

STRUCTURAL DRAWING

66/33kV SUBSTATION
CONTROL ROOM BUILDING
JAMTSHOLING, SIPS00
BHUTAN POWER CORPORATION LIMITED

GENERAL NOTES

- READ THIS DRAWINGS IN CONJUNCTION WITH ARCHITECTS' AND OTHER RELEVANT ENGINEERS' DRAWING.
- ALL DIMENSIONS ARE IN MILIMETER UNLESS NOTED OTHERWISE.
- DRAWINGS SHALL NOT BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.

DESIGN CONFIRMS TO:

- IS-456:2000 - CONCRETE DESIGN
- IS-13920:1993 - DUCTILE DETAILING OF REINFORCE CONCRETE STRUCTURES SUBJECTED TO SEISMIC FORCES.
- IS-1893:2002 - CRITERIA FOR EARTHQUAKE RESISTANT DESIGN OF STRUCTURES & BUILDING CODE OF BHUTAN 2003.
- IS-806 - DESIGN OF STEEL STRUCTURES
- SP 34 : 1987 - HAND BOOK ON CONCRETE REINFORCEMENT AND DETAILING
- WIND LOAD IN ACCORDANCE WITH IS 875, PART 3 ASSUMING WIND SPEED OF 44M/S

NOMINAL LOADS USED FOR DESIGN OF STRUCTURE:

- UNIT WEIGHT OF RCC = 25KN/M3
- UNIT WEIGHT OF PCC = 24KN/M3
- UNIT WEIGHT OF BRICK = 20KN/M3
- UNIT WEIGHT OF CEMENT MORTAR = 20KN/M3
- LIVE LOAD FOR ROOF = 0.75KN/M2
- LIVE LOAD FOR STAIRCASE = 3 KN/M2
- LIVE LOAD FOR FLOOR SLAB = 3 KN/M2
- LIVE LOAD FOR CORRIDOR SLAB = 3 KN/M2
- LIVE LOAD FOR TOILETS = 2 KN/M2

FOUNDATION:

- THE DEPTH OF FOUNDATION SHALL EXTENDED TO A MINIMUM OF THE SPECIFIED DEPTH OR TO A STABLE HARD STRATA WHICHEVER IS MORE.
- BEARING CAPACITY OF SOIL FOR DESIGN WORKS= 120KN/M2

REINFORCEMENTS:

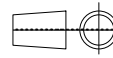
- ALL REINFORCEMENT BARS SHOWN AS ϕ ARE Fe 500 (TMT).
- SPLICING/LAPPING OF BARS SHALL BE STAGGERED AND IN NO CASE MORE THAN 50% BARS SHALL BE LAPPED AT ANY SECTION.
- LAPPING OF BARS FOR BEAMS & SLABS SHALL BE AVOIDED IN THE MAXIMUM TENSION ZONES.
- REINFORCEMENT SHALL BE SUITABLY ADJUSTED AT SITE TO CLEAR POCKETS, BOLTS, OPENINGS, CUTOUTS ETC... AS CHECKED BY THE ENGINEER IN CHARGE UNLESS SHOWN OTHERWISE IN THE DRAWINGS.

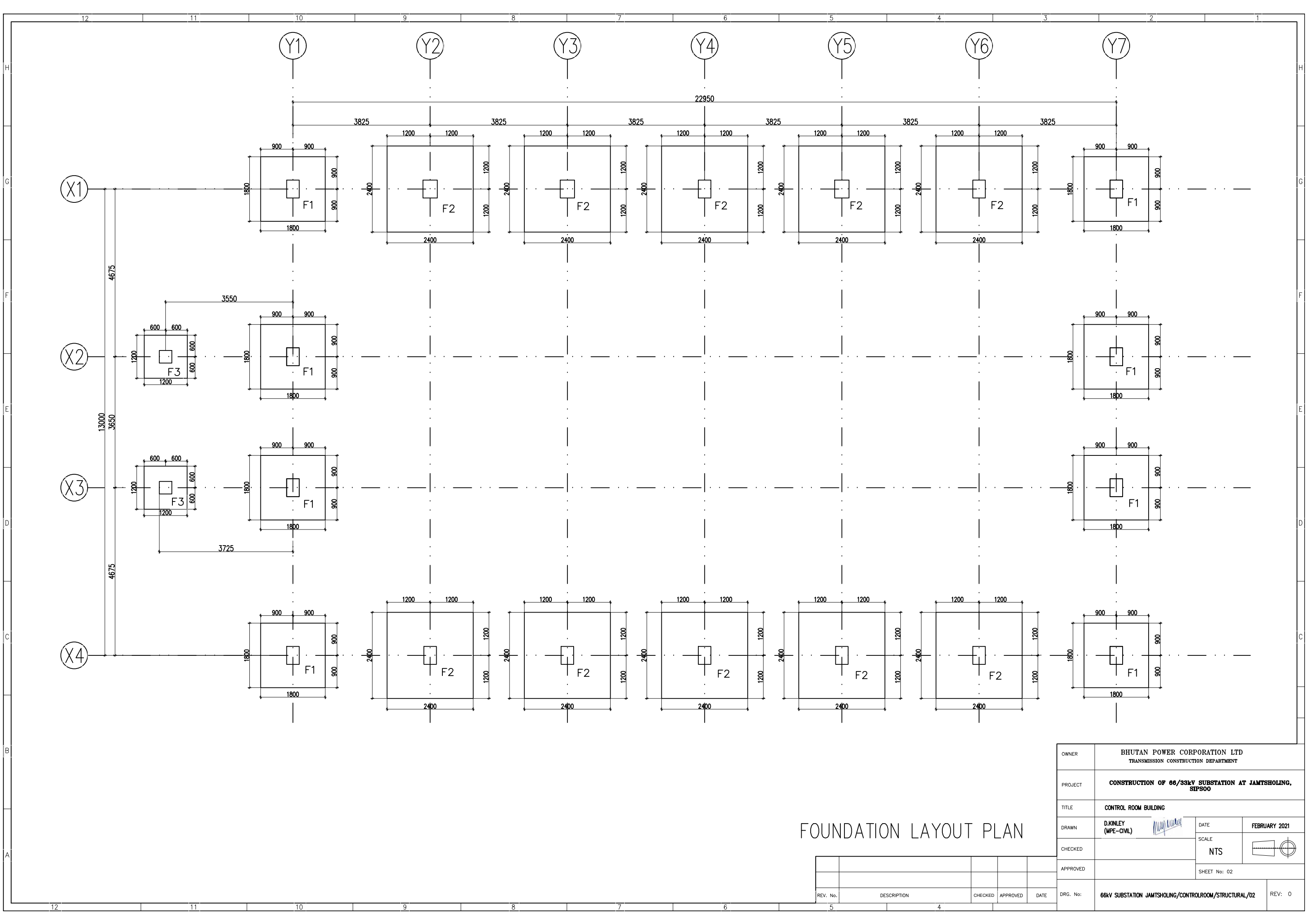
CONCRETE WORKS:

- ALL STRUCTURAL REINFORCED CONCRETE WORKS SHALL BE WITH MIX CONCRETE GRADE OF M20 UNLESS SPECIFIED OTHERWISE.
- AGGREGATE FOR ALL RCC WORKS SHALL BE WELL GRADED AND MAXIMUM SIZE OF 20MM UNLESS STATED OTHERWISE
- WATER CEMENT RATIO SHALL BE MAXIMUM OF 0.55.
- LEAN CONCRETE FOR FILLING UNDER FOUNDATION SHALL BE 1:4:8 WITH AGGT. OF 40MM.
- LOCATION OF CONSTRUCTION JOINTS IF ANY IN STRUCTURAL CONCRETE SHALL BE AS PER THE APPROVAL TAKEN FROM THE ENGINEER-IN-CHARGE BEFORE EXECUTION.
- MINIMUM CLEAR CONCRETE COVER FROM THE OUTSIDE FACE OF THE MAIN BAR AS PER IS 456 2000 SHALL BE AS FOLLOWS.

-FOUNDATION	= 50MM
-COLUMN	= 40MM
-BEAM	= 25MM
-SLAB AND STAIRCASE	= 20MM
- ALL EXPOSED CONCRETE SURFACES SHALL BE NEAT PLASTER FINISHES.
- FOR POSITION AND SIZE OF CUTOUT IN R.C SLAB PLEASE REFER TO THE CORRESPONDING DRAWINGS OF OTHER DECIPLINE, UNLESS SHOWN OTHERWISE.
- DO NOT PLACE ANY CONDUITS AND OTHER PIPES THROUGH BEAMS & COLUMNS UNLESS APPROVAL FROM THE STRUCTURAL ENGINEER
- CONCRETE SHALL BE VIBRATED BY USING NEEDLE VIBRATORS PROPERLY AS PER STANDARD CODE OF PRACTICE.
- ALL CONSTRUCTION SHALL BE CARRIED OUT AS PER THE SPECIFICATION GIVEN IN THE CONTRACT DOCUMENT.

REV. No.	DESCRIPTION	CHECKED	APPROVED	DATE

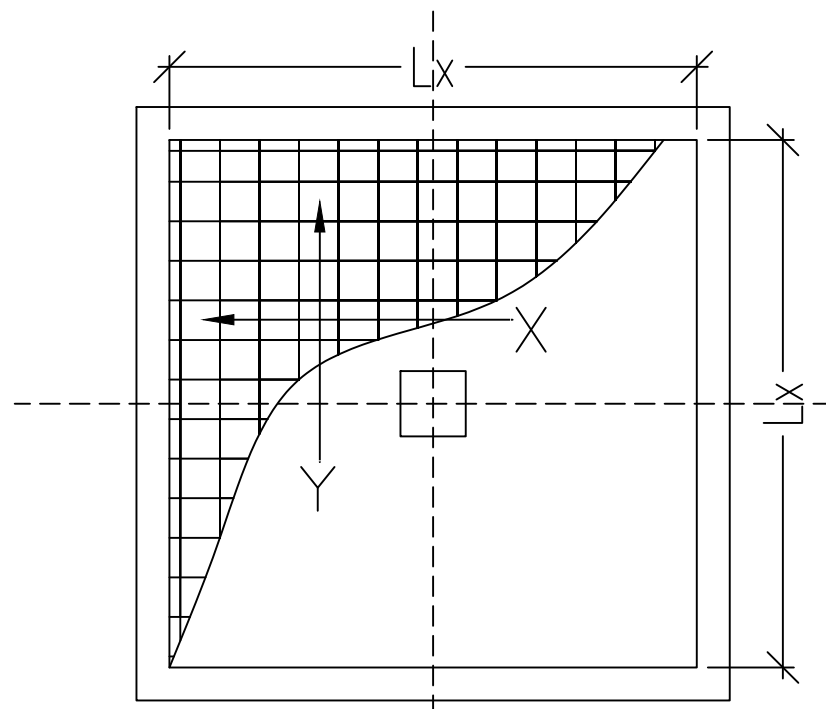
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PROJECT	CONSTRUCTION OF 66/33kV SUBSTATION AT JAMTSHOLING, SIPS00		
TITLE	CONTROL ROOM BUILDING		
DRAWN	D.KINLEY (MPE-CIVIL)	DATE	FEBRUARY 2021
		SCALE	NTS
CHECKED			
APPROVED			
DRG. No:	66KV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/01	REV:	0



