

GENERAL NOTES

- 1.0

STANDARDS AND REFERENCES  
THE FOLLOWING SHALL GOVERN THE DESIGN, FABRICATION AND CONSTRUCTION OF THE PROJECT.  
1.1 NATIONAL STRUCTURAL CODE OF THE PHILIPPINES (NSCP) 2015, VOL. 1, 7TH EDITION
- 2.0

DESIGN CRITERIA  
2.1 LOADINGS
- A.

DEAD LOAD  
CONCRETE  
STEEL  
SOIL  
LEAD  
150mm THK CHB WALL (both faces plastered)  
100mm THK CHB WALL (both faces plastered)

23.56 kN/m  
76.93 kN/m  
18.00 kN/m  
  
3.11 kPa  
2.49 kPa
- B.

LIVE LOAD  
ROOF  
HOSPITAL  
  
CORRIDORS ABOVE STAIRS  
CORRIDORS ON GROUND

1.00 kPa  
1.90 kPa  
2.40 kPa  
3.80 kPa  
4.80 kPa
- C.

WIND LOAD (NSCP 2015)  
BASIC WIND VELOCITY,  $V = 280.00$  kph  
 $P = q_v [(GC_{pf}) - (GC_{pi})]$  (DESIGN WIND PRESSURE)  
WHERE:  $q_v$  = VELOCITY PRESSURE  
 $GC_{pf}$  = EXTERNAL PRESSURE COEFFICIENT  
 $GC_{pi}$  = INTERNAL PRESSURE COEFFICIENT
- D.

SEISMIC LOAD (NSCP 2015)  
 $V = \frac{C_M}{R_T} W$  (DESIGN BASE SHEAR)  
 $V_{max} = \frac{2.50 C_a C_b W}{R}$   $V_{min} = 0.11 C_a W$   
 $V_{min} = \frac{0.80 Z N_v I_a W}{R}$  (ZONE 4)  
WHERE:  $W$  = TOTAL WEIGHT OF STRUCTURE  
 $T$  = NATURAL PERIOD =  $C_t (h_n)^{3/4}$   
WHERE:  $C$  = NUMERICAL COEFFICIENT  
 $h$  = BUILDING HEIGHT  
 $I$  = IMPORTANCE FACTOR = 1.25  
 $R$  = NUMERICAL FACTOR = 8.50  
SEISMIC COEFFICIENT  $C_v$  = 1.50  
 $C_a$  = 0.64N  
NEAR SOURCE FACTOR  $3.30$  km (West Valley Fault)  
 $N_v$  = 1.6  
 $N_a$  = 1.2  
 $Z$  = SEISMIC ZONE = 0.40 (ZONE 4)  
 $S$  = SOIL TYPE =  $S_u$
- 2.2

MATERIAL DESIGN STRENGTH  
A. CONCRETE FOR FOOTING, COLUMN, BEAMS, RC WALLS, AND SUSPENDED SLABS  
COMPRESSIVE STRENGTH @ 28 DAYS  
B. CONCRETE FOR SLAB ON GRADE AND SHIELDING WALLS  
COMPRESSIVE STRENGTH @ 28 DAYS  
A. REINFORCING STEEL BARS  
a. FOR BARS 16mmØ AND GREATER, (HIGH TENSILE GRADE DEFORMED BAR)  
b. FOR BARS LESS THAN 16mmØ (INTERMEDIATE GRADE DEFORMED BAR)  
B. STRUCTURAL STEEL, ASTM A36  
FOR TRUSSES, BRACING & STRUTS  
C. PURLINS  
COLD FORMED LIGHT GAGE SHAPES  
D. MASONRY UNIT (CHB)  
NON-LOAD BEARING CHB WALLS  
E. WELDS  
USE E60xx ELECTRODE  
F. STRUCTURAL BOLTS, ASTM A-307  
a.  $F_u = 96.60$  MPa (14,000 psi) b.  $F_u = 69$  MPa (10,000 psi)

$f'_c = 27.6$  Mpa (4,000 psi)  
 $f'_c = 20.7$  Mpa (3,000 psi)  
 $f_y = 415$  MPa (60,000 psi)  
 $f_y = 275$  MPa (40,000 psi)  
 $f_y = 248$ MPa (36,000 psi)  
 $f_y = 248$ MPa (36,000 psi)  
 $f_m' = 3.45$ MPa (500 psi)
- 3.0

IN THE INTERPRETATION OF THE DRAWING, INDICATED DIMENSIONS SHALL GOVERN AND DISTANCES AND SIZES SHALL NOT BE SCALED FOR CONSTRUCTION PURPOSES.
- 4.0

IN REFERENCE TO OTHER DRAWINGS, SEE ARCHITECTURAL DRAWINGS FOR DEPRESSIONS IN THE FLOOR SLABS, OPENING IN THE WALLS AND SLABS, INTERIOR PARTITIONS, LOCATION OF DRAINS ETC.
- 5.0

IN CASE OF DISCREPANCIES AS TO THE LAYOUT, DIMENSIONS, AND ELEVATIONS BETWEEN THE STRUCTURAL PLANS, AND ARCHITECTURAL DRAWINGS, THE CONTRACTOR SHALL NOTIFY BOTH THE STRUCTURAL ENGINEER AND THE ARCHITECT.
- 6.0

ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH THE ACI 318-18M BUILDING CODE REQUIREMENTS FOR REINFORCEMENTS FOR REINFORCED CONCRETE AND ALL STRUCTURAL STEEL WORK ACCORDING WITH AISC SPECIFICATION (9th EDITION) IN SO FAR AS DO THEY NOT CONFLICT WITH THE LOCAL BUILDING CODE REQUIREMENT.
- 7.0

ACI REFERS TO AMERICAN CONCRETE INSTITUTE, AISC TO AMERICAN INSTITUTE OF STEEL CONSTRUCTION AND, ASTM TO AMERICAN SOCIETY FOR TESTING MATERIALS.
- 8.0

CONSTRUCTION NOTES AND TYPICAL DETAILS APPLY TO ALL DRAWINGS UNLESS OTHERWISE SHOWN OR NOTED. MODIFY TYPICAL DETAILS AS DIRECTED TO MEET SPECIAL CONDITIONS.
- 9.0

SHOP DRAWINGS WITH ERECTION AND PLACING DIAGRAMS OF ALL STRUCTURAL STEELS. MISCELLANEOUS IRON, PRE-CAST CONCRETE, ETC. SHALL BE SUBMITTED FOR ENGINEERS APPROVAL BEFORE FABRICATION.
- 10.0

CONTRACTOR SHALL NOTE AND PROVIDE ALL MISCELLANEOUS CURBS, SILLS, STOOLS, EQUIPMENTS AND MECHANICAL BASES THAT ARE REQUIRED BY THE ARCHITECTURAL, ELECTRICAL, AND MECHANICAL DRAWINGS.
- 11.0

ALL RESULTS OF MATERIAL TESTING FOR CONCRETE, REINFORCING BARS, & STRUCTURAL STEEL MUST BE NOTED & APPROVED BY THE STRUCTURAL DESIGNER.

NOTES ON CONCRETE MIXES & PLACING

1.

ALL CONCRETE SHALL DEVELOP A MIN. COMPRESSIVE STRENGTH AT THE END OF TWENTY EIGHT (28) DAYS W/ CORRESPONDING MAXIMUM SIZE AGGREGATE & SLUMPS AS FOLLOWS.
- LOCATION

28 DAYS STRENGTH

MAX. SIZE OF AGGREGATE

MAX. SLUMP
- COLUMNS

27.6 MPa (4,000 psi)

20mm

100mm
- BEAMS, SUSPENDED SLABS

27.6 MPa (4,000 psi)

20mm

100mm
- SLAB ON FILL

20.7 MPa (3,000 psi)

20mm

100mm
- CONCRETE WALLS

20.7 MPa (3,000 psi)

20mm

100mm
2.

MAINTAIN MINIMUM CONCRETE COVER FOR REINFORCING STEEL AS FOLLOWS:
- SUSPENDED SLABS

20mm
- SLAB ON GRADE

40mm
- WALLS ABOVE GRADE

25mm
- BEAM STIRRUPS AND COLUMN TIES

40mm
- WHERE CONCRETE IS EXPOSED TO EARTH BUT AGAINST FORMS

50mm
- WHERE CONCRETE IS DEPOSITED DIRECTLY AGAINST EARTH

75mm
3.

CONCRETE SHALL BE DEPOSITED IN ITS FINAL POSITION WITHOUT SEGREGATION. RE-HANDLING OR PLACING SHALL BE DONE PREFERABLY WITH BUGGIES, BUCKETS OR WHEELBARROWS, NO CHUTES WILL BE ALLOWED EXCEPT TO TRANSFER CONCRETE FROM HOPPERS TO BUGGIES, WHEELBARROWS OR BUCKETS IN WHICH CASE THEY SHALL NOT EXCEED SIX (6) METERS IN AGGREGATE LENGTH.
4.

NO DEPOSITING OF CONCRETE SHALL BE ALLOWED WITHOUT THE USE OF VIBRATORS UNLESS AUTHORIZED IN WRITING BY THE DESIGNERS AND ONLY FOR THE UNUSUAL CONDITIONS WHERE VIBRATIONS ARE EXTREMELY DIFFICULT TO ACCOMPLISH.
5.

ALL ANCHOR BOLTS, DOWELS, AND OTHER INSERTS, SHALL BE PROPERLY POSITIONED & SECURED IN PLACE PRIOR TO PLACING OF CONCRETE.
6.

ALL CONCRETE SHALL BE KEPT MOIST FOR MINIMUM OF SEVEN CONSECUTIVE DAYS IMMEDIATELY AFTER POURING BY THE USE OF WET BURLAP, FOG SPRAYING CURING COMPOUNDS OR OTHER APPROVED METHODS.
7.

STRIPPING OF FORMS AND SHORES:
- FOUNDATION

24 HRS.
- SUSPENDED SLAB EXCEPT WHEN ADDITIONAL LOADS ARE IMPOSED

7 DAYS
- WALLS

21 DAYS
- BEAMS

14 DAYS
- COLUMNS

21 DAYS
8.

THE CONTRACTOR SHALL SUBMIT THE SCHEDULE OF POURING AND LOCATION OF THE CONSTRUCTION JOINTS TO THE STRUCTURAL ENGINEER AT LEAST (4) DAYS PRIOR TO THE POURING FOR APPROVAL.
9.

THE CONTRACTOR SHALL FURNISH AND MAINTAIN ADEQUATE FORMS AND SHORINGS UNTIL THE CONCRETE MEMBERS HAVE ATTAINED THEIR WORKING CONDITION AND STRENGTH.

NOTES ON FOOTINGS

- 1.1.

FOOTINGS ARE DESIGNED FOR AN ALLOWABLE SOIL BEARING PRESSURE OF 144 kPa (3000 psf). CONTRACTOR SHALL REPORT TO THE ENGINEER, IN WRITING, THE ACTUAL SOIL CONDITIONS UNCOVERED AND CONFIRM ACTUAL BEARING CAPACITY OF SOIL BEFORE DEPOSITING CONCRETE.
- 2.0.

FOOTING SHALL REST AT LEAST 1.50 m BELOW NATURAL GRADE LINE UNLESS OTHERWISE INDICATED IN PLANS. NO FOOTING SHALL REST ON FILL.
- 3.0.

MINIMUM CONCRETE PROTECTION FOR REINFORCEMENTS SHALL BE 75mm CLEAR FOR CONCRETE DEPOSITED THE GROUND AND 50mm FOR CONCRETE DEPOSITED AGAINST A FORMWORK.
- 3.1.

IN CASES WHERE THE ACTUAL SOIL CONDITION IS SUCH THAT THE MINIMUM ALLOWABLE SOIL PRESSURE OF 150 kPa (3,000 psf) CAN NOT BE ATTAINED, THE STRUCTURAL ENGINEER MUST BE INFORMED FOR PROPER RESIZING OF FOOTING DIMENSION.

NOTES ON REINFORCEMENT

1.

