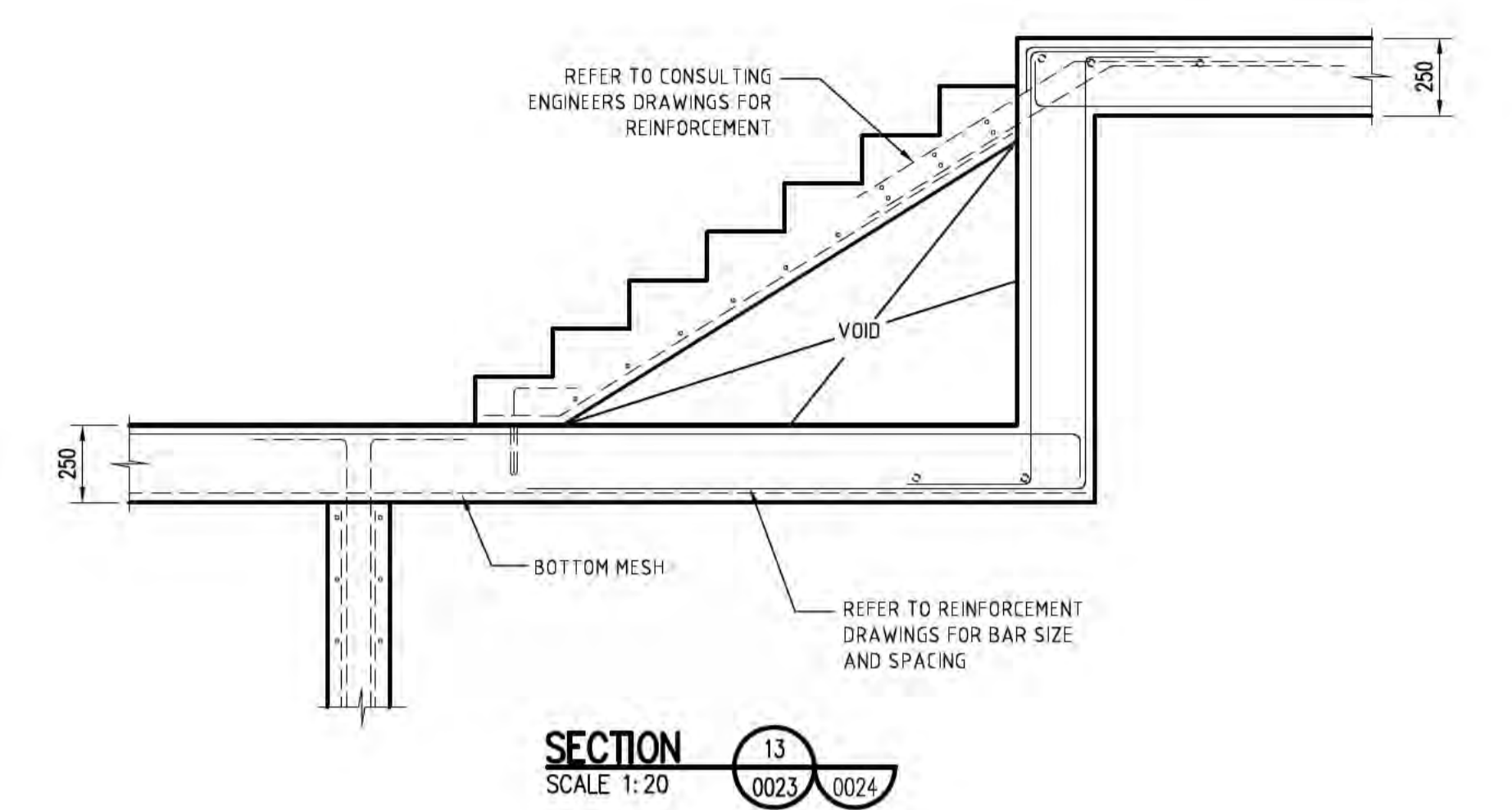
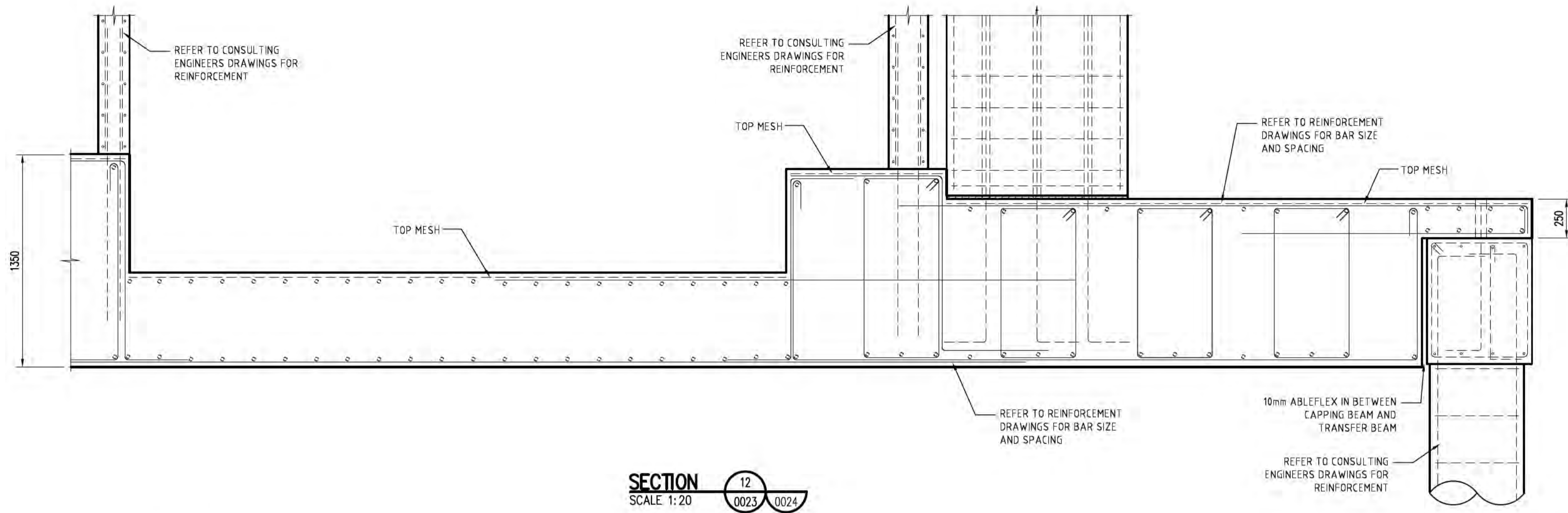