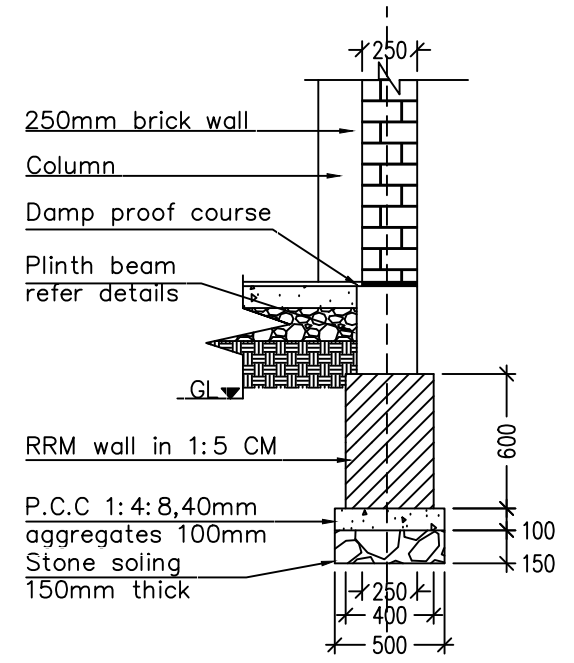
FOUNDATION LAYOUT PLAN

REV. No.	DESCRIPTION	CHECKED	APPROVED	DATE

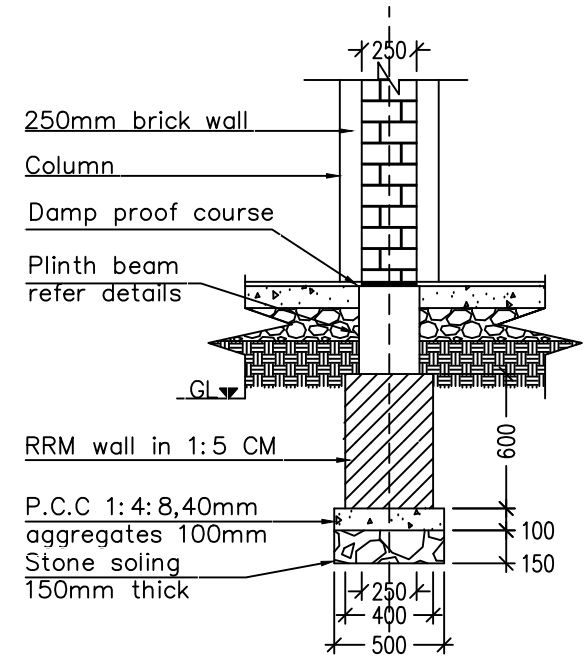
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PROJECT	CONSTRUCTION OF 66/33kV SUBSTATION AT JAMTSHOLING, SIPS00		
TITLE	CONTROL ROOM BUILDING		
DRAWN	D.KINLEY (MPE-CIVIL)	DATE	FEBRUARY 2021
CHECKED		SCALE	NTS
APPROVED		SHEET No: 02	
DRG. No:	66kV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/02	REV:	0



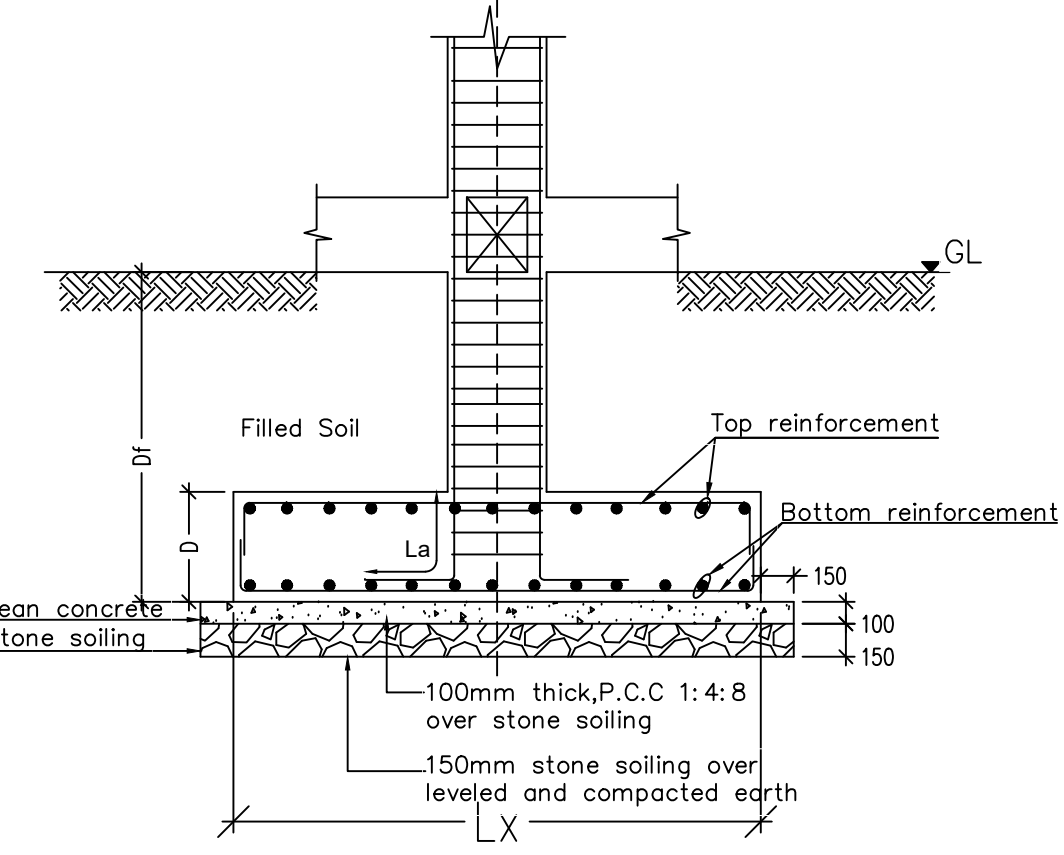
ISOLATED FOOTING REBAR LAYOUT PLAN



EXTERNAL WALL FOUNDATION DETAILS FOR 250mm WALL



INTERNAL WALL FOUNDATION DETAILS FOR 250mm WALL



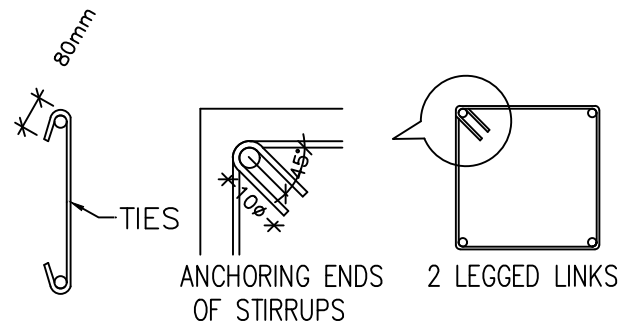
SECTIONAL ELEVATION FOR ISOLATED FOOTING

SCHEDULE OF FOOTINGS

SL/NO	FOOTINGS TYPE	FOOTING SIZE		DEPTH(D)	BOTTOM REINFORCEMENTS		TOP REINFORCEMENTS		DEPTH OF FOUNDATION(Df)
		LENGTH(Lx)	WIDTH(Ly)		X-DIRECTION	Y-DIRECTION	X-DIRECTION	Y-DIRECTION	
F1	ISOLATED FOOTING	1800	1800	325	12 ϕ @180mmc/c	12 ϕ @180mmc/c	12 ϕ @200mmc/c	12 ϕ @200mmc/c	1500
F2	ISOLATED FOOTING	2400	2400	375	12 ϕ @170mmc/c	12 ϕ @170mmc/c	12 ϕ @200mmc/c	12 ϕ @200mmc/c	1500
F3	ISOLATED FOOTING	1400	1400	300	12 ϕ @180mmc/c	12 ϕ @180mmc/c	12 ϕ @200mmc/c	12 ϕ @200mmc/c	1500

REV. No.	DESCRIPTION	CHECKED	APPROVED	DATE

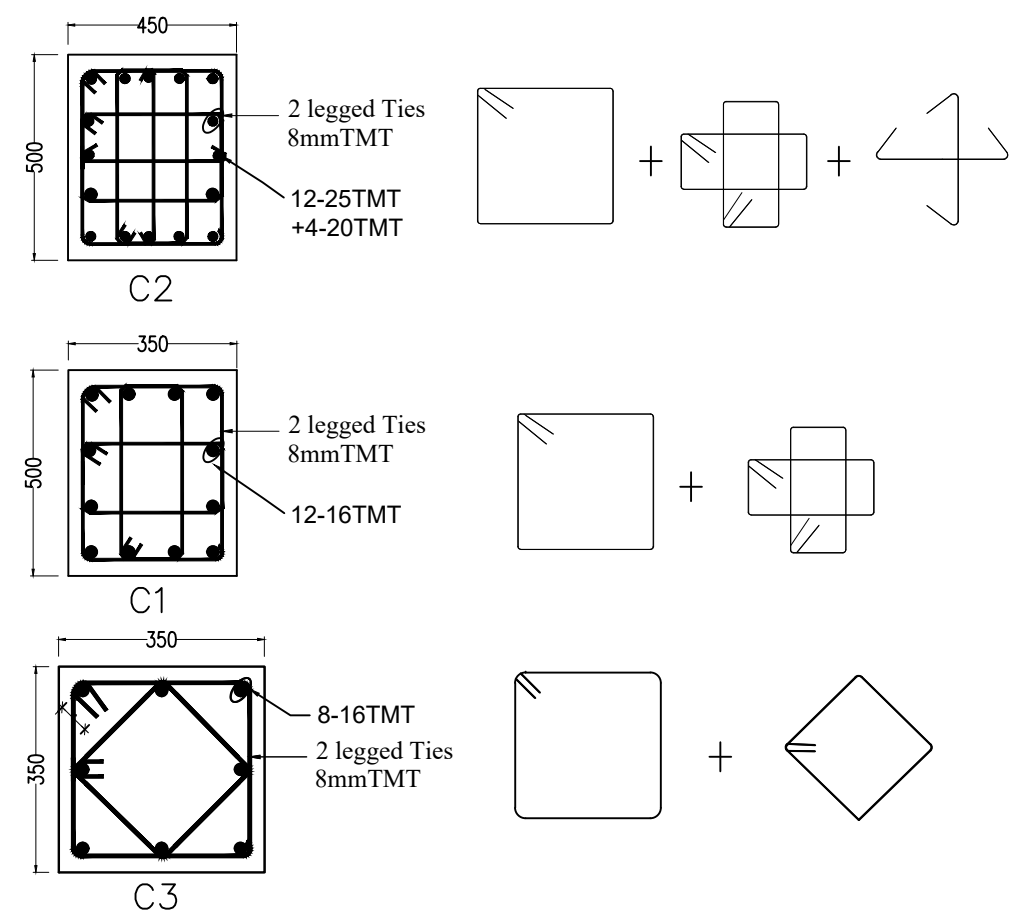
OWNER	BHUTAN POWER CORPORATION LTD TRANSMISSION CONSTRUCTION DEPARTMENT			
PROJECT	CONSTRUCTION OF 66/33kV SUBSTATION AT JAMTSHOLING, SIPS00			
TITLE	CONTROL ROOM BUILDING			
DRAWN	D.KINLEY (MPE-CIVIL)	DATE	FEBRUARY 2021	
CHECKED		SCALE	NTS	
APPROVED		SHEET No: 03		
DRG. No:	66kV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/03			REV: 0