UNLESS OTHERWISE NOTED IN PLANS, THE YIELD STRENGTH OF REINFORCING BARS SHALL BE:  
A. FOOTINGS, BEAMS AND GIRDERS  $f_y = 414$  MPa (60,000 psi)  
B. COLUMNS AND SHEAR WALLS  $f_y = 414$  MPa (60,000 psi)  
C. BEAMS AND GIRDER  $f_y = 414$  MPa (60,000 psi)  
D. NON - LOAD BEARING WALL PARTITIONS, BEDDED SLABS, FLOOR & ROOF SLABS, PARAPETS, CATCH BASIN, SIDEWALK.  $f_y = 275$  MPa (40,000 psi)
2.

ALL REINFORCING BARS SIZE 10mm OR LARGER SHALL BE DEFORMED IN ACCORDANCE WITH ASTM A706. BARS SMALLER THAN 10mm MAY BE PLAIN.
3.

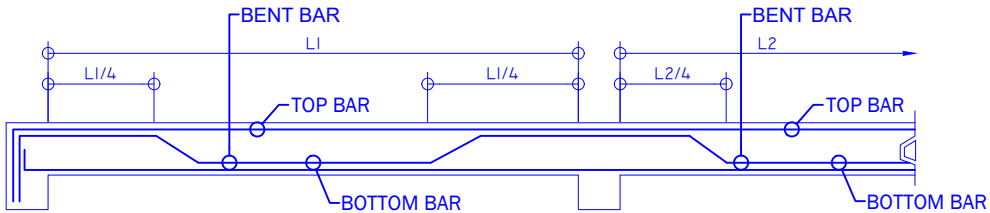
SPLICES SHALL BE SECURELY WIRED TOGETHER & SHALL LAP OR EXTEND IN ACCORDANCE W/ TABLE A & TABLE B (TABLE OF LAP SPICE & ANCHORAGE LENGTH) UNLESS OTHERWISE SHOWN ON DRAWINGS. SPLICES SHALL BE STAGGERED WHENEVER POSSIBLE.

NOTES ON CONCRETE SLABS

1.

ALL SLAB REINFORCEMENTS SHALL BE 20mm CLEAR MINIMUM FROM BOTTOM AND FROM THE TOP OF SLAB.
2.

UNLESS OTHERWISE SHOWN, REINFORCEMENT IN CONTINUOUS ELEVATED SLAB SHALL BE CUT AS FOLLOWS:



TYPICAL BAR BENDING AND CUTTING DETAILS FOR SLABS

3.

IF SLABS ARE REINFORCED BOTHWAYS BARS ALONG THE SHORTER SPAN SHALL BE PLACED BELOW THOSE ALONG THE LONG SPAN AT THE CENTER AND OVER THE LONGER SPAN FOR REINFORCING BARS NEAR THE SUPPORTS. THE SPACING OF THE BARS AT THE COLUMN STRIPS SHALL NOT BE MORE THAN ONE AND A HALF (1 1/2) SLAB THICKNESS.
4.

TEMPERATURE BARS FOR SLAB SHALL BE GENERALLY PLACED NEAR THE FACE IN TENSION AND SHALL NOT BE LESS THAN 0.0025 x GROSS CROSS-SECTIONAL AREA ( $A_g$ ) OF THE SLAB (SEE SCHEDULE BELOW)

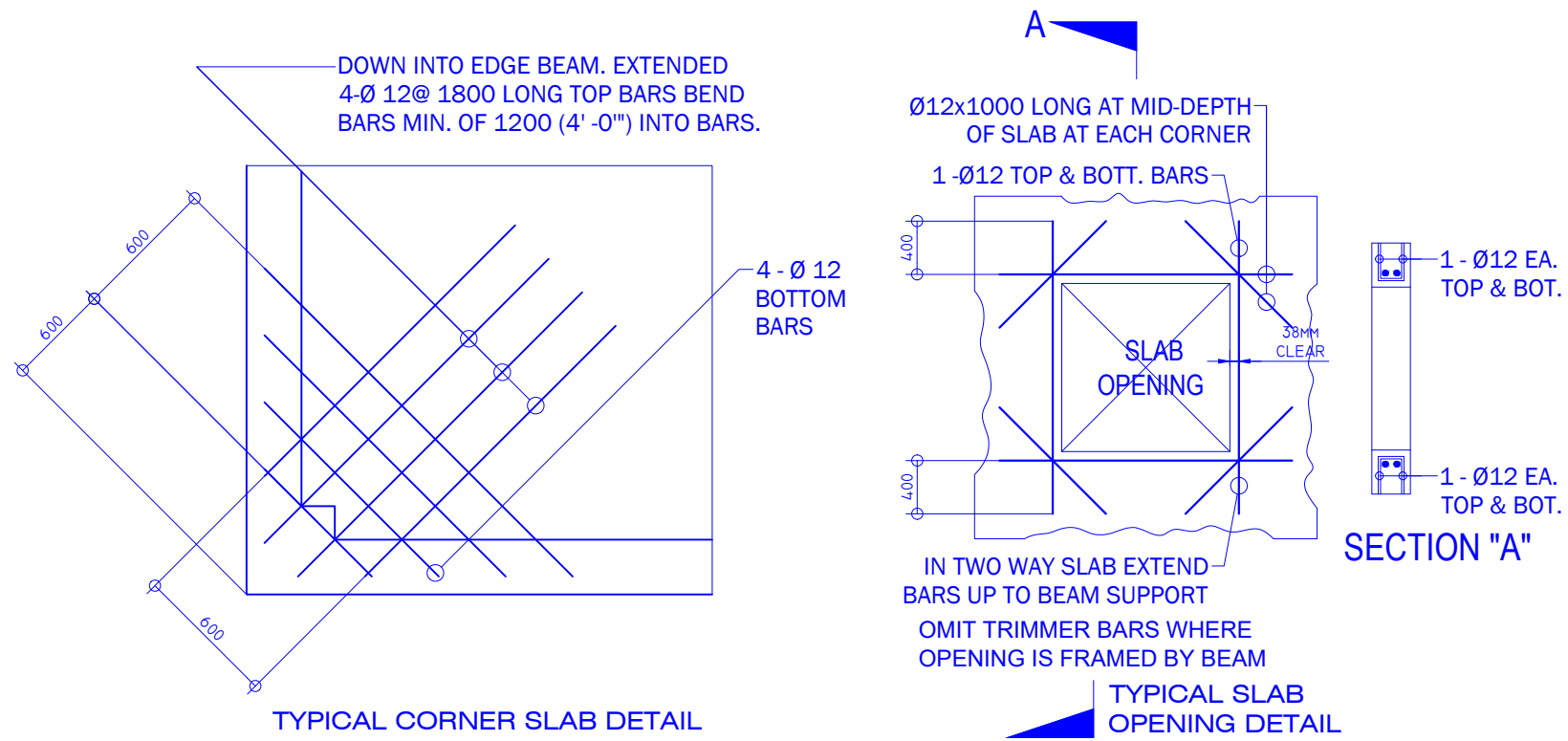
SCHEDULE OF MINIMUM SLAB REINFORCEMENT	
THICKNESS	MINIMUM TEMPERATURE BARS
100 mm	10mm Ø @ 300mm EACH WAY
125 mm	10mm Ø @ 250mm EACH WAY
150 mm	10mm Ø @ 185mm EACH WAY
175 mm	10mm Ø @ 150mm EACH WAY
200 mm	10mm Ø @ 140mm EACH WAY

5.

UNLESS OTHERWISE NOTED IN THE PLANS ALL BEDDED SLABS SHALL BE REINFORCED WITH 10mmØ AT 250mm O.C. EACH WAY TO CENTER OF SLAB AND CONSTRUCTION JOINTS FOR THE SAME SHALL NOT BE LESS THAN 3.65 METER APART.
6.

PROVIDE EXTRA REINFORCEMENTS FOR CORNER SLAB (TWO ADJACENT DISCONTINUOUS EDGES) AS SHOWN BELOW.
7.

CONCRETE SLAB REINFORCEMENTS SHALL BE PROPERLY SUPPORTED WITH 10mmØ STEEL CHAIR OR APPROVED EQUIVALENT SPACED AT 1.0 METER ON CENTER BOTHWAYS



NOTES ON COLUMNS

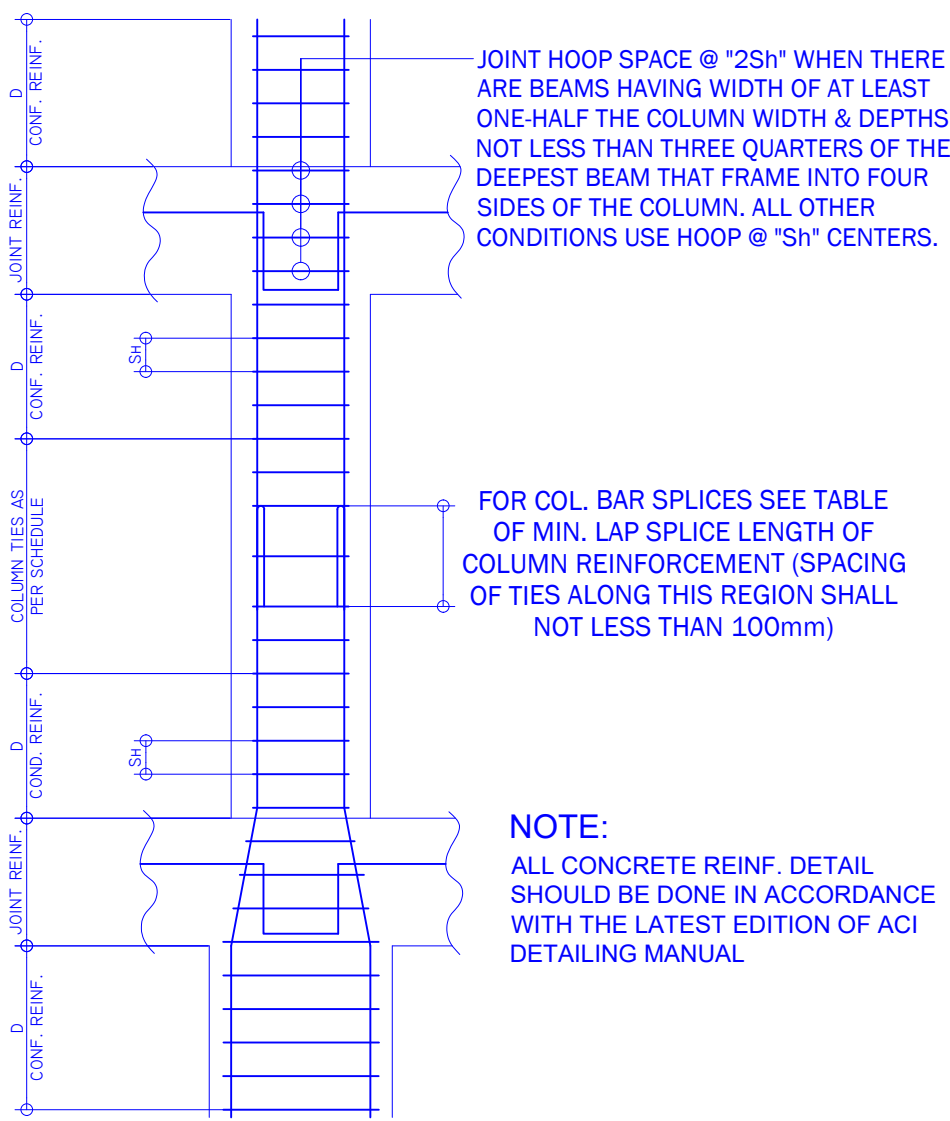
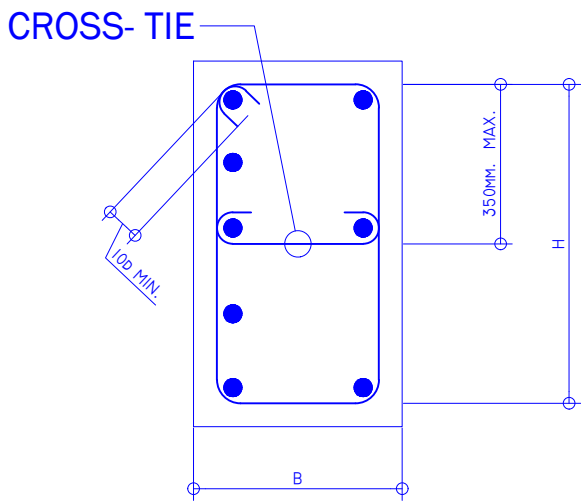
1.