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GROUND FLOOR - SECTIONS SHEET 2

FOR CONSTRUCTION

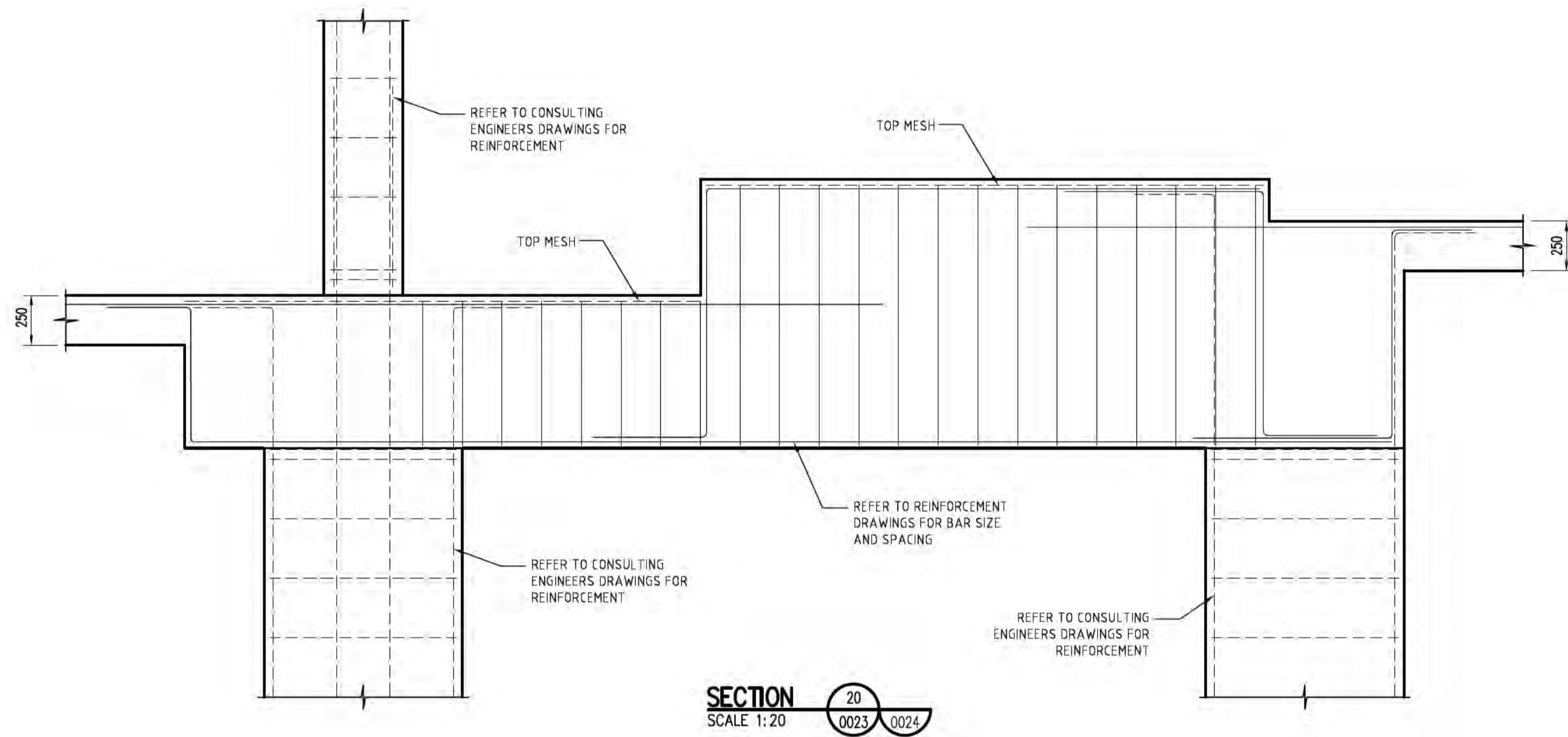
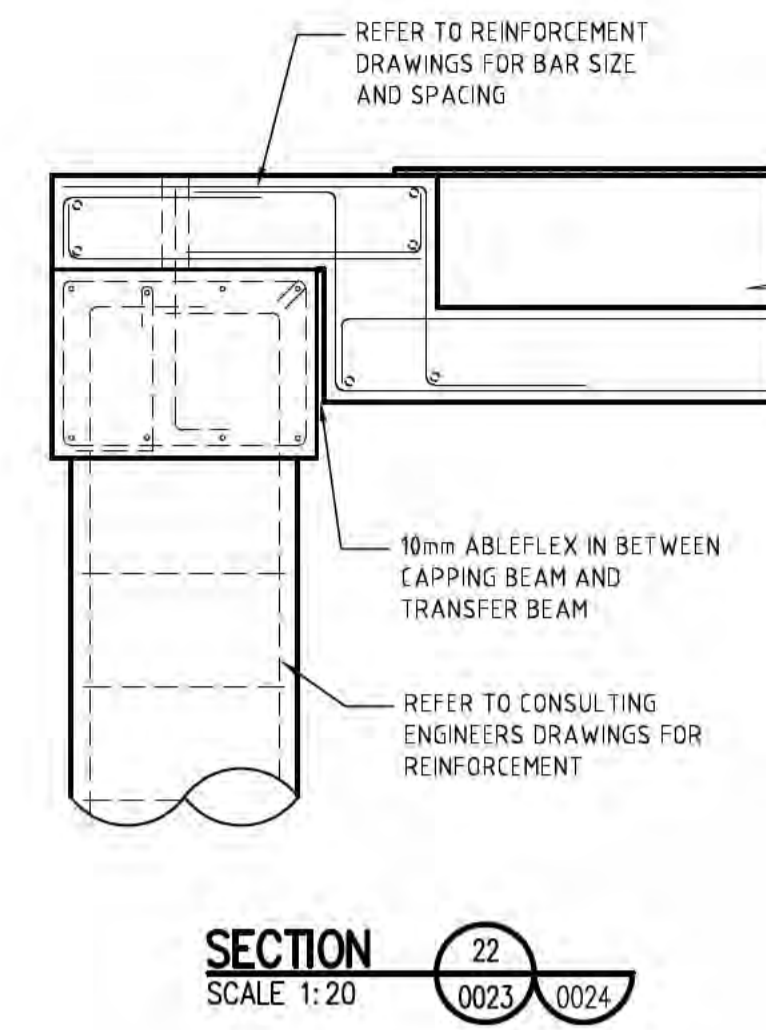
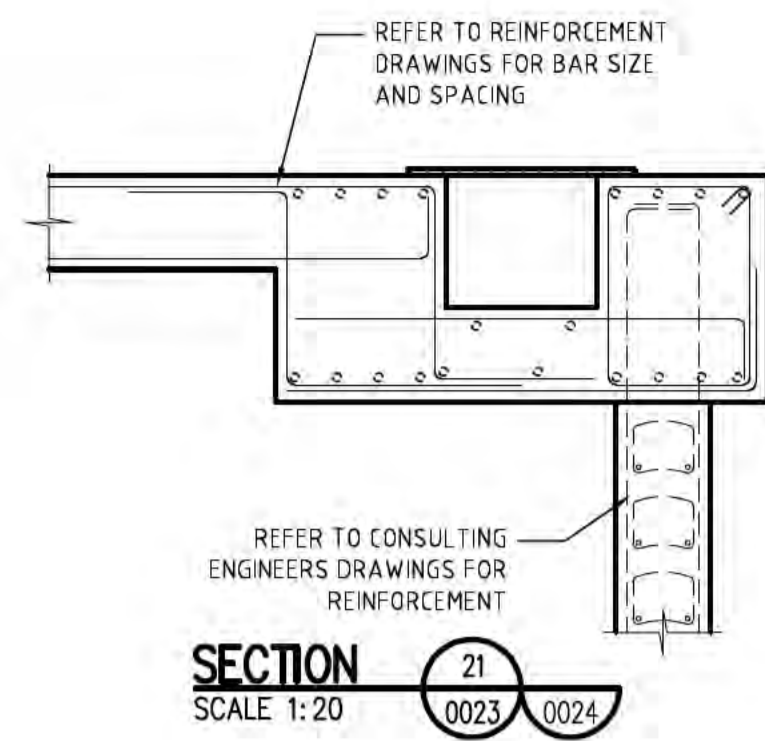
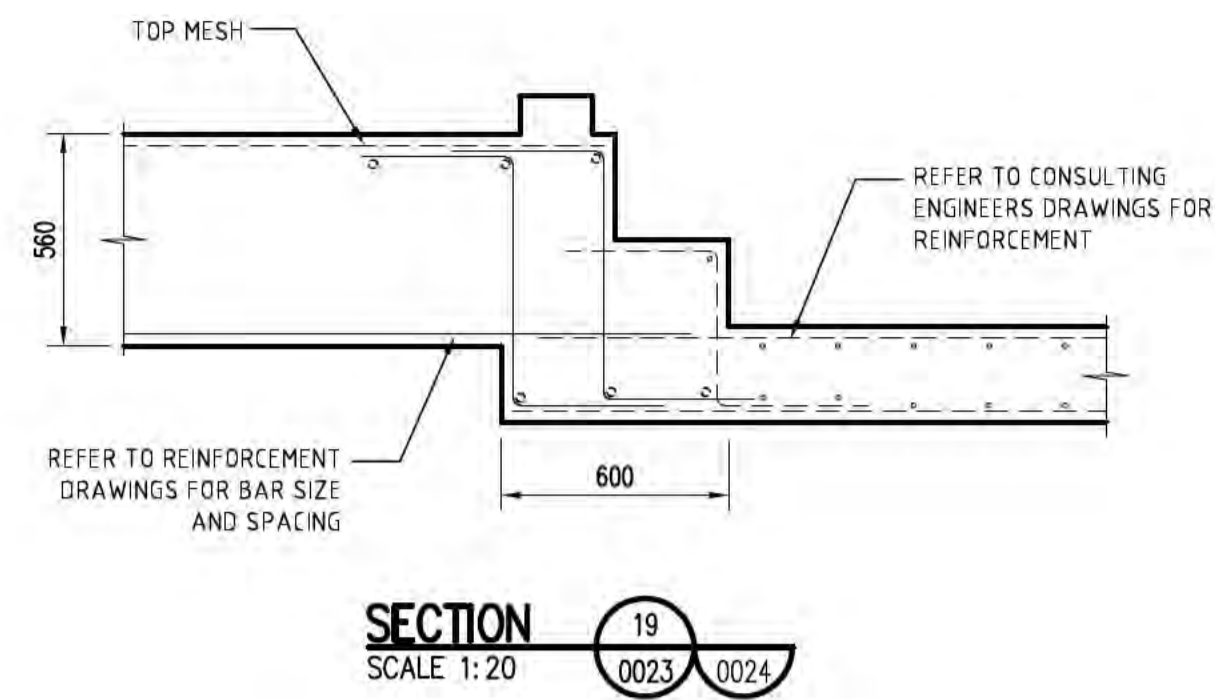
<p>Key Plan:</p>	 Level 11, 528 Kent Street, Sydney NSW 2000 Tel: (02) 9287 2888 Fax: (02) 9287 2777		<table border="1"> <tr> <th colspan="2">REVISIONS</th> </tr> <tr> <th>No.</th> <th>DESCRIPTION</th> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </table>	REVISIONS		No.	DESCRIPTION					<p>Print reduction bar:</p>	<p>Project: MERITON SUITES CANBERRA, 40 ALLARA STREET, CANBERRA ACT 2061</p>
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DESIGNED	DS												
DRAWN	AL												
CHECKED	BC												
DATE ISSUED	DEC-2021												