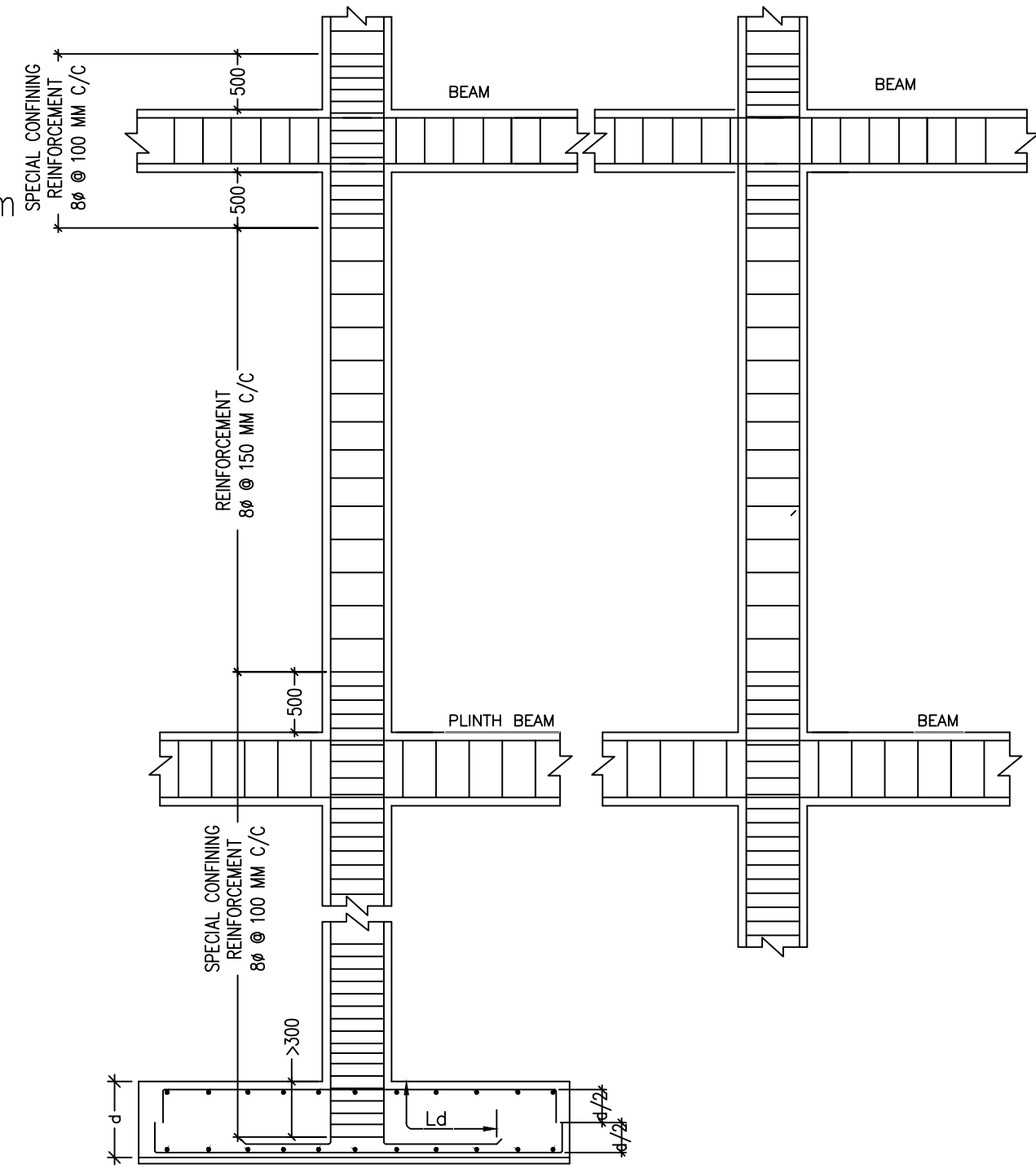
NOTE:-
 1. No lapping shall be allowed for column bars.
 2. Special confining steel shall be provided as shown in the drawing and should continue at least 500mm on either sides of the beams;

SCHEDULE FOR COLUMN

SL.NO	COLUMN	SIZE	REINFORCEMENTS		
			LONGITUDINAL	TIES	
				NORMAL	SPECIAL CONFINING
1	C1	350x500	12-16 ϕ	8 ϕ @ 150 C/C	8 ϕ @ 100 C/C
2	C2	450x500	12-25 ϕ +4-20 ϕ	8 ϕ @ 150 C/C	8 ϕ @ 100 C/C
3	C3	350x350	8-16 ϕ	8 ϕ @ 150 C/C	8 ϕ @ 100 C/C



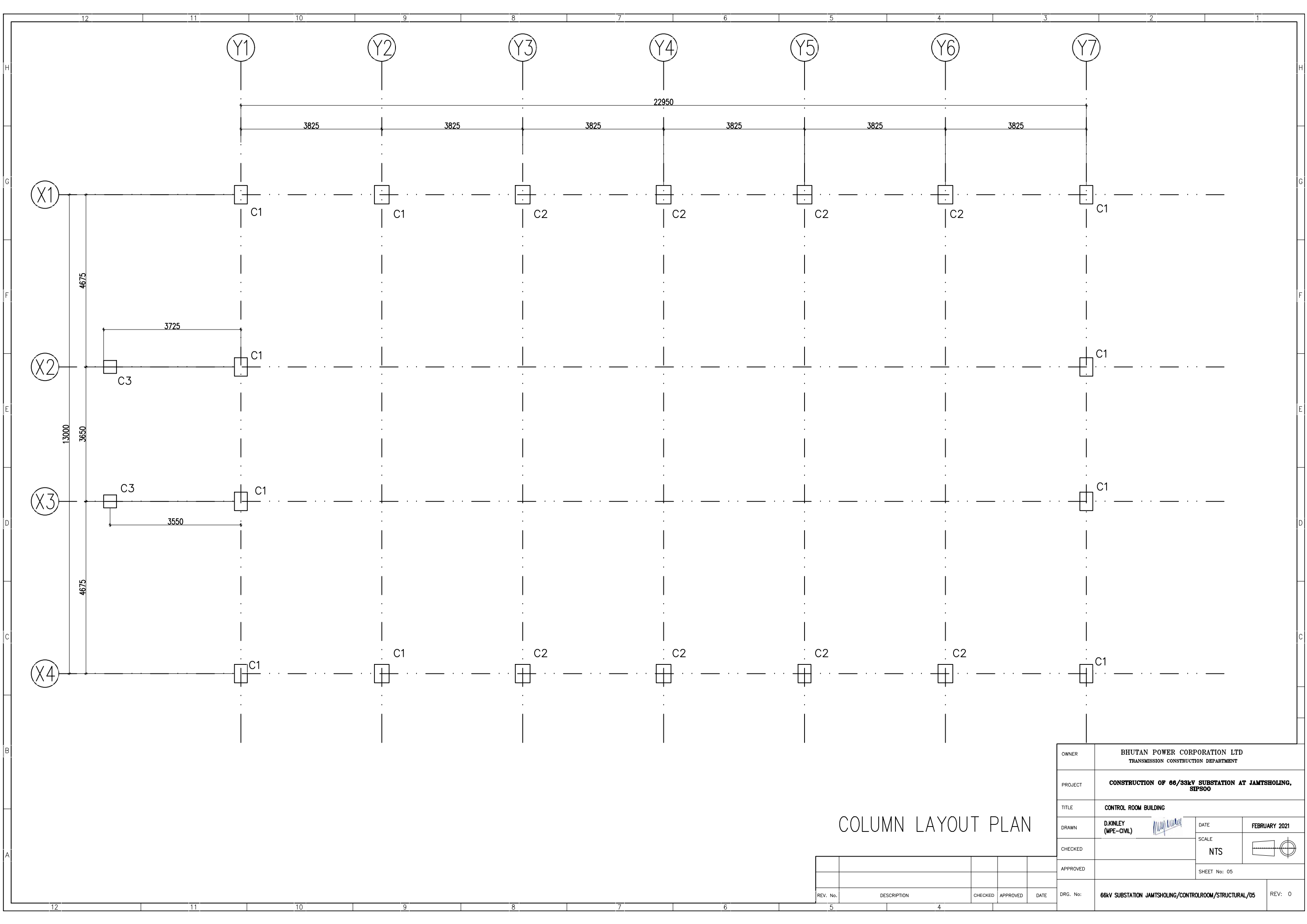
COLUMN DETAIL



COLUMN & JOINT DETAILING

REV. No.	DESCRIPTION	CHECKED	APPROVED	DATE

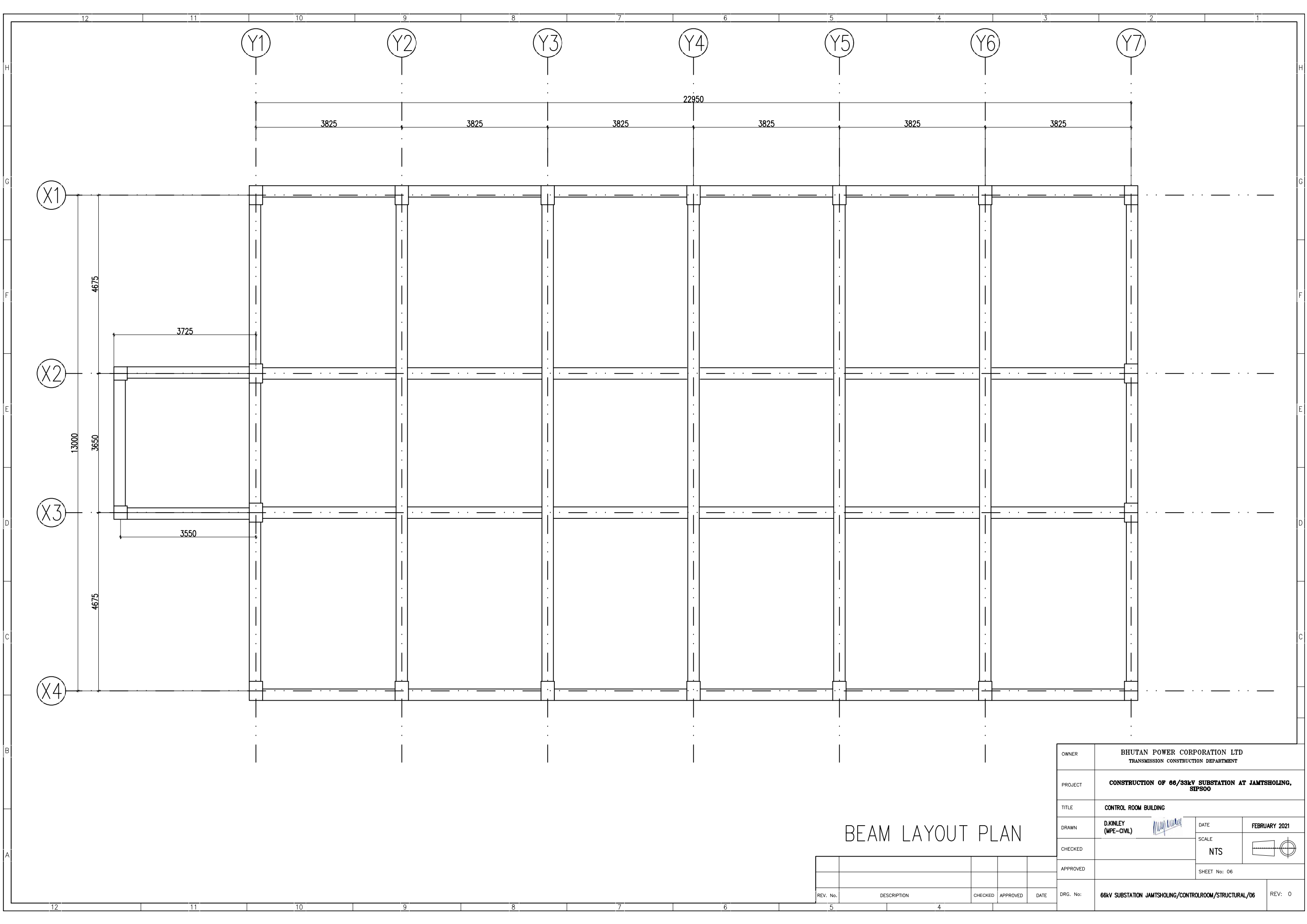
OWNER	BHUTAN POWER CORPORATION LTD TRANSMISSION CONSTRUCTION DEPARTMENT			
PROJECT	CONSTRUCTION OF 66/33kV SUBSTATION AT JAMTSHOLING, SIPS00			
TITLE	CONTROL ROOM BUILDING			
DRAWN	D.KINLEY (MPE-CIVIL)	DATE	FEBRUARY 2021	
CHECKED		SCALE	NTS	
APPROVED		SHEET No: 04		
DRG. No:	66kV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/04			REV: 0