PROVIDE EXTRA SETS OF TIES AT 100mm O.C. FOR TIED COLUMN REINFORCEMENT ABOVE AND BELOW BEAM-COLUMN CONNECTIONS FOR A DISTANCE FROM FACE OF CONNECTION EQUAL TO THE GREATER OF THE OVERALL THICKNESS OF COLUMN,  $\frac{1}{4}$  THE CLEAR HEIGHT OF COLUMN OR 450mm.
2.

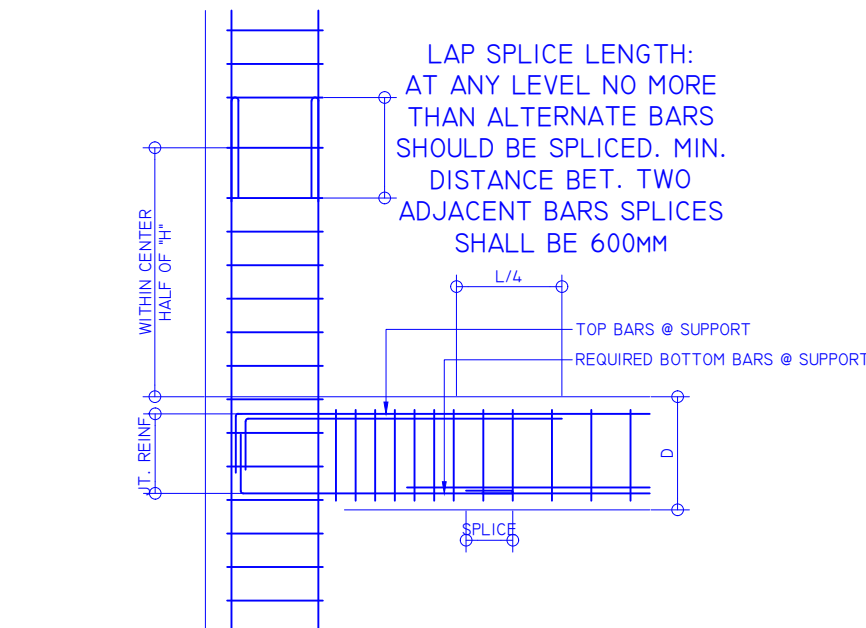
COLUMN TIES SHALL BE PROTECTED EVERYWHERE BY A COVERING OF CONCRETE CAST MONOLITHICALLY WITH THE CORE WITH THE MINIMUM THICKNESS OF 40mm AND NOT LESS THAN 40 TIMES THE MAXIMUM SIZE OF COARSE AGGREGATE IN MILLIMETERS.
3.

WHERE COLUMNS CHANGE IN SIZE, VERTICAL REINFORCEMENTS SHALL BE OFFSET AT A SLOPE OF NOT MORE THAN 1 IN 6 AND EXTRA 10mm TIES AT 100mm SHALL BE PROVIDED THRU OUT THE OFFSET REGION.
4.

UNLESS OTHERWISE INDICATED IN THE PLANS, LAP SPLICES FOR THE VERTICAL COLUMN REINFORCEMENT SHALL BE MADE WITHIN THE CENTER HALF OF COLUMN HEIGHT, AND THE SPlice LENGTH SHALL NOT BE LESS THAN 40 BAR DIAMETERS, WELDING OR APPROVED MECHANICAL DEVICES MAY BE USED PROVIDED THAT NOT MORE THAN ALTERNATE BARS ARE WELDED OR MECHANICALLY SPLICED AT ANY LEVEL AND THE VERTICAL DISTANCES BETWEEN THESE WELDS OR SPLICES OF ADJACENT BARS IS NOT LESS THAN 600mm.



TYPICAL COLUMN SECTION SHOWING DOWELS AND TIES



TYP. DETAIL OF COLUMN LAP SPlice AND GIRDER TO COLUMN CONNECTION

NOTES ON BEAMS AND GIRDERS

1.

UNLESS, OTHERWISE NOTED IN PLANS, CAMBER ALL BEAMS AND GIRDER AT LEAST 6 mm-Ø FOR EVERY 4.50M OF SPAN, EXCEPT CANTILEVERS FOR WHICH THE CAMBER SHALL BE AS NOTED IN PLAN OR AS ORDERED BY THE ENGINEER BUT IN NO CASE LESS THAN 20mm FOR EVERY 3.0M OF FREE SPAN.
2.

TYPICAL BARS BENDING AND CUTTING DETAILS FOR BEAMS SHALL BE AS SHOWN IN FIG. B-1.

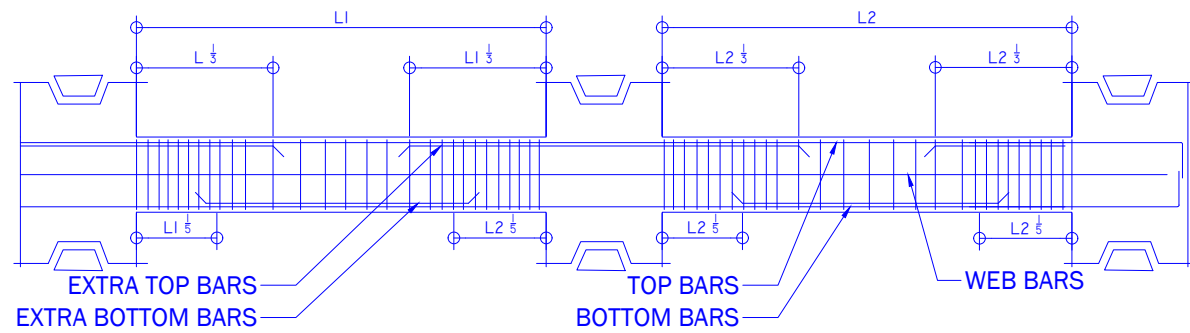


FIG. B-1

1 GENERAL NOTES  
S-1 SCALE NTS

TABLE 'A' TENSION BARS EMBEDMENT LENGTHS AND LAPPED SPLICED IN MILLIMETERS					
BAR SIZE (DEFORMED)	f <sub>c</sub> '= 20.7MPa(3000psi)		f <sub>c</sub> '= 20.7MPa(3000psi)		
	EMBEDMENT	LAPPED	EMBEDMENT	LAPPED	
10mm Ø	300	300	300	300	
12mm Ø	300	300	300	300	
16mm Ø	300	400	300	400	
20mm Ø	400	550	350	500	
25mm Ø	600	800	550	750	
28mm Ø	750	1000	650	850	
32mm Ø	950	1300	850	1100	

TABLE 'B' COMPRESSION BARS EMBEDMENT LENGTHS AND LAPPED SPLICED IN MILLIMETERS					
BAR SIZE (DEFORMED)	f <sub>c</sub> '= 20.7MPa(3000psi)		f <sub>c</sub> '= 20.7MPa(3000psi)		
	EMBEDMENT	LAPPED	EMBEDMENT	LAPPED	
10mm Ø	225	300	200	300	
12mm Ø	275	300	250	300	
16mm Ø	350	400	325	400	
20mm Ø	450	500	475	500	
25mm Ø	550	625	550	625	
28mm Ø	625	675	625	675	
32mm Ø	700	775	700	775	

3. IF THE BEAM REINFORCING BARS END IN THE WALL THE CLEAR DISTANCE FROM THE BAR TO THE FARTHER FACE OF THE WALL NOT BE LESS THAN 25mm. EMBEDMENT LENGTH SHALL BE AS SHOWN IN TABLE 'A' FOR TENSION BARS AND TABLE 'B' FOR COMPRESSION BARS UNLESS SPECIFIED IN THE PLAN. TOP BAR SHALL NOT BE SPLICED WITHIN THE COLUMN OR WITHIN A DISTANCE TWICE THE MEMBER DEPTH FROM THE FACE OF THE COLUMN. AT LEAST TWO STIRRUPS SHALL BE PROVIDED AT ALL SPLICES.
4. IF THERE ARE TWO OR MORE LAYERS OF REINFORCING BARS, USE 25mmØ BAR SEPARATORS SPACED AT 1.0M ON CENTER. IN NO CASE SHALL THERE BE LESS THAN TWO (2) SEPARATORS BETWEEN TWO LAYERS OF BARS.
5. MINIMUM CONCRETE PROTECTION FOR REINFORCING BARS OR STEEL SHAPES SHALL BE AS SHOWN IN FIG B-2 UNLESS SPECIFIED ELSEWHERE.

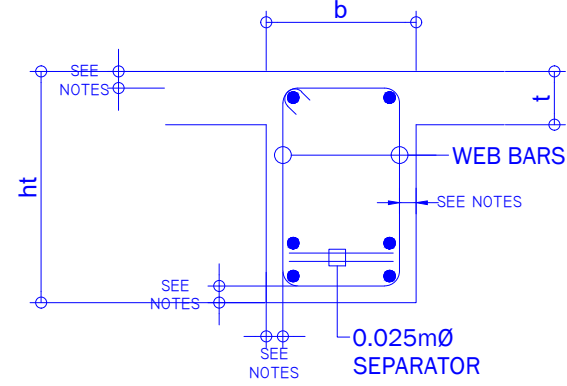
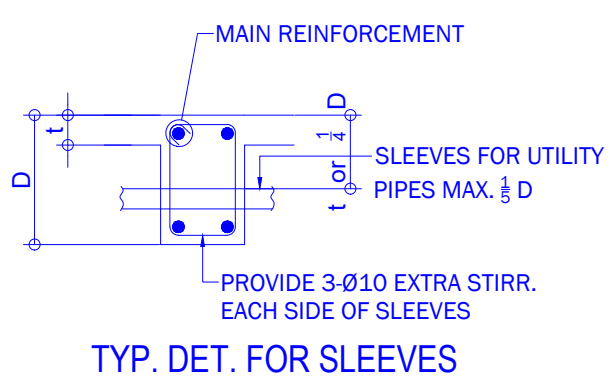


FIG. B-2



TYP. DET. FOR SLEEVES

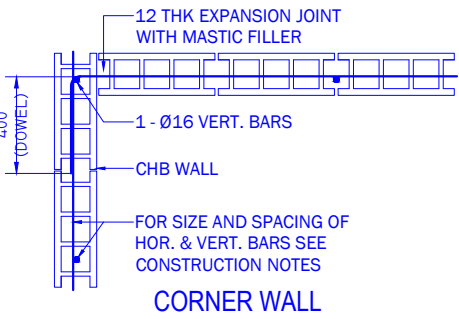
6. WHEN A BEAM CROSSES A GIRDER, REST BEAM ON TOP OF GIRDER BARS, BEAM REINFORCING BAR SHALL BE SYMMETRICAL ABOUT CENTER LINE WHENEVER POSSIBLE.
7. GENERALLY NO SPLICES WHERE SO PERMITTED AT POINTS WHERE CRITICAL BENDING STRESSES OCCUR, SPLICES WHERE SO PERMITTED SHALL BE INDICATED IN THE TABLE 'A' AND 'B' WELDED SPLICES SHALL DEVELOP IN TENSION AT LEAST 125% OF THE SPECIFIED YIELD STRENGTH OF THE BAR. NOT MORE THAN 50% OF THE BARS AT ANY ONE SECTION IS ALLOWED TO BE SPLICED THEREIN.

#### NOTES ON CONCRETE HOLLOW BLOCK WALLS

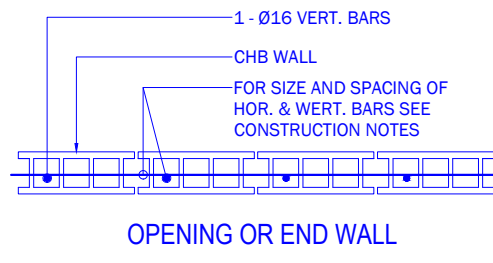
1. UNLESS OTHERWISE SHOWN IN PLANS ALL CONCRETE HOLLOW BLOCKS AND CERAMIC BLOCKS SHALL BE REINFORCED AS SHOWN IN THE SCHEDULE OF CONCRETE HOLLOW BLOCKS AND CERAMIC BLOCK REINFORCEMENT.
2. PROVIDE 150mm x 300mm STIFFENER COLUMN REINFORCED WITH 4-12mm WITH 6mmØ TIES AT 150mm ON CENTER WHERE CONCRETE HOLLOW BLOCKS TERMINATES AND AT EVERY 3.0M LENGTH OF CONCRETE HOLLOW BLOCK WALLS UNLESS NOTED IN STRUCTURAL PLANS.