GROUND FLOOR - SECTIONS SHEET 3

FOR CONSTRUCTION

Key Plan: 	 KARIMBLA CONSTRUCTION SERVICES (NSW) PTY LIMITED <small>Level 11, 528 Kent Street, Sydney NSW 2000 Tel: (02) 9287 2888 Fax: (02) 9287 2177</small>	 PTWORKS Post Tensioning Contractor & Engineering Consultant	REVISIONS <table border="1"> <tr> <th>No.</th> <th>BY</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> <tr> <td>A</td> <td>A.L.</td> <td>21.12.2021</td> <td>ISSUED FOR CONSTRUCTION</td> </tr> </table>	No.	BY	DATE	DESCRIPTION	A	A.L.	21.12.2021	ISSUED FOR CONSTRUCTION	Print reduction bar: 	Project: MÉRITON SUITES CANBERRA, 40 ALLARA STREET, CANBERRA ACT 2061
				No.	BY	DATE	DESCRIPTION						
A	A.L.	21.12.2021	ISSUED FOR CONSTRUCTION										
POST TENSION CONTRACTOR DRAWINGS DESIGNED: DS DRAWN: AL CHECKED: BC DATE ISSUED: DEC-2021			Title: GROUND FLOOR SECTIONS - SHEET 3		Status: CONSTRUCTION	Project No.: 211651	Drawing No.: PT0027	Rev.: A					



GROUND FLOOR - SECTIONS SHEET 4

FOR CONSTRUCTION

Key Plan: 	 Level 11, 528 Kent Street, Sydney NSW 2000 Tel: (02) 9287 2888 Fax: (02) 9287 2777		REVISIONS <table border="1"> <tr><th>No.</th><th>BY</th><th>DATE</th><th>DESCRIPTION</th></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table>	No.	BY	DATE	DESCRIPTION													Print reduction bar: 	Project: MÉRITON SUITES CANBERRA, 40 ALLARA STREET, CANBERRA ACT 2061
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POST TENSION CONTRACTOR DRAWINGS DESIGNED: DS DRAWN: AL CHECKED: BC DATE ISSUED: DEC-2021	Title: GROUND FLOOR SECTIONS - SHEET 4	Status: CONSTRUCTION	Project No.: 211651	Drawing No.: PT0028	Rev.: A																