COLUMN LAYOUT PLAN

REV. No.	DESCRIPTION	CHECKED	APPROVED	DATE

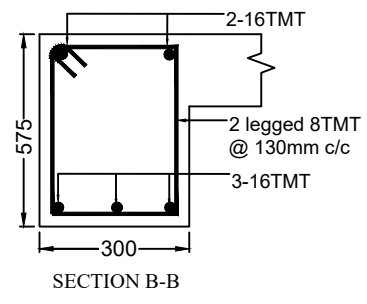
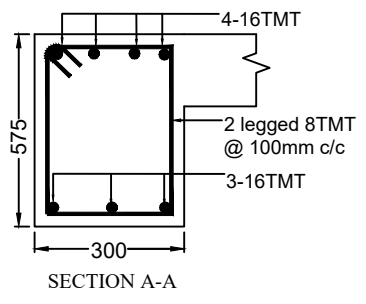
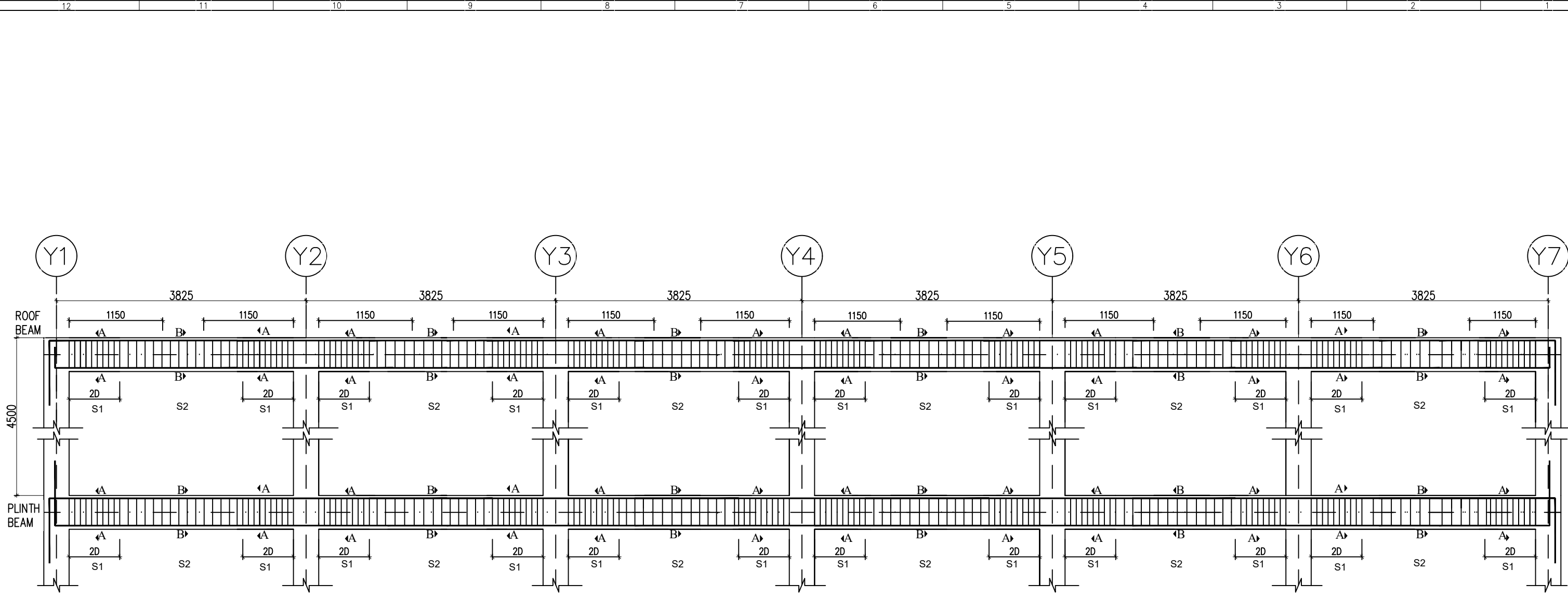
OWNER	BHUTAN POWER CORPORATION LTD TRANSMISSION CONSTRUCTION DEPARTMENT		
PROJECT	CONSTRUCTION OF 66/33kV SUBSTATION AT JAMTSHOLING, SIPS00		
TITLE	CONTROL ROOM BUILDING		
DRAWN	D.KINLEY (MPE-CIVIL)	DATE	FEBRUARY 2021
CHECKED		SCALE	NTS
APPROVED		SHEET No: 05	
DRG. No:	66kV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/05		REV: 0



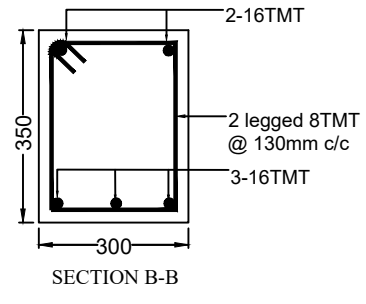
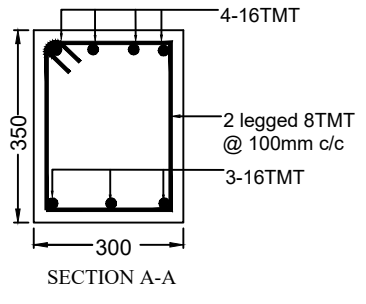
BEAM LAYOUT PLAN

REV. No.	DESCRIPTION	CHECKED	APPROVED	DATE

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PROJECT	CONSTRUCTION OF 66/33kV SUBSTATION AT JAMTSHOLING, SIPS00		
TITLE	CONTROL ROOM BUILDING		
DRAWN	D.KINLEY (MPE-CIVIL)	DATE	FEBRUARY 2021
CHECKED		SCALE	NTS
APPROVED		SHEET No: 06	
DRG. No:	66kV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/06		REV: 0



ROOF BEAM



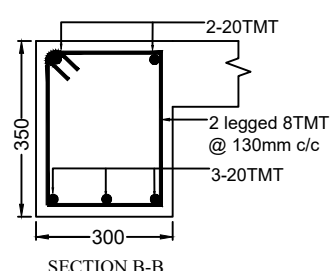
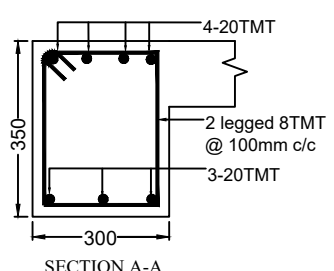
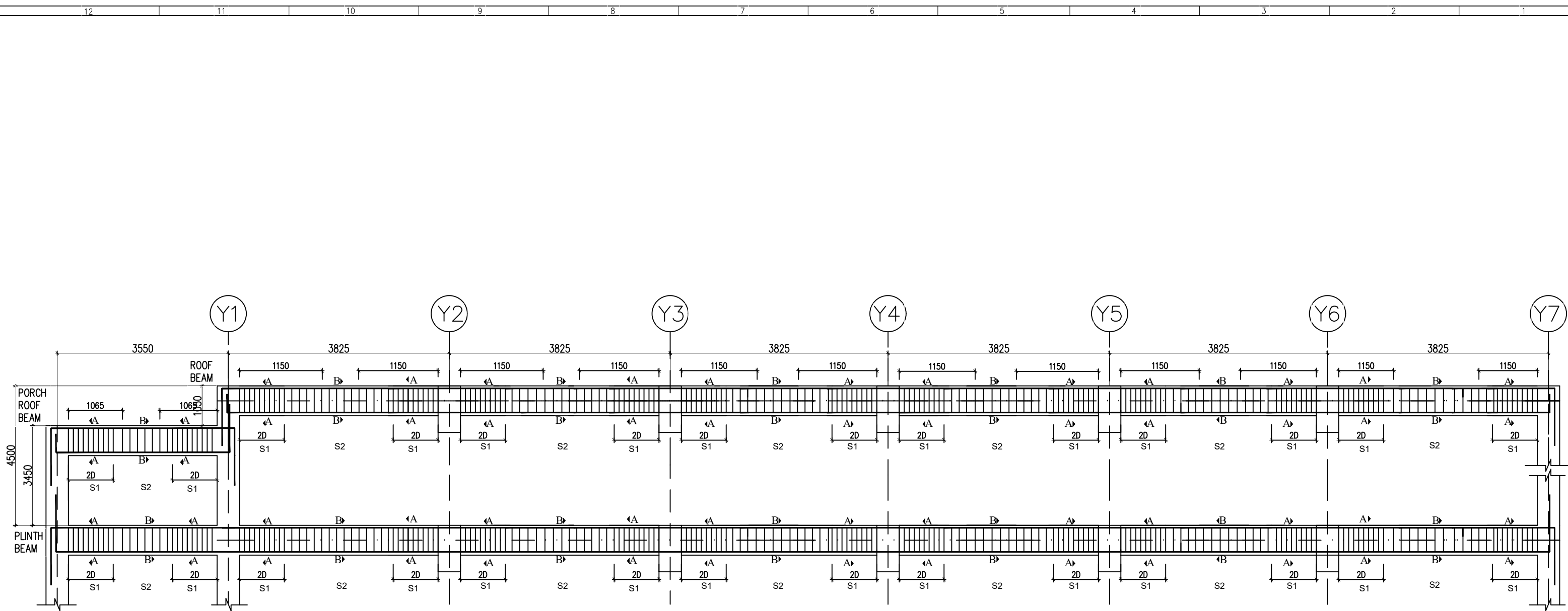
PLINTH BEAM

NOTES:
 S1= 8mm ϕ @ 100mm c/c for 2D (Unless stated in the beam section)
 S2= 8mm ϕ @ 140mm c/c between two S1 (Unless stated in the beam section)
 Curtailment distances are given above the roof beam level
 Development length(L_d)=57*diameter of the bar &
 Anchorage length (L_a) = 67*diameter of the bar
 S1=2D

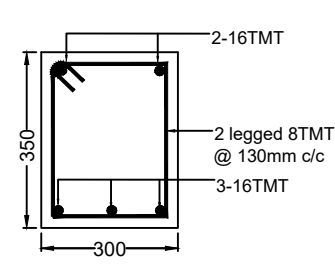
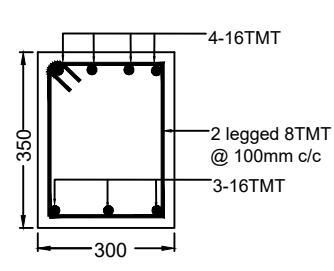
GRID X1 & X4

REV. No.	DESCRIPTION	CHECKED	APPROVED	DATE

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TITLE	CONTROL ROOM BUILDING		
DRAWN	D.KINLEY (MPE-CIVIL)	DATE	FEBRUARY 2021
CHECKED		SCALE	NTS
APPROVED		SHEET No: 07	
DRG. No:	66kV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/07		REV: 0