SCHEDULE OF CONCRETE HOLLOW BLOCKS AND CERAMIC BLOCK REINFORCEMENT			
BLOCK THICKNESS	REINFORCEMENT		NOTES
	HORIZONTAL	VERTICAL	
75 mm	10mmØ @ 600mm O.C.	10mmØ @ 600mm O.C.	A. MINIMUM LAPS AT SPICE = 0.25M B. PROVIDE RIGHT ANGLED REINFORCEMENT AT CORNERS 0.92M LONG
125 mm	10mmØ @ 600mm O.C.	10mmØ @ 600mm O.C.	C. WHERE CHB OR CER. BLK. WALL DOWELS JOIN COL. R.C. BEAMS AND WALL DOWELS WITH THE SAME SIZE AS VERT. OR HOR. REINFORCEMENTS SHALL BE PROVIDED
150 mm	10mmØ @ 600mm O.C.	10mmØ @ 600mm O.C.	
200 mm	12mmØ @ 600mm O.C.	12mmØ @ 600mm O.C.	

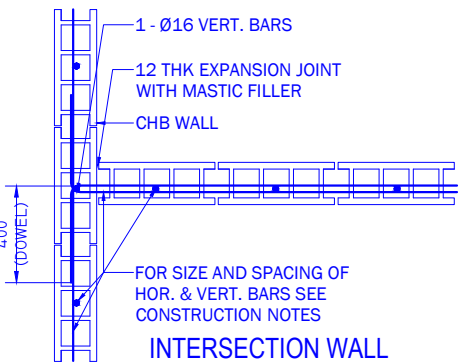
REINFORCING CONCRETE LINTEL BEAM IN CONCRETE BLOCK WALLS									
LINTELS IN BLOCK WALLS									
CLEAR SPAN ("L")	TOTAL LENGTH (L+0.40M)	MIN. f <sub>c</sub> ' (MPa)	HEIGHT OF LINTEL (mm)	REINFORCEMENT			BOTTOM	TOP	STIRRUPS
1.20M	1.60M	14.0	200	1 - Ø 10	1 - Ø 10	Ø6mm @ 200mm			
1.50M	1.90M		200	1 - Ø 10	1 - Ø 10	Ø6mm @ 200mm			
1.80M	2.20M		200	1 - Ø 12	1 - Ø 10	Ø6mm @ 200mm			
2.10M	2.50M	17.0	250	1 - Ø 12	1 - Ø 10	Ø6mm @ 200mm			
2.40M	2.90M		250	1 - Ø 12	1 - Ø 10	Ø6mm @ 200mm			
2.70M	3.10M		250	1 - Ø 16	1 - Ø 12	Ø10mm @ 200mm			
3.00M	3.40M	20.0	300	1 - Ø 16	1 - Ø 12	Ø10mm @ 200mm			
3.30M	3.70M		300	1 - Ø 16	1 - Ø 12	Ø10mm @ 200mm			
3.60M	4.00M		300	1 - Ø 20	1 - Ø 12	Ø10mm @ 200mm			



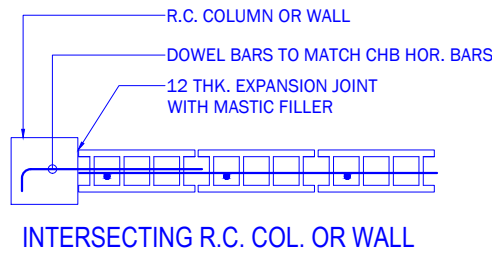
CORNER WALL



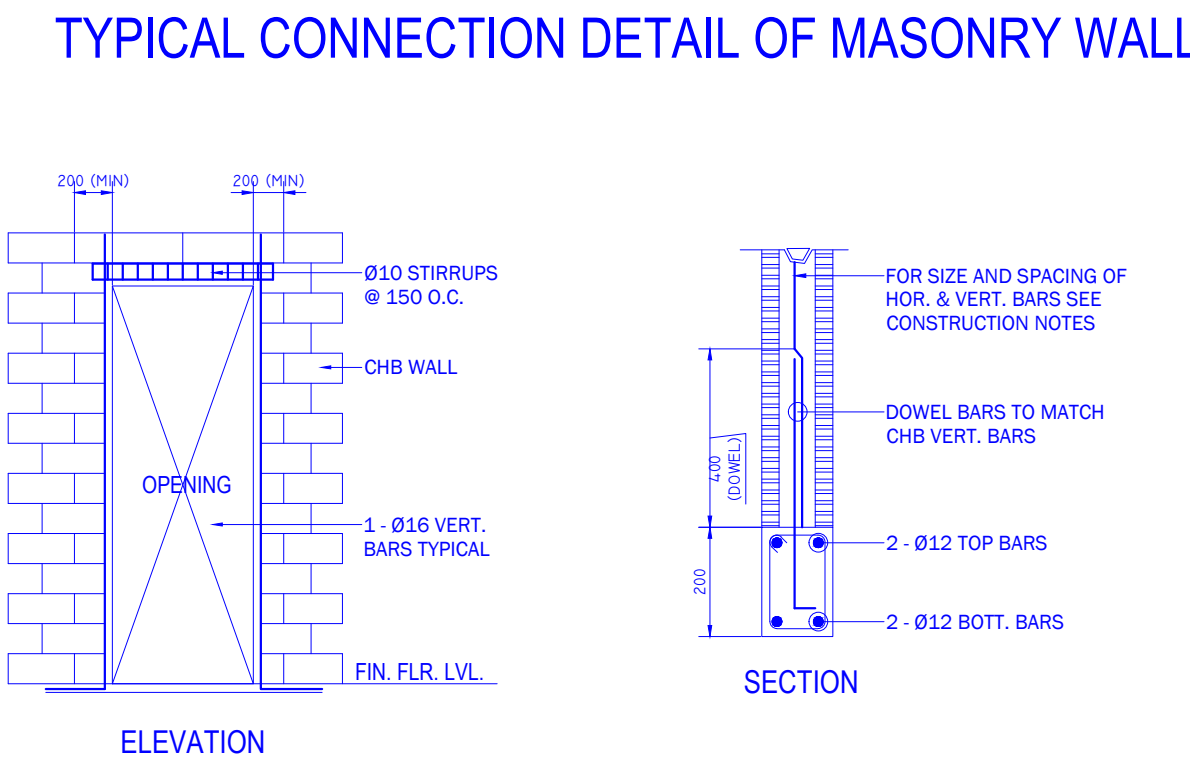
OPENING OR END WALL



INTERSECTION WALL

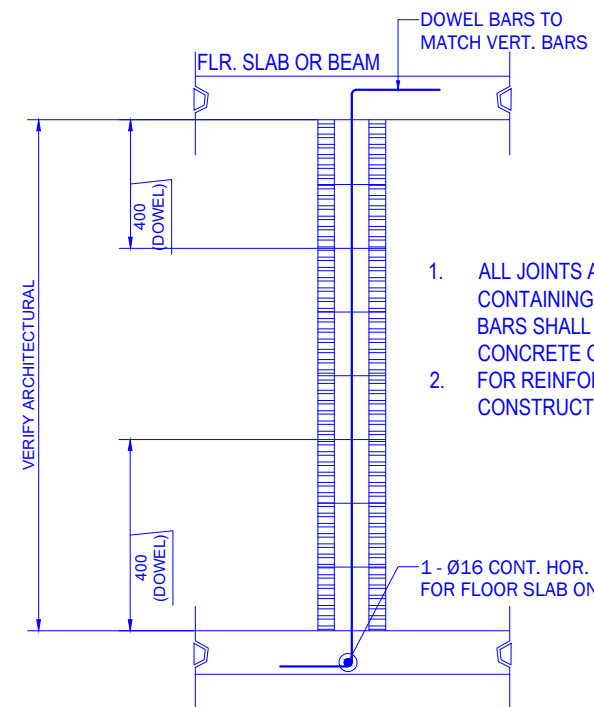


INTERSECTING R.C. COL. OR WALL

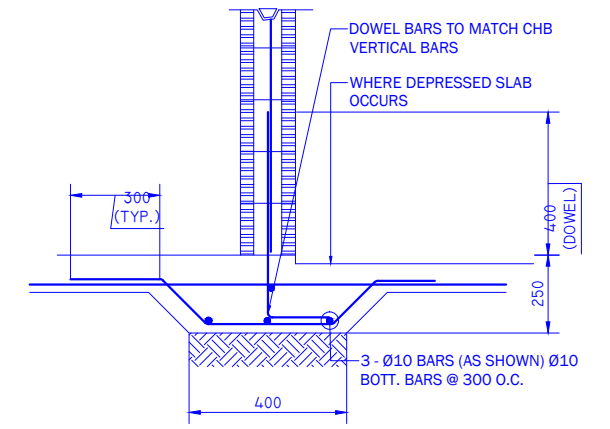
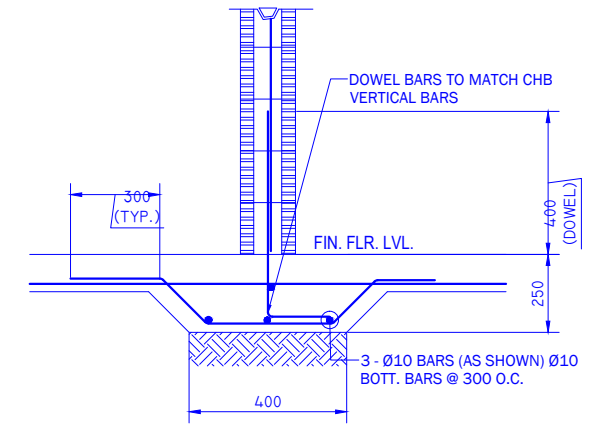
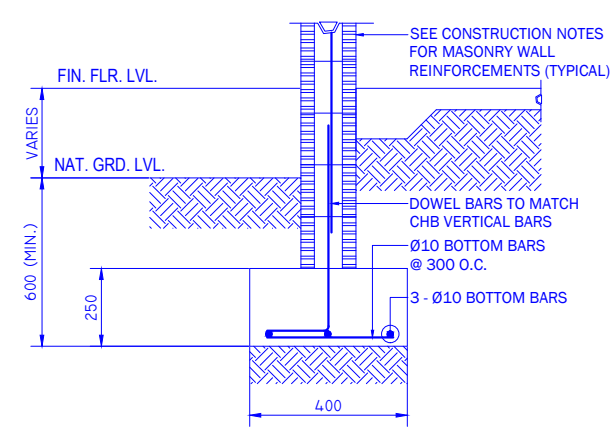


ELEVATION

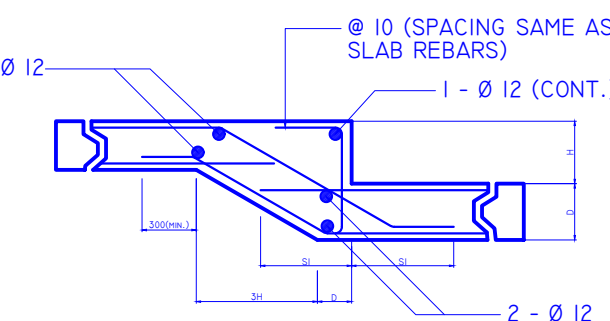
TYPICAL DETAIL OF LINTEL BEAM AT CHB WALL OPENING



TYP. SECTION OF MASONRY PARTITION REINFORCEMENTS



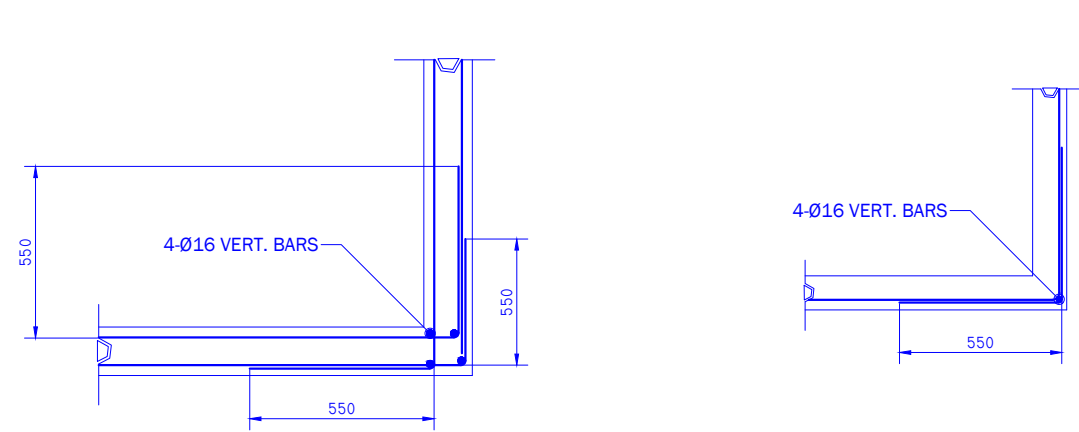
TYPICAL CHB FOOTING DETAILS (WHERE APPLICABLE)