ROOF BEAM



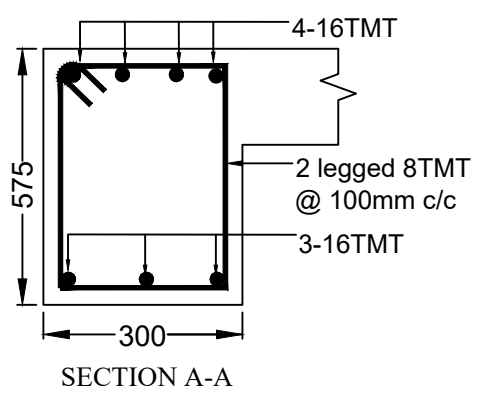
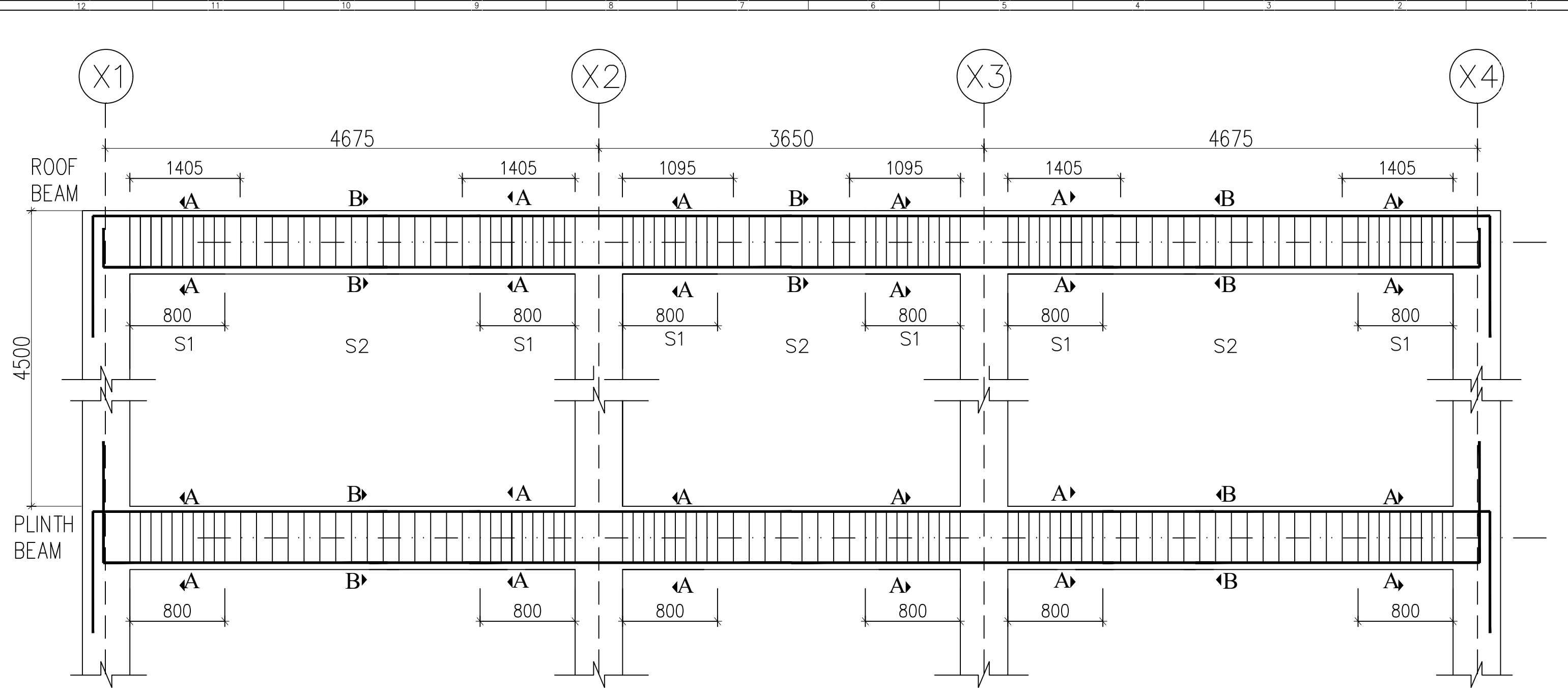
PLINTH BEAM

NOTES:
 S1= 8mm ϕ @ 100mm c/c for 2D (Unless stated in the beam section)
 S2= 8mm ϕ @ 140mm c/c between two S1 (Unless stated in the beam section)
 Curtailment distances are given above the roof beam level
 Development length(L_d)=57* ϕ diameter of the bar &
 Anchorage length (L_a) = 67* ϕ diameter of the bar
 S1=2D

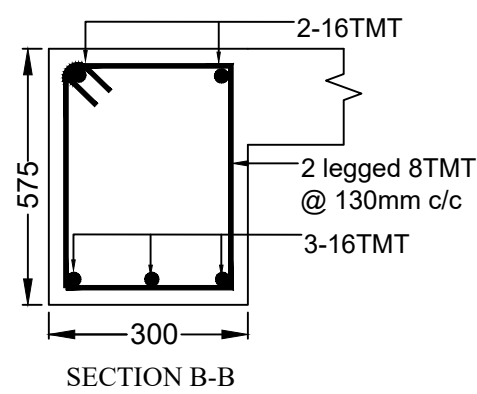
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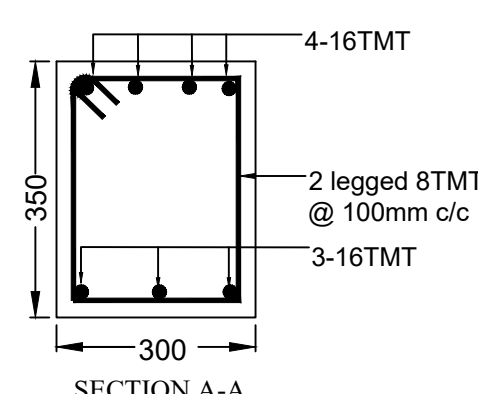
OWNER	BHUTAN POWER CORPORATION LTD TRANSMISSION CONSTRUCTION DEPARTMENT		
PROJECT	CONSTRUCTION OF 66/33kV SUBSTATION AT JAMTSHOLING, SIPS00		
TITLE	CONTROL ROOM BUILDING		
DRAWN	D.KINLEY (MPE-CIVIL)	DATE	FEBRUARY 2021
CHECKED		SCALE	NTS
APPROVED		SHEET No: 08	
DRG. No:	66kV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/08		REV: 0



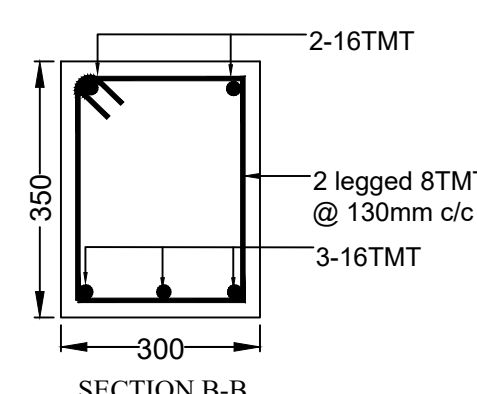
SECTION A-A
ROOF BEAM



SECTION B-B
ROOF BEAM



SECTION A-A
PLINTH BEAM



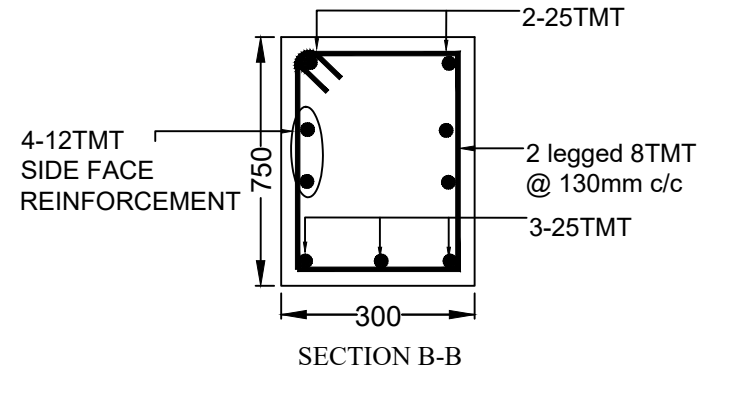
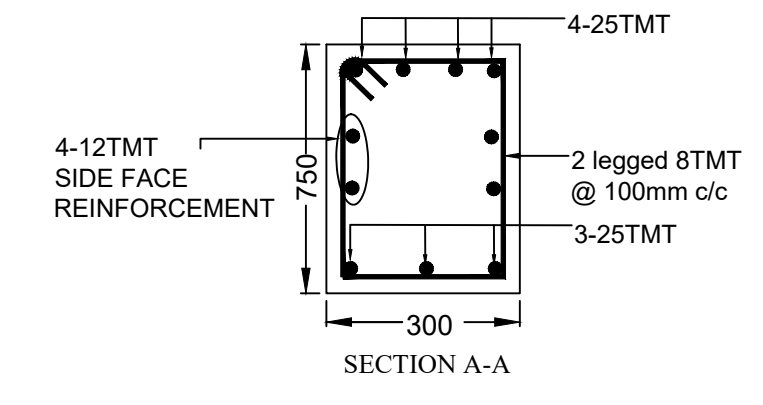
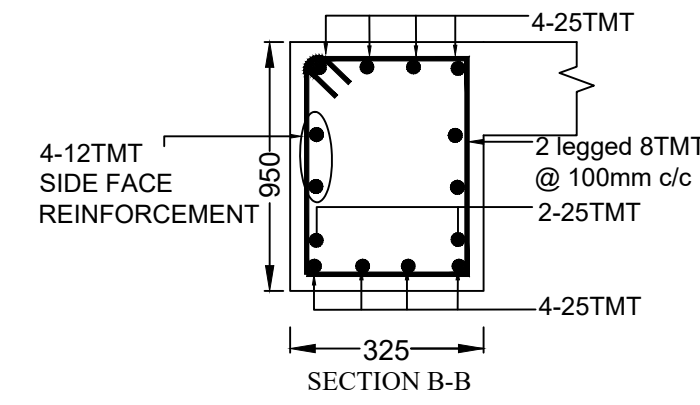
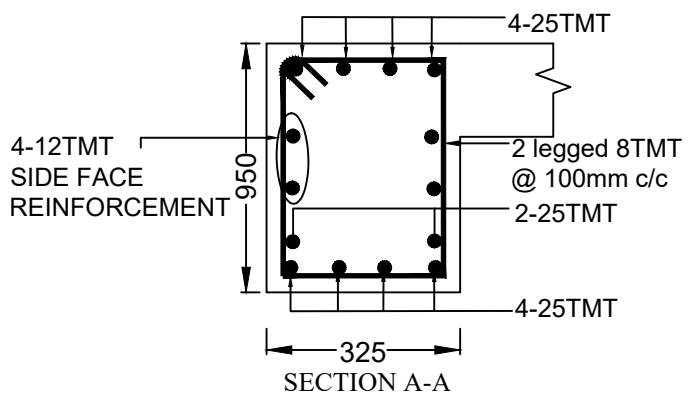
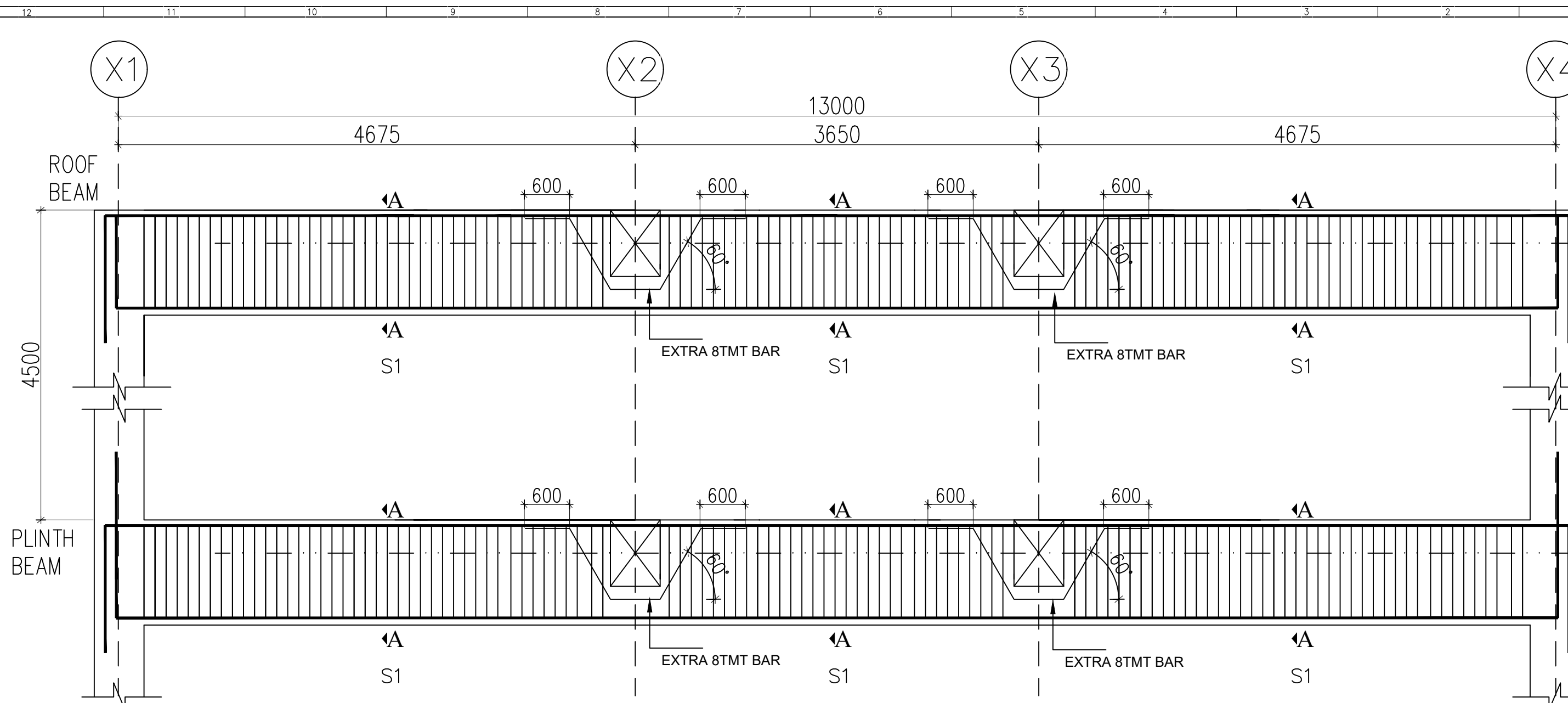
SECTION B-B
PLINTH BEAM