TYPICAL DETAIL FOR BEAM OR SLAB CHANGE SOFFIT

#### NOTES ON CONCRETE WALLS

1. ALL WALLS SHALL BE REINFORCED ACCORDING TO THE FOLLOWING SCHEDULE OF WALL REINFORCEMENT UNLESS OTHERWISE INDICATED IN THE PLANS.
- | WALL THICKNESS | REINFORCEMENT      |                    |  | REMARKS                     | VERTICAL SECTION |
|----------------|--------------------|--------------------|--|-----------------------------|------------------|
|                | HORIZONTAL         | VERTICAL           |  |                             |                  |
| 100 mm         | 10mmØ @ 250mm O.C. | 10mmØ @ 300mm O.C. |  | HORIZONTAL BARS AT CENTERS  |                  |
| 125 mm         | 10mmØ @ 200mm O.C. | 10mmØ @ 250mm O.C. |  | VERTICAL BARS STAGGERED OUT |                  |
| 150 mm         | 12mmØ @ 250mm O.C. | 12mmØ @ 300mm O.C. |  |                             |                  |
2. REINFORCING BARS SHALL HAVE 25mm CLEAR CONCRETE COVER FROM FACE OF WALL EXCEPT FOR WALLS IN CONTACT WITH THE GROUND WHERE A MINIMUM OF 60mm SHALL BE PROVIDED, AND FOR EXPOSED FACES OF FORMED WALLS WHERE THE MINIMUM SHALL BE 50mm CLEAR.
3. CARRY VERTICAL BARS AT LEAST 60 mm ABOVE FLOOR LEVEL TO PROVIDE FOR SPLICES WHEN NECESSARY STOP AT 50 mm BELOW TOP SLAB OR SOLID BAND WHERE THE WALL ENDS VERTICAL AND HORIZONTAL BARS SHALL BE SPLICED BY LAPPING A DISTANCE EQUAL TO 3Ø DIAMETERS AND WIRED SECURELY WITH #16 G.I. WIRE PROVIDED THAT SPLICES IN ADJACENT BARS ARE STAGGERED AT LEAST 1.50 m O.C.
4. UNLESS OTHERWISE NOTED IN THE PLANS, ALL OPENINGS IN WALLS 250mm OR THICKER SHALL BE REINFORCED AROUND WITH 2 -20 mm-Ø BARS FOR 225mm, 200 mm, 175 mm, 150 mm, USE 2-16 mm-Ø. FOR 125 mm AND 100 mm WALLS, USE 2-12 mm-Ø BARS. ALL WALLS SPANNING SHALL HAVE VERTICAL REINFORCEMENT BENT TO A U-FORM LIKE STIRRUPS AND SPACED ACCORDING TO THE SCHEDULE UNLESS OTHERWISE NOTED (SEE FIG.1)



TYPICAL CONNECTION DETAIL OF R.C. WALL AT CORNERS

#### NOTES ON WELDS

1. USE E60xx ELECTRODES FOR ALL MEMBERS WELDED.
2. WELDS SHALL DEVELOP THE FULL STRENGTH OF MEMBERS JOINED UNLESS OTHERWISE SHOWN OR DETAILED IN THE DRAWINGS.

#### NOTES ON STRUCTURAL STEEL

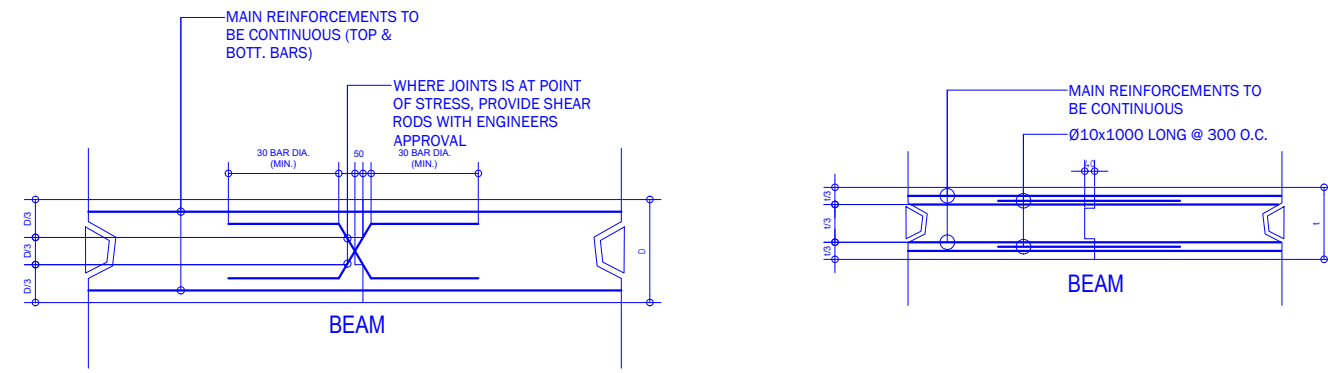
1. STRUCTURAL STEEL TO BE USED FOR FABRICATION AND ERECTION OF THIS STRUCTURE SHALL COMPLY WITH ALL THE PERTINENT PROVISION OF AISC SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDING LATEST EDITION.
2. ALL STRUCTURAL STEEL SHAPES SHALL CONFORM TO ASTM A36 STRUCTURAL STEEL UNLESS OTHERWISE INDICATED.
3. ALL WELDED CONNECTIONS SHALL DEVELOP THE FULL STRENGTH OF THE MEMBERS CONNECTED. UNLESS OTHERWISE SPECIFIED ALL WELDING RODS SHALL CONFORM AWS E60 ELECTRODES.
4. ALL BOLTS USED UNLESS OTHERWISE SPECIFIED SHALL BE ASTM A307 BOLTS.

#### NOTES ON EMBEDDED PIPES

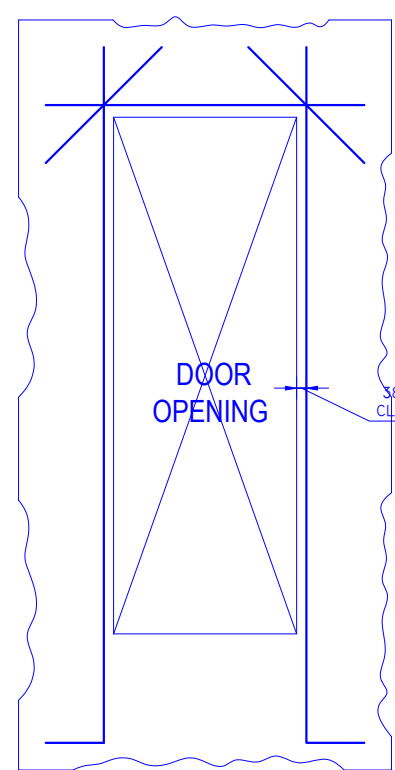
- A. ALL EMBEDDED PIPES FOR UTILITIES , ETC. THAT PASS THRU BEAMS SHALL NOT EXCEED 100mm IN DIAMETER OR  $\frac{1}{8}$  OF BEAM DEPTH WHICHEVER IS LESS, UNLESS OTHERWISE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER.
- B. NO PIPES SHALL BE ALLOWED TO PASS THRU BEAMS VERTICALLY.
- C. NO PIPES SHALL BE EMBEDDED COLUMNS.

#### NOTES ON CONSTRUCTION JOINTS IN CONCRETE

1. WHERE A CONSTRUCTION JOINT IS TO BE MADE, THE SURFACE OF CONCRETE SHALL BE CLEANED AND ALL LAITANCE AND STANDING WATER REMOVED. SHEAR KEY SHALL BE PROVIDED AT THE JOINT.

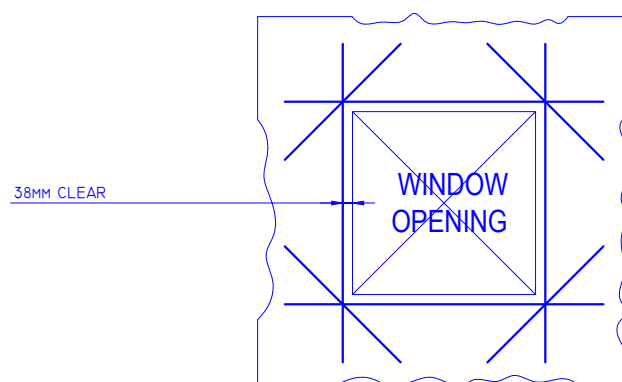


TYPICAL SLAB & BEAM CONSTRUCTION JOINT DETAIL



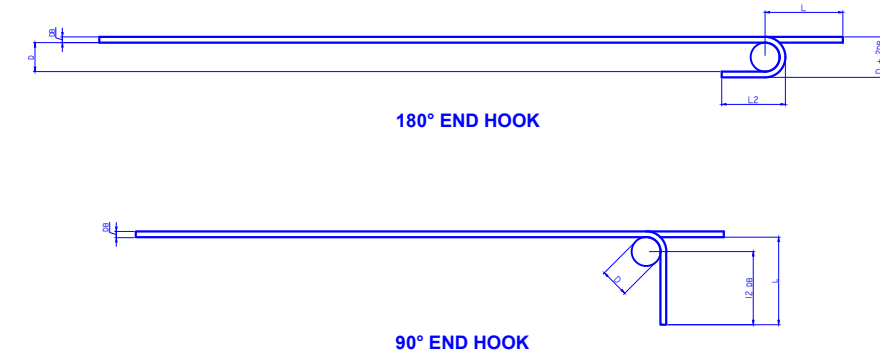
NOTE:  
PROVIDE THESE ADDITIONAL BARS FOR ALL OPENINGS PLUS BARS (NOT SHOWN) PARALLEL TO SIDE OF OPENING EQUAL TO THE NUMBER OF TERMINATED BARS AT OPENING

SEE ARCHITECTURAL & MECHANICAL PLANS FOR SLAB OPENING LOCATION.

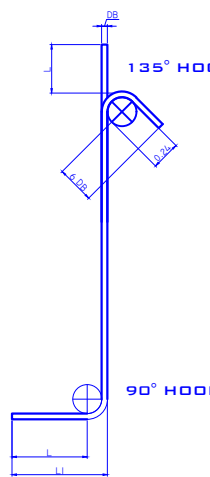


TYP. EXTERIOR WINDOW & DOORS OPENING

- NOTES ON STIRRUPS
- ALL REINFORCEMENT SHALL BE BENT COLD UNLESS OTHERWISE PERMITTED BY THE STRUCTURAL ENGINEER.
  - REINFORCEMENT PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FILLED BENT, EXCEPT AS SHOWN IN THE DESIGN DRAWINGS OR PERMITTED BY THE STRUCTURAL ENGINEER.
  - TIES & CLOSE STIRRUPS MUST BE BENT AT 135°.