NOTES:
 S1= 8mm ϕ @ 100mm c/c for 2D (Unless stated in the beam section)
 S2= 8mm ϕ @ 140mm c/c between two S1 (Unless stated in the beam section)
 Curtailment distances are given above the roof beam level
 Development length(Ld)=57*diameter of the bar &
 Anchorage length (La) = 67*diameter of the bar
 S1=2D

GRID Y1 & Y7

REV. No.	DESCRIPTION	CHECKED	APPROVED	DATE

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TITLE	CONTROL ROOM BUILDING		
DRAWN	D.KINLEY (MPE-CIVIL)	DATE	FEBRUARY 2021
CHECKED		SCALE	NTS
APPROVED		SHEET No: 09	
DRG. No:	66kV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/09		REV: 0

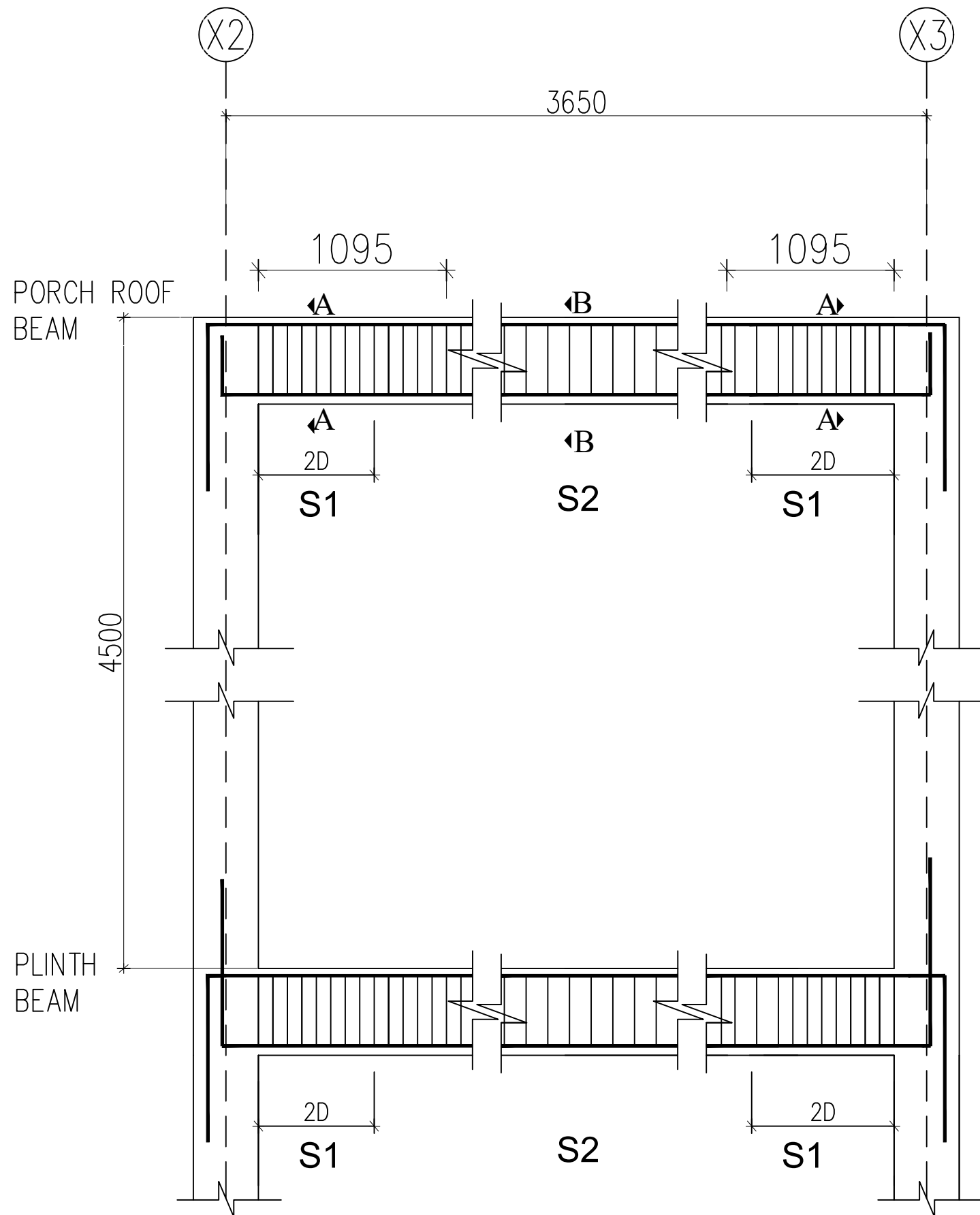


NOTES:
 S1= 8mm ϕ @ 100mm c/c for 2D (Unless stated in the beam section)
 S2= 8mm ϕ @ 140mm c/c between two S1 (Unless stated in the beam section)
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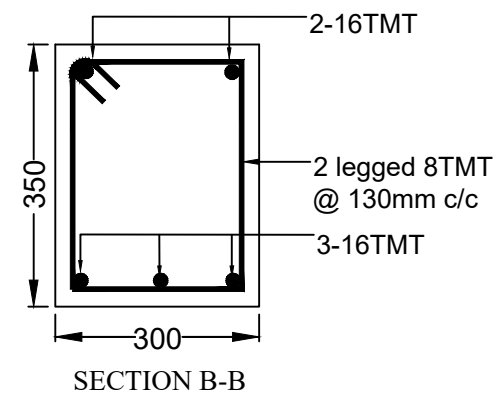
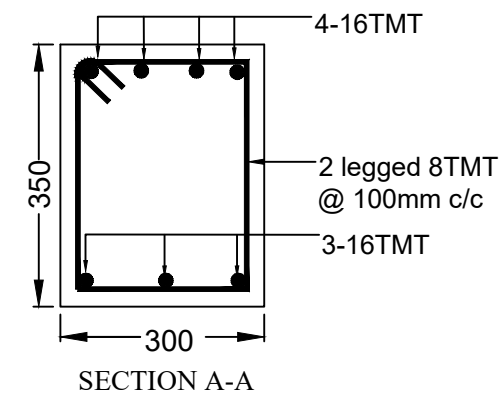
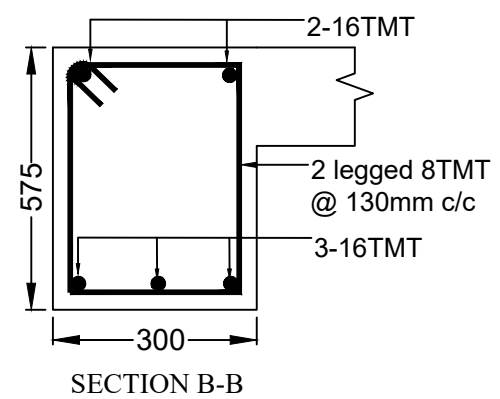
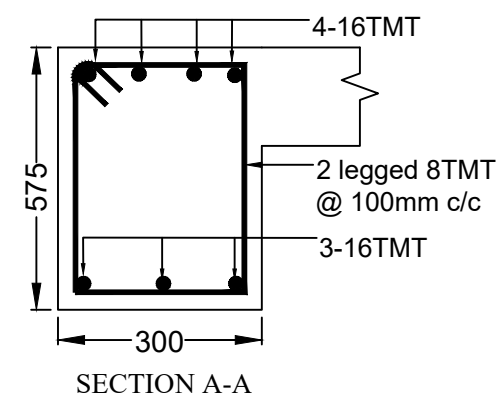
GRID Y2 & Y6

REV. No.	DESCRIPTION	CHECKED	APPROVED	DATE

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TITLE	CONTROL ROOM BUILDING		
DRAWN	D.KINLEY (MPE-CIVIL)	DATE	FEBRUARY 2021
CHECKED		SCALE	NTS
APPROVED		SHEET No: 10	
DRG. No:	66kV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/10	REV:	0