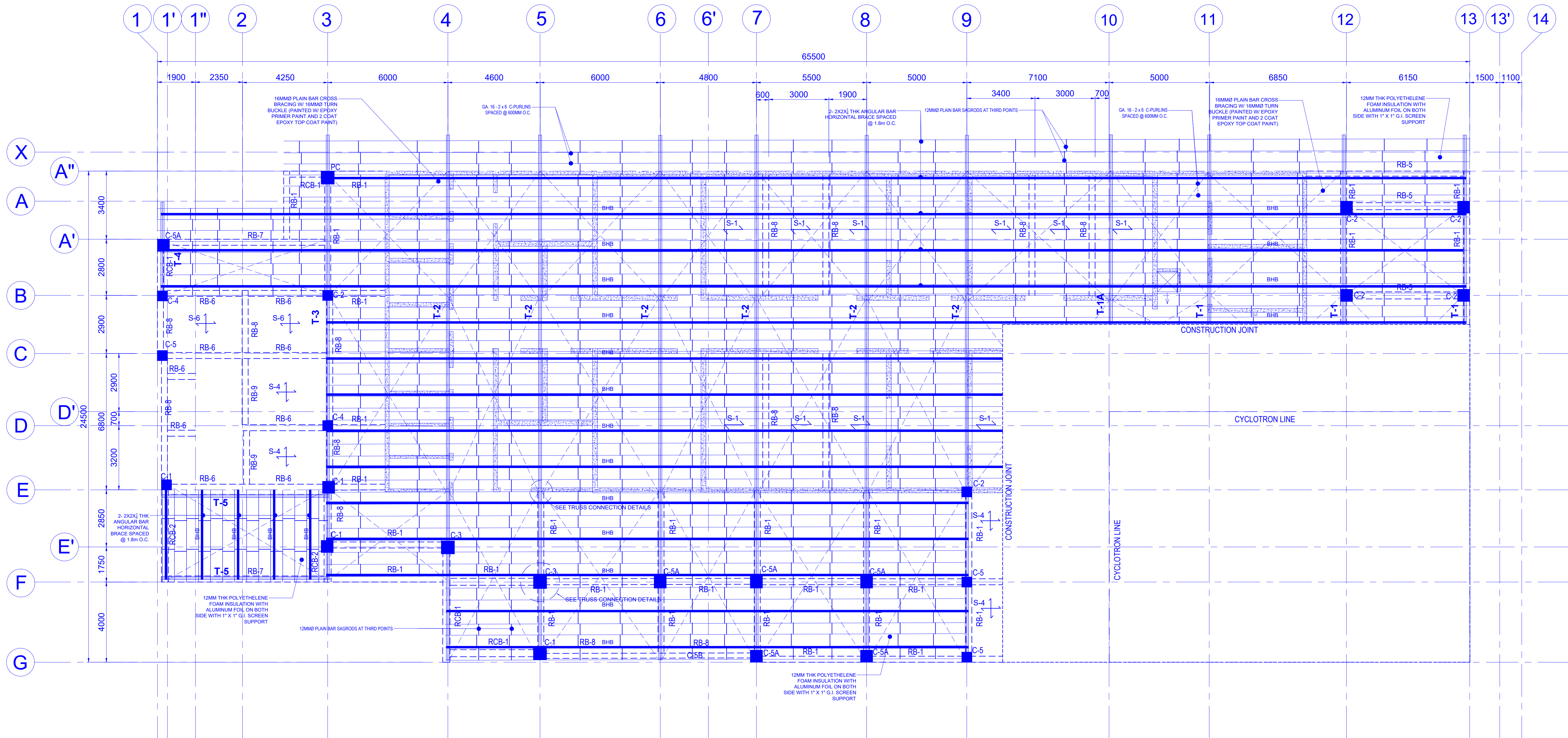
MAIN BAR END HOOKS (ALL GRADES)				
BAR SIZE (DEFORMED)	DIAMETER (mm)	180° HOOK D=2db	90° HOOK L	90° HOOK L
10mm Ø	60	75	300	150
12mm Ø	75	100	300	200
16mm Ø	95	125	300	250
20mm Ø	115	150	350	300
25mm Ø	150	200	550	450
28mm Ø	240	300	650	550
32mm Ø	300	335	850	600



STIRRUP AND TIE HOOKS (ALL GRADES)				
BAR SIZE (DEFORMED)	DIAMETER (mm)	180° HOOK D=2db	90° HOOK L	90° HOOK L
10mm Ø	40	125	85	100
12mm Ø	50	165	115	115
16mm Ø	65	200	140	150
20mm Ø	115	250	165	300
25mm Ø	150	365	230	405

#### GENERAL NOTES

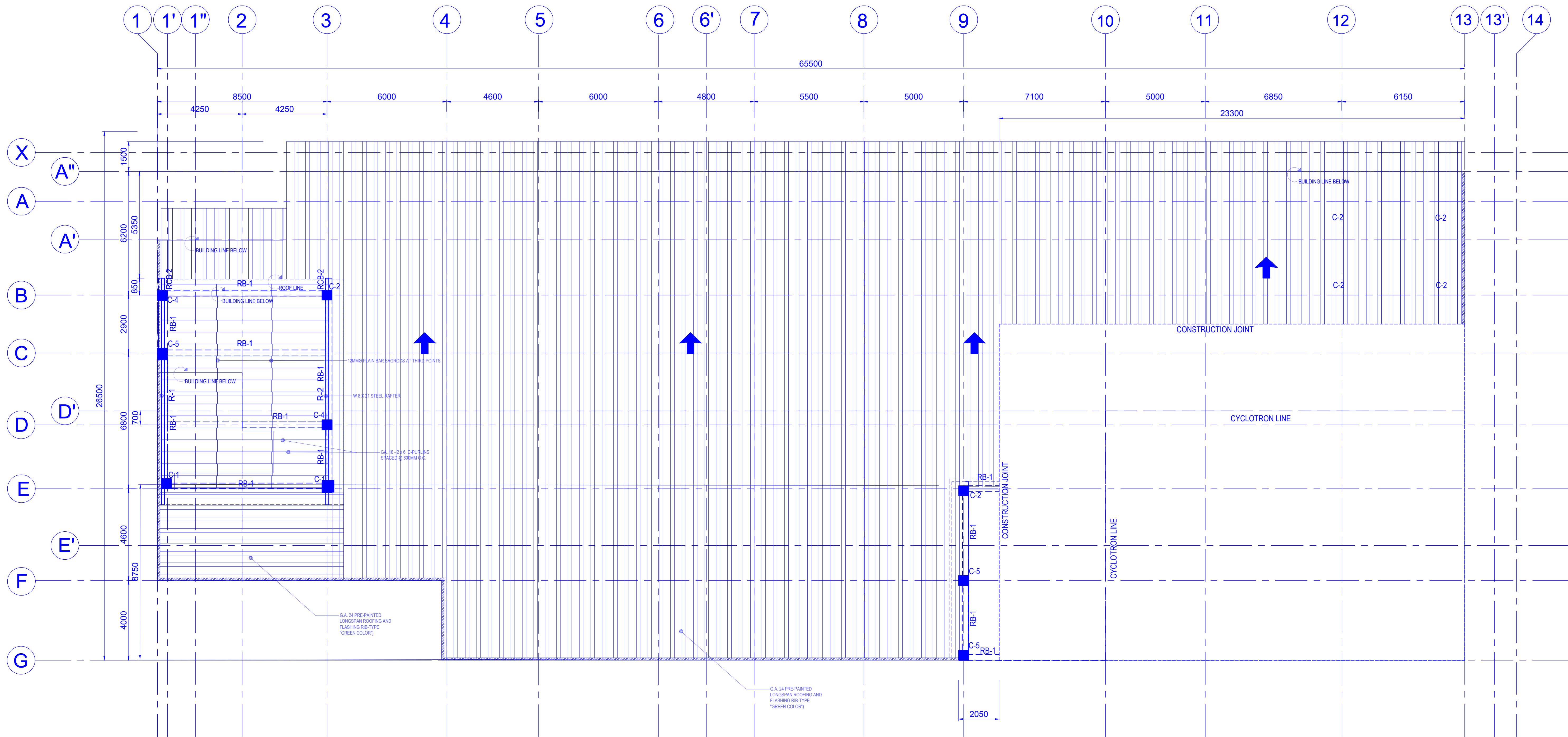
1 S-2 SCALE NTS



1  
S-3

MAIN ROOF FRAMING PLAN

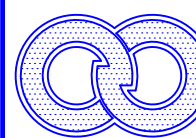
SCALE 1:100m



1  
S-4

SCALE 1:100m

ROOF DECK FRAMING PLAN



**E. A. RAMIREZ CONSTRUCTION, INC.**  
DESIGNER DEVELOPER BUILDER  
Location : EARCON Bldg, 31 Commonwealth Ave. Ext., Brgy. Sta. Monica, Quezon City 1117  
Tels. +63 9259169 Telefax. +63 2779125

**Ed Angelo D. Ramirez**  
PROJECT MANAGER



**PROJECT TITLE:**  
Department of Science and Technology  
Philippines Nuclear Research Institute  
**Innovating Nuclear Medicine Research and Services:  
Development of Emerging PET Radiopharmaceuticals  
for Early Cancer Staging and Assessment of Biological  
Functions in Cancer Cells (C.Y. 2021) (PHASE 2)**  
LOCATION: PNRI Compound, Commonwealth Avenue, Diliman, Quezon City

**Engr. Rosalino B. Rejas**  
SENIOR SCIENCE RESEARCH SPECIALIST

**Engr. Arturo F. Salih**  
SENIOR SCIENCE RESEARCH SPECIALIST

**Engr. Andrew C. Barrida**  
ENGINEER II

**Engr. Renato T. Bahaga**  
ESS HEAD

**Adelina DM. Bulos**  
END-USER/ ITS HEAD

**Preciosa Corazon B. Pabroa, Ph. D.**  
NSO CHIEF

**Vallerie Ann I. Samson, Ph. D.**  
OIC, DEPUTY DIRECTOR

**Carlo A. Arcilla, Ph. D.**  
DIRECTOR

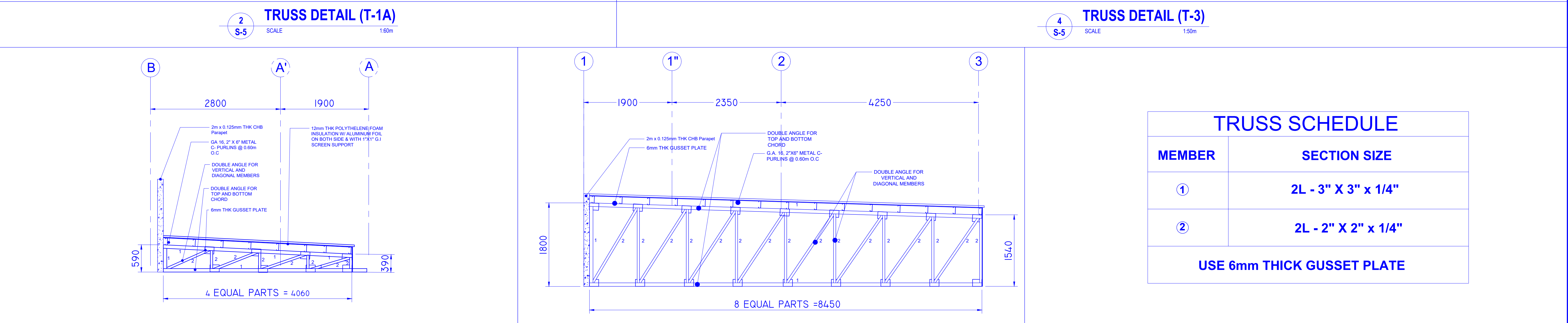
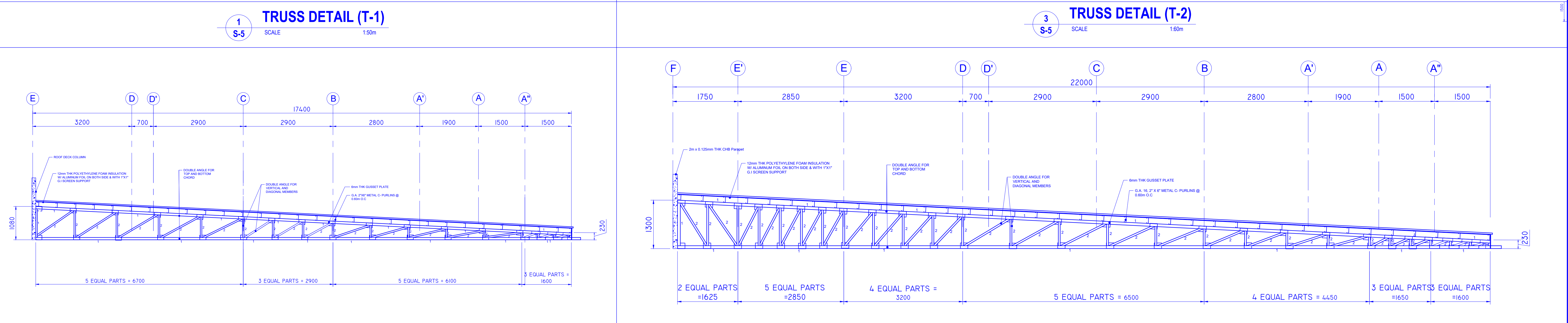
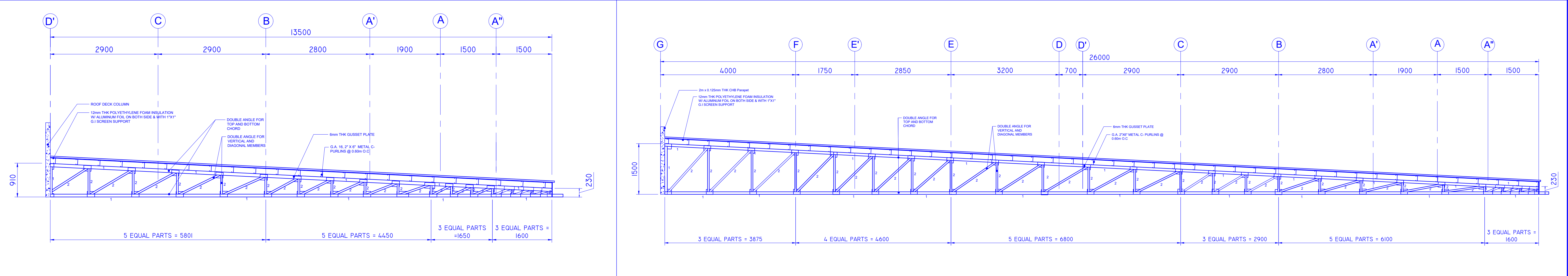
**SHEET CONTENTS:**  
ROOF DECK FRAMING  
PLAN

**DESIGNED BY:** E.A.D.R.  
**DESIGN DEVT:** E.A.D.R.  
**DRAWING PRODUCTION:** E.A.D.R.  
**ACAD BY:** B.M.E.F.  
**CHECKED BY:**  
**PROJECT NUMBER:**

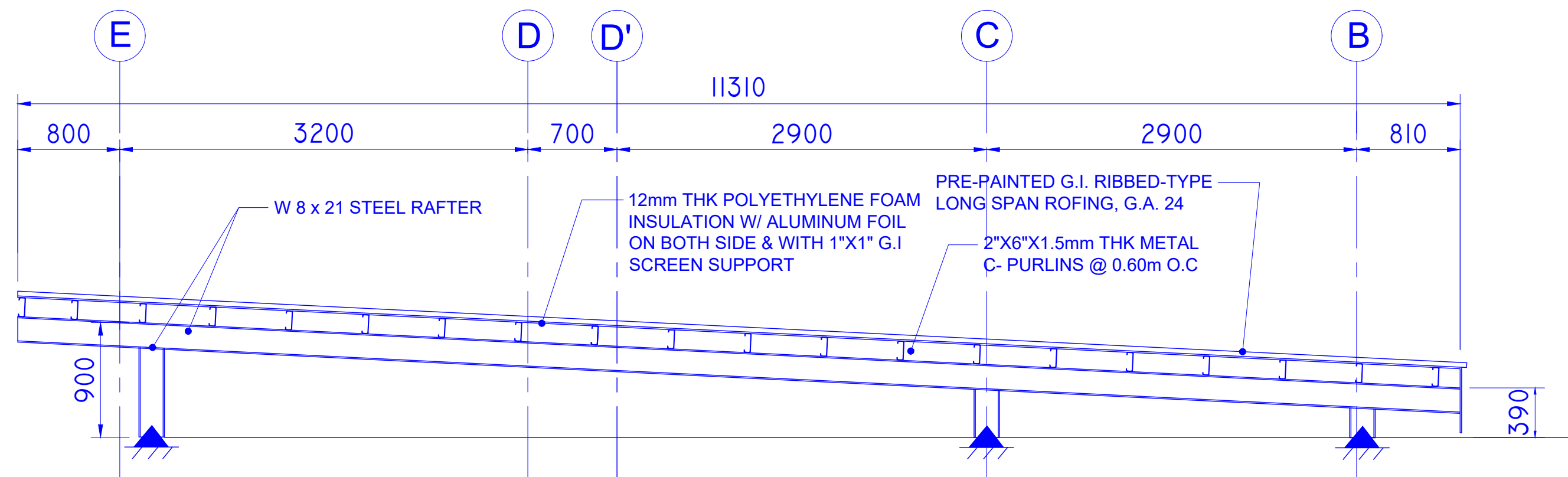
**SHEET NO.**

**S - 4**

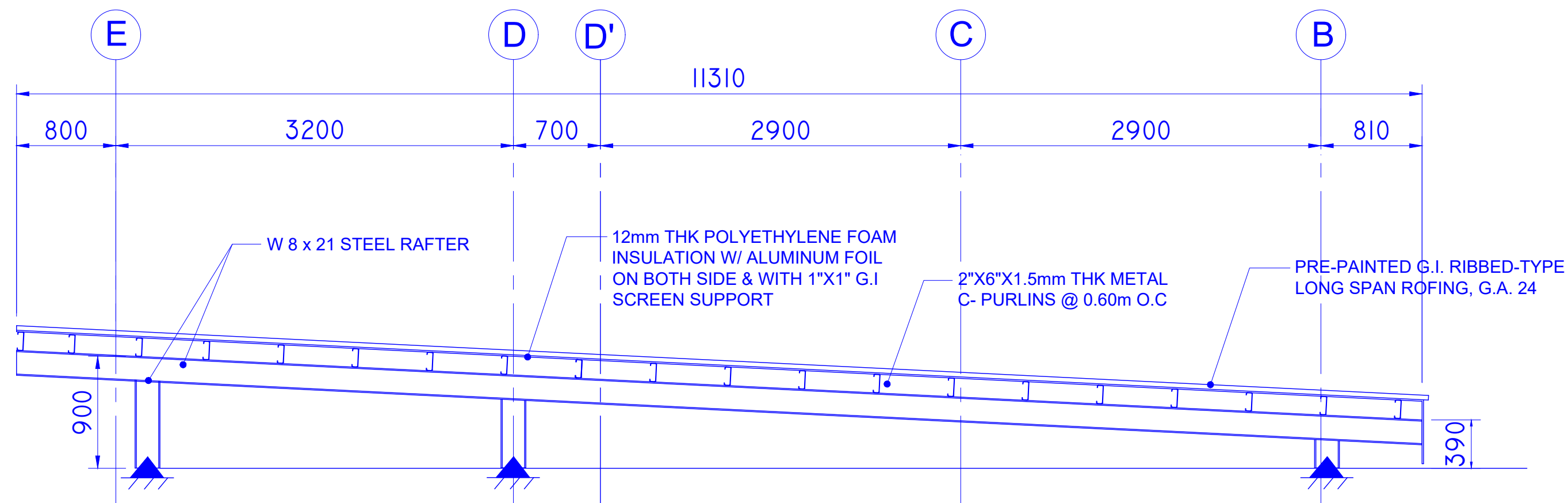
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OF PAGES  
**12** of **19**



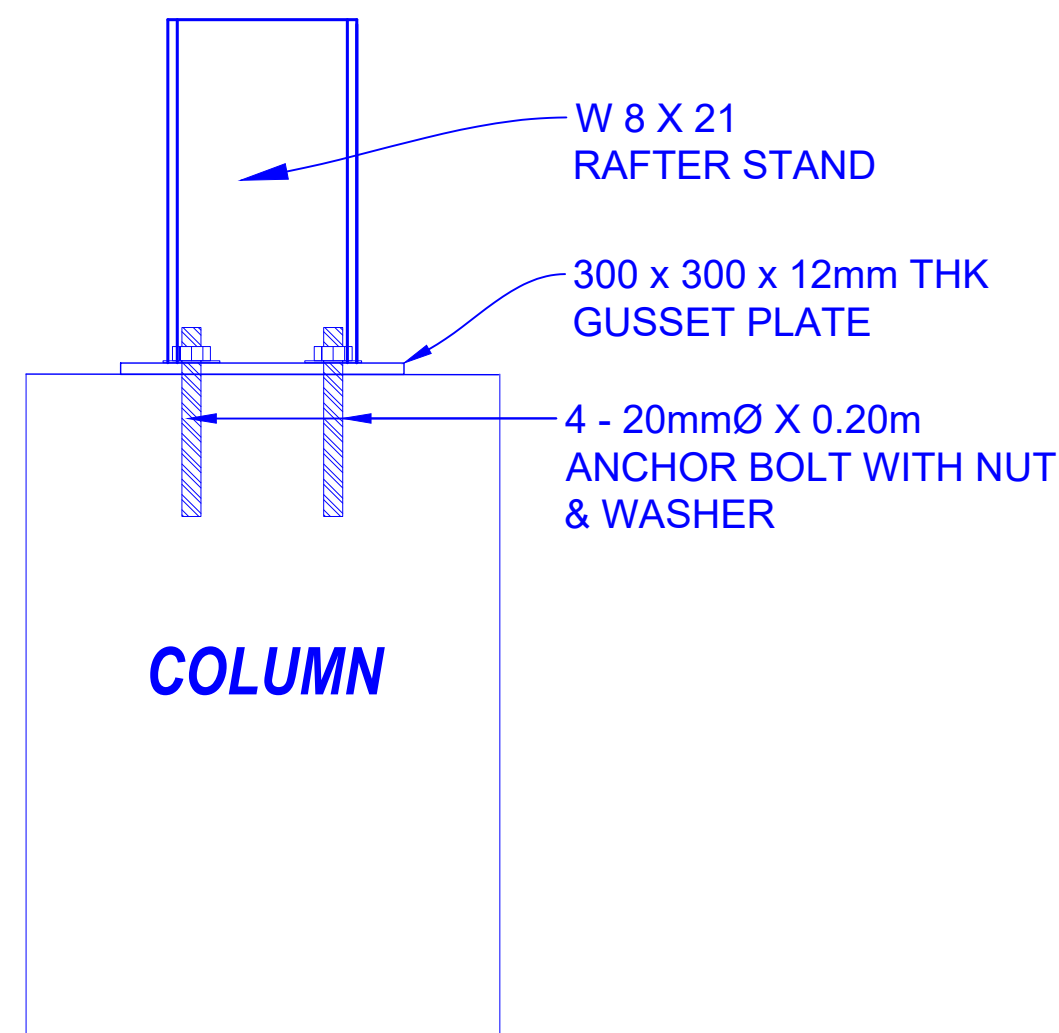
TRUSS SCHEDULE	
MEMBER	SECTION SIZE
①	2L - 3" X 3" x 1/4"
②	2L - 2" X 2" x 1/4"
USE 6mm THICK GUSSET PLATE	