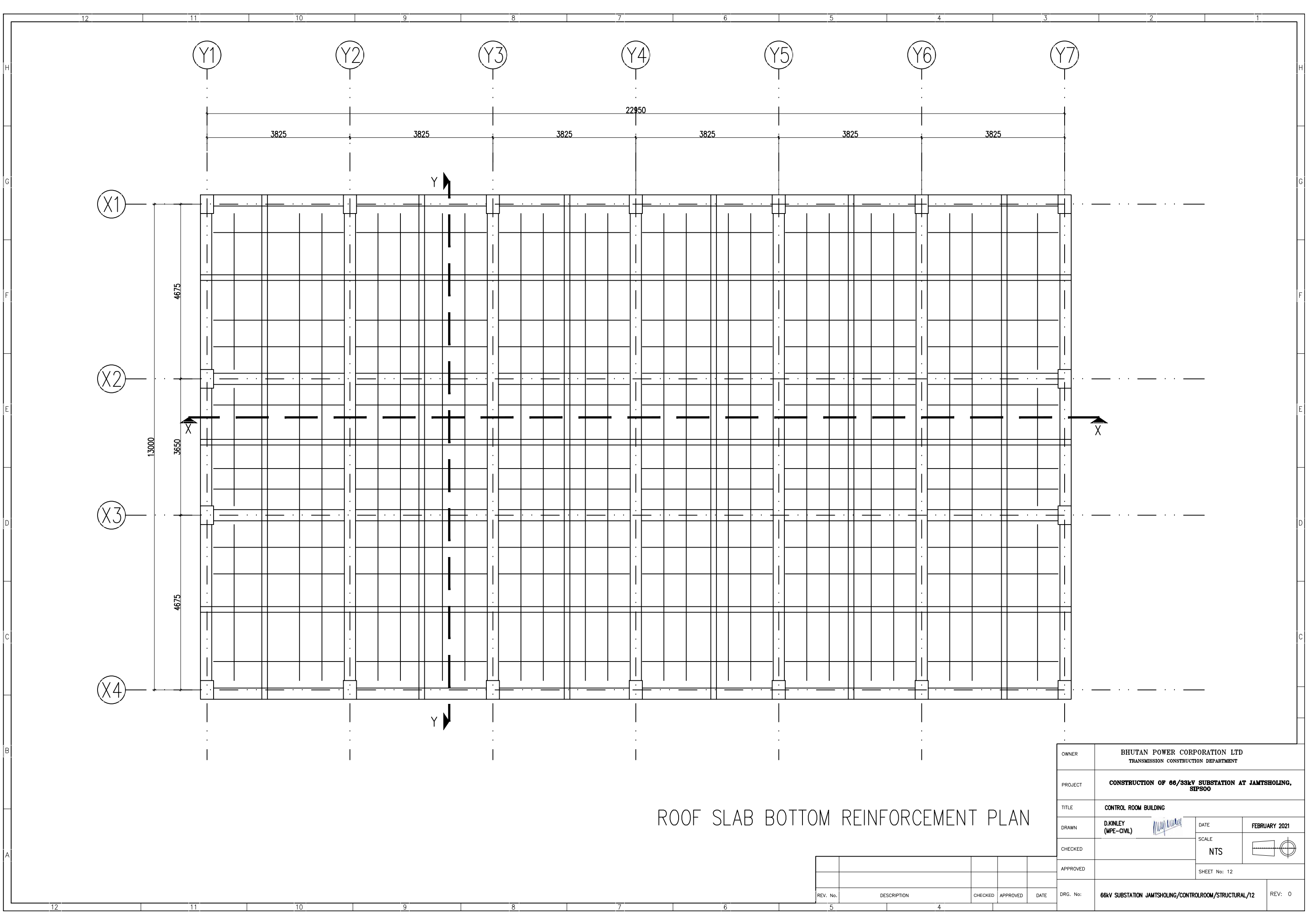
NOTES:
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 S1=2D



PORCH BEAM

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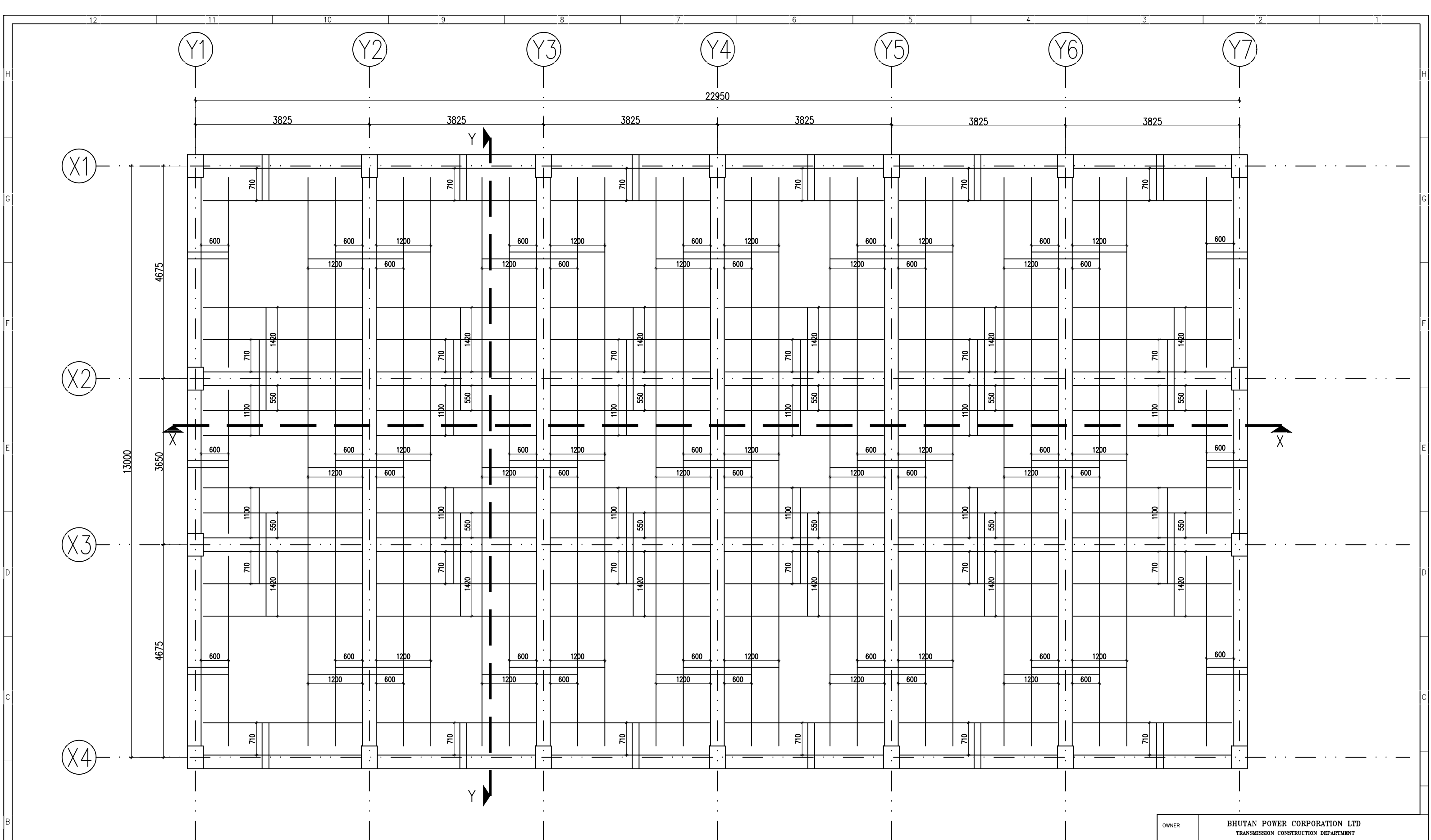
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PROJECT	CONSTRUCTION OF 66/33kV SUBSTATION AT JAMTSHOLING, SIPS00		
TITLE	CONTROL ROOM BUILDING		
DRAWN	D.KINLEY (MPE-CIVIL)	DATE	FEBRUARY 2021
CHECKED		SCALE	NTS
APPROVED		SHEET No: 11	
DRG. No:	66kV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/11	REV:	0



ROOF SLAB BOTTOM REINFORCEMENT PLAN

REV. No.	DESCRIPTION	CHECKED	APPROVED	DATE

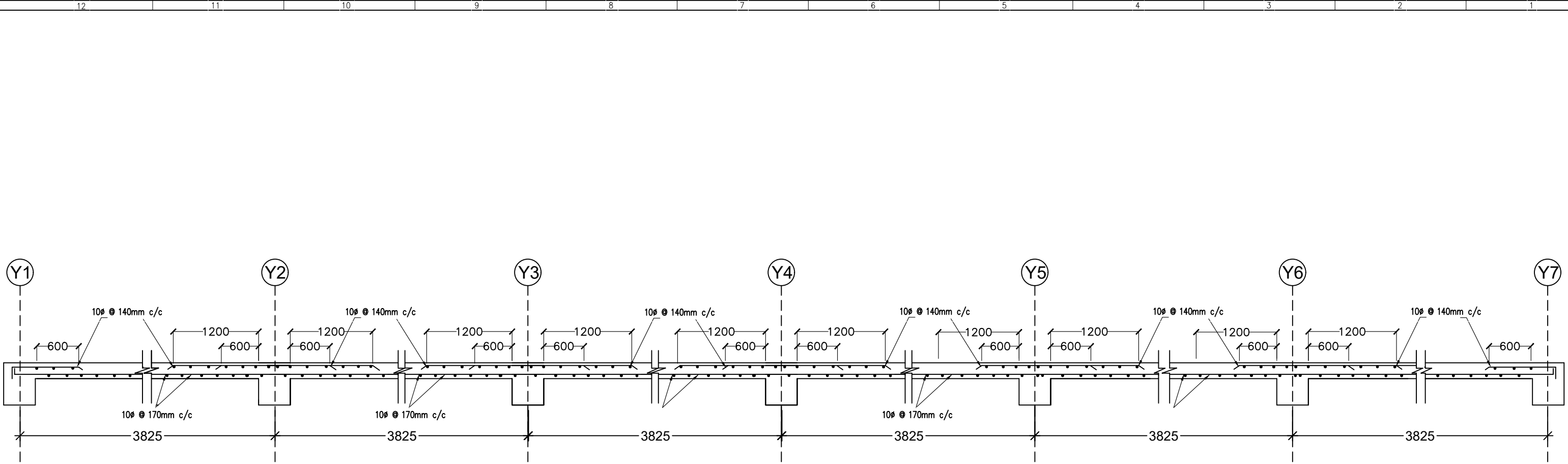
OWNER	BHUTAN POWER CORPORATION LTD TRANSMISSION CONSTRUCTION DEPARTMENT		
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TITLE	CONTROL ROOM BUILDING		
DRAWN	D.KINLEY (MPE-CIVIL)	DATE	FEBRUARY 2021
CHECKED		SCALE	NTS
APPROVED		SHEET No: 12	
DRG. No:	66kV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/12	REV:	0



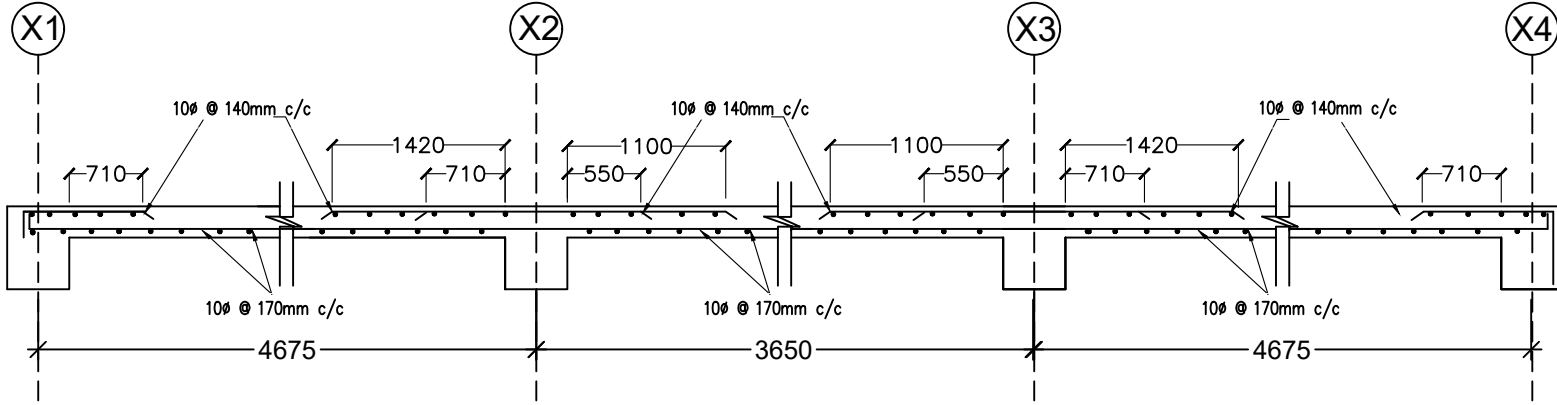
ROOF SLAB TOP REINFORCEMENT PLAN

REV. No.	DESCRIPTION	CHECKED	APPROVED	DATE

OWNER	BHUTAN POWER CORPORATION LTD TRANSMISSION CONSTRUCTION DEPARTMENT		
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CHECKED		SCALE	NTS
APPROVED		SHEET No: 13	
DRG. No:	66kV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/13		REV: 0