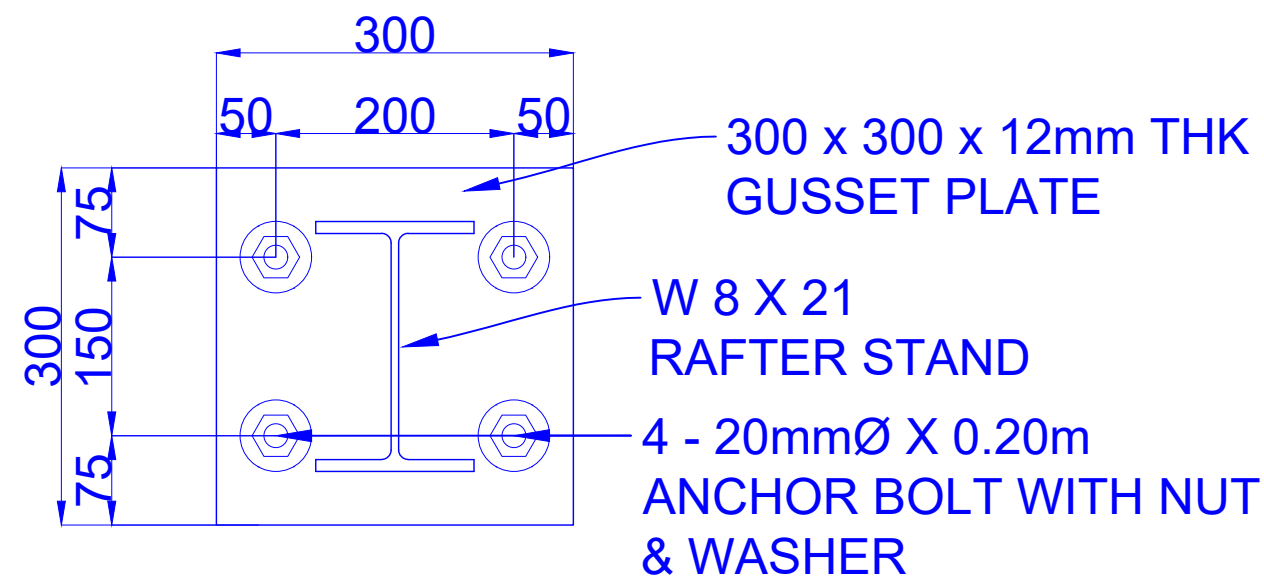
1  
S-6  
RAFTER DETAIL (R-1)  
SCALE 1:35m



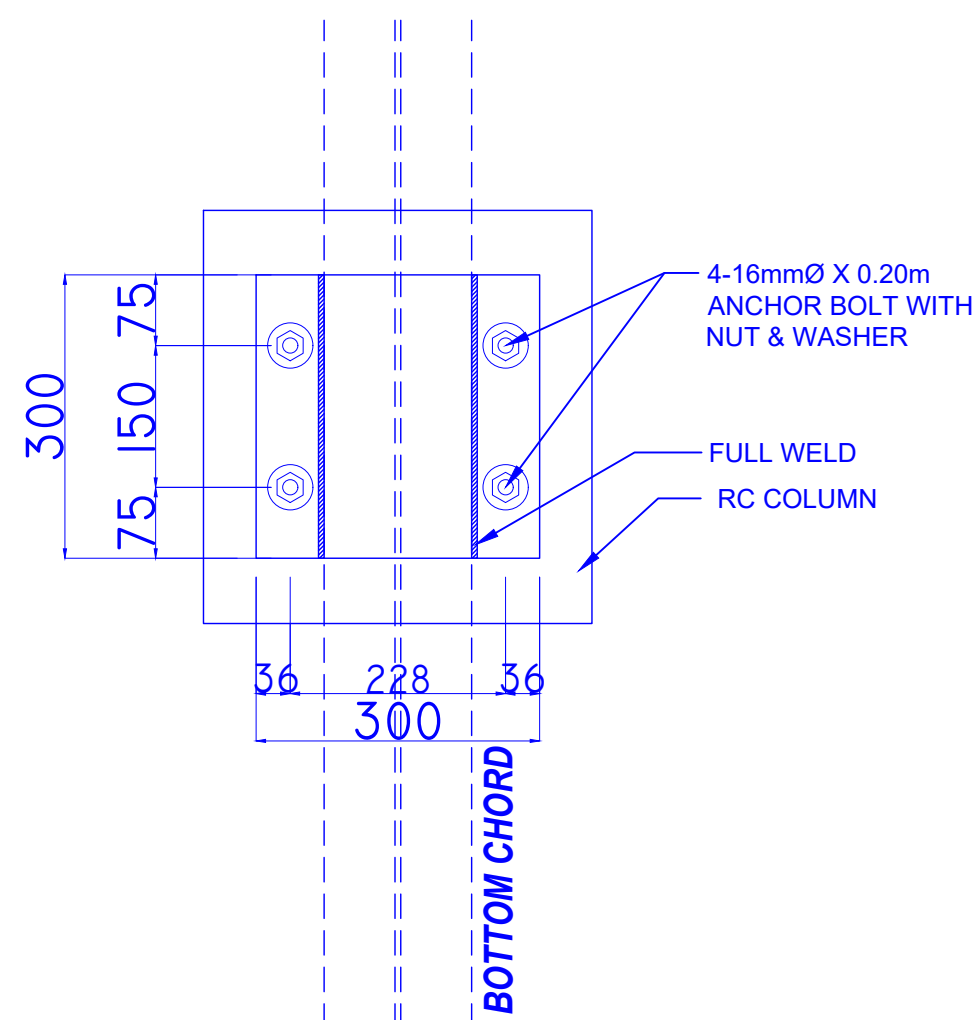
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S-6  
RAFTER DETAIL (R-2)  
SCALE 1:35m



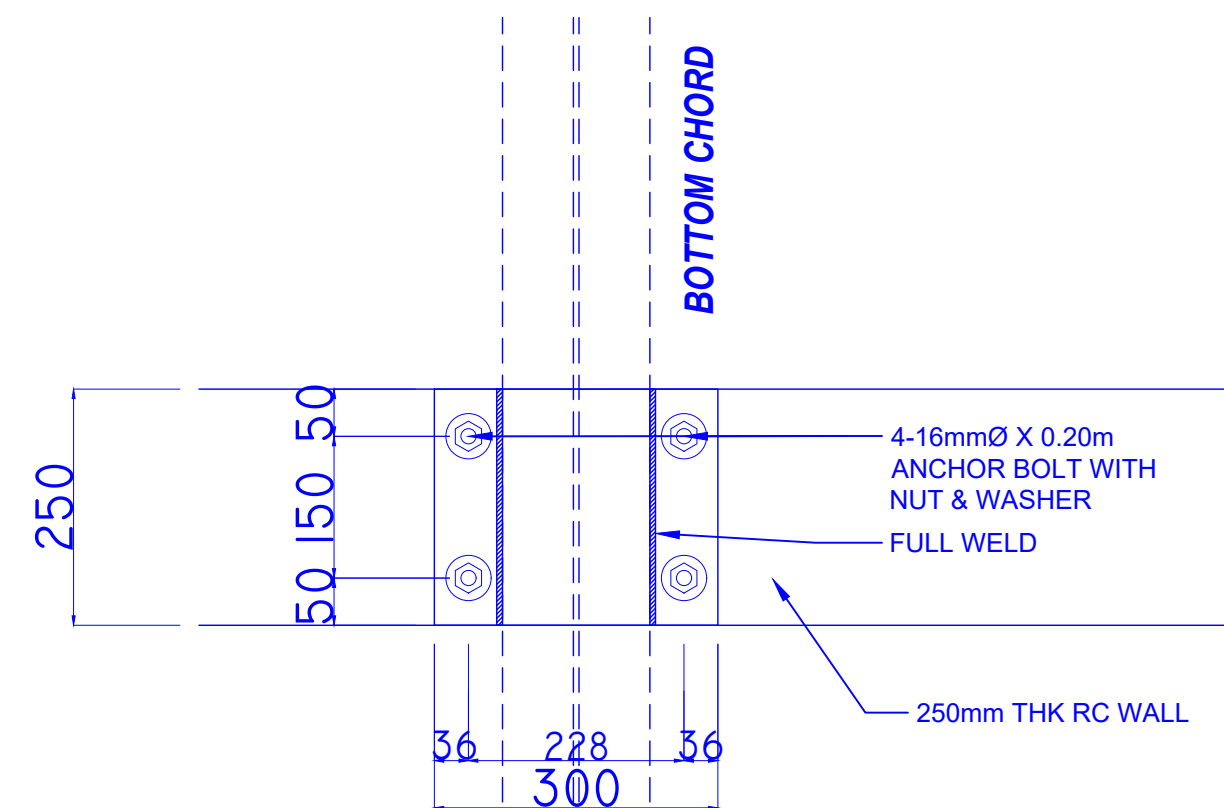
3  
S-6  
RAFTER CONNECTION  
ELEVATION VIEW  
SCALE NTS



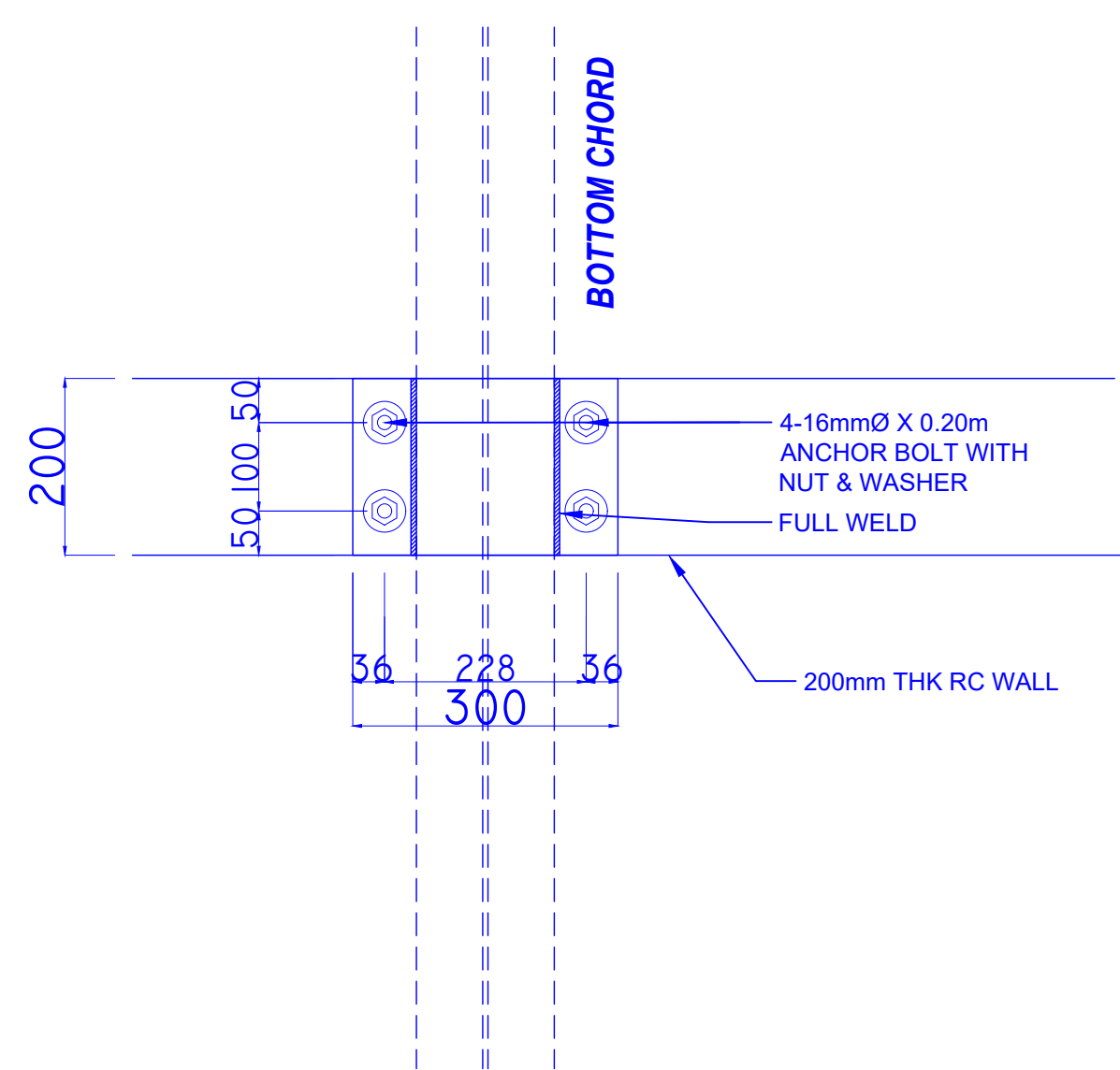
4  
S-6  
RAFTER CONNECTION  
TOP VIEW  
SCALE NTS



5  
S-6  
TRUSS-COLUMN CONNECTION  
TOP VIEW  
SCALE NTS



6  
S-6  
TRUSS-RC WALL CONNECTION  
TOP VIEW (250MM WALL)  
SCALE NTS



7  
S-6  
TRUSS-RC WALL CONNECTION  
TOP VIEW (200MM WALL)  
SCALE NTS