ROOF SLAB SECTION THROUGH X-X



ROOF FLOOR SLAB SECTION THROUGH Y-Y

NOTES:-
 Slab thickness = 150mm
 Reinforcements:-
 As shown in the drawing.
 Concrete grade M20 (Cement 1: Sand 1.5 : Aggregate 3)
 Steel Grade Fe500

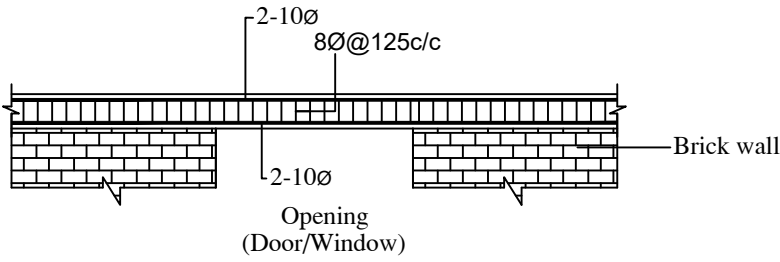
REV. No.	DESCRIPTION	CHECKED	APPROVED	DATE

OWNER	BHUTAN POWER CORPORATION LTD TRANSMISSION CONSTRUCTION DEPARTMENT		
PROJECT	CONSTRUCTION OF 66/33kV SUBSTATION AT JAMTSHOLING, SIPS00		
TITLE	CONTROL ROOM BUILDING		
DRAWN	D.KINLEY (MPE-CIVIL)	DATE	FEBRUARY 2021
CHECKED		SCALE	NTS
APPROVED		SHEET No: 14	
DRG. No:	66kV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/14	REV:	0

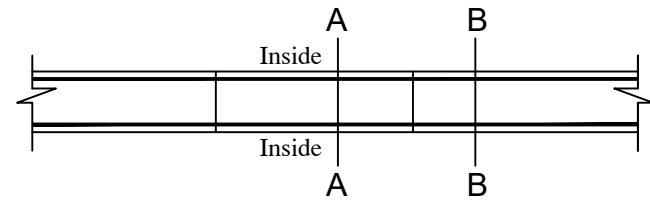
NOTES:

1. The external and internal wall will have a band lintel above the openings.

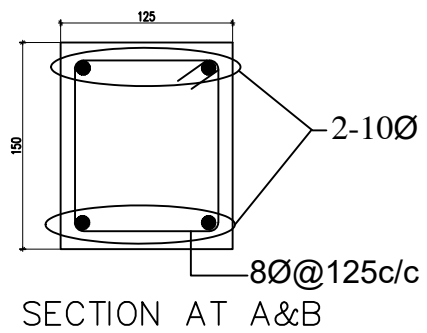
INTERNAL BAND LINTEL DETAILS OVER OPENINGS AND WALLS



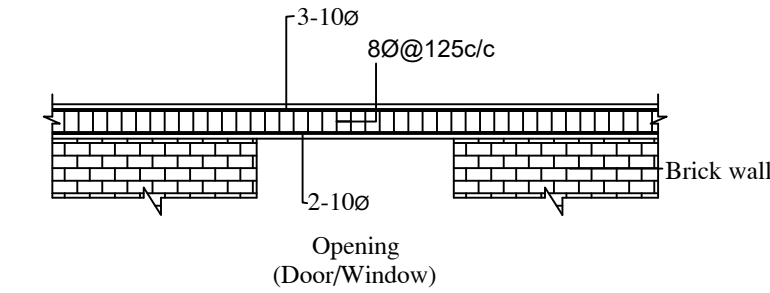
Lintel band elevation for internal walls and openings



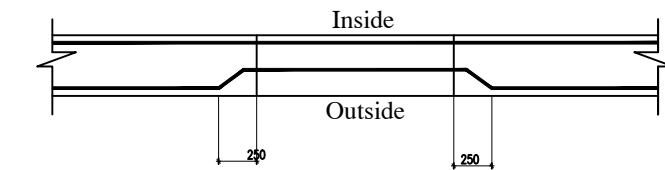
Top & Bottom reinforcement layout in lintel band (plan)



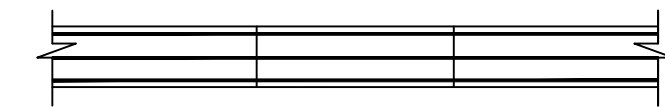
EXTERNAL BAND LINTEL DETAILS OVER OPENINGS AND WALLS



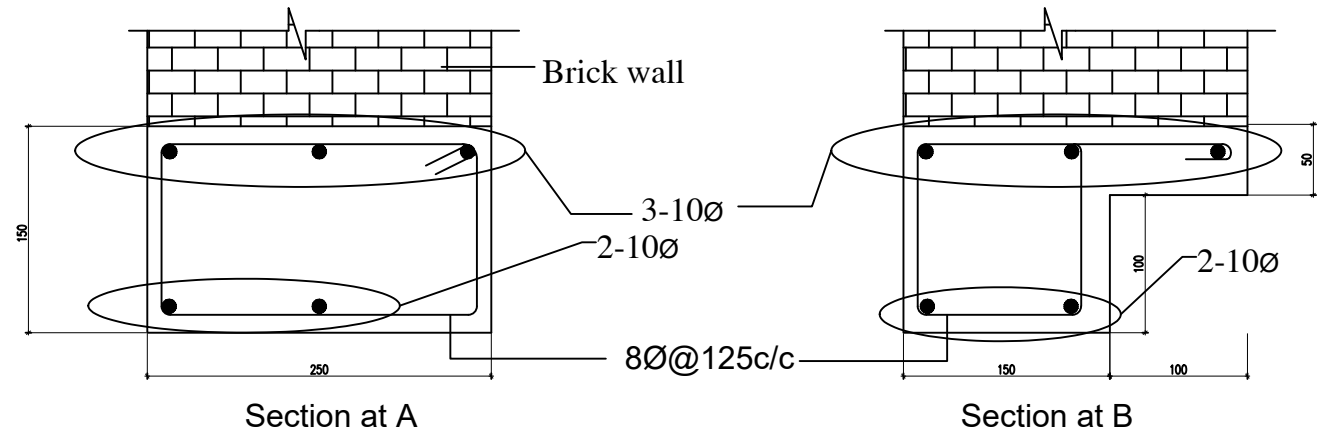
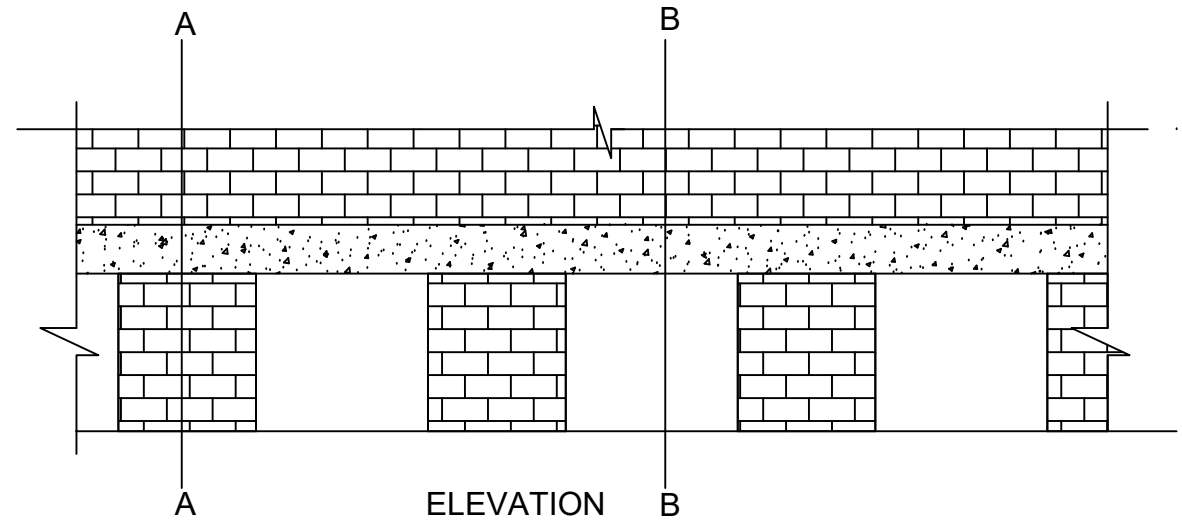
Lintel band elevation for external walls over openings



Bottom reinforcement layout in lintel band(plan)



Top reinforcement layout in lintel band(plan)
Typical reinforcement layout in lintel band over opening



Section through lintel opening (External walls)

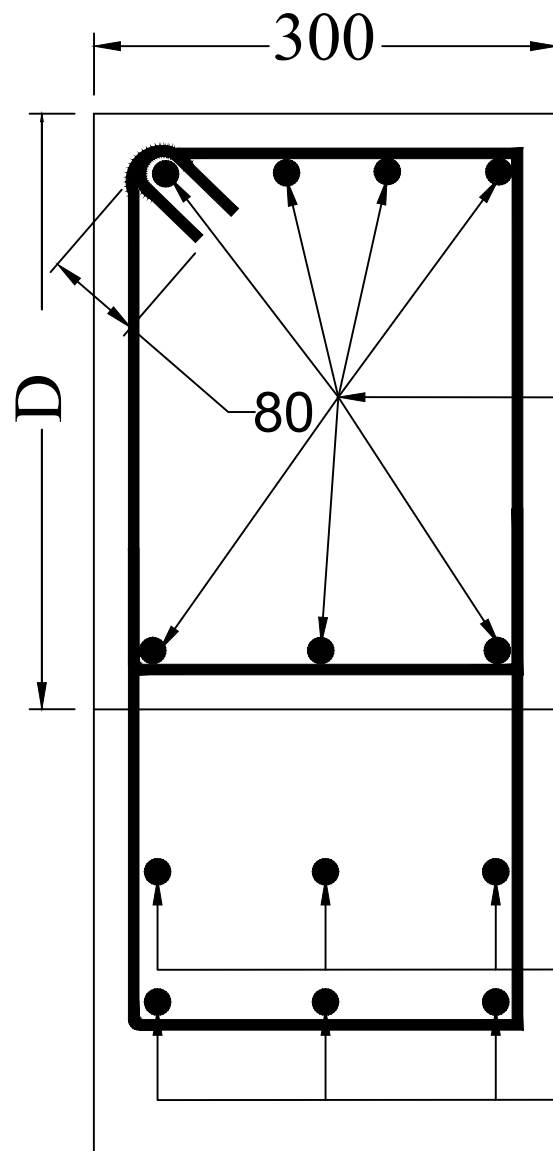
LINTEL DETAILS

NOTES:

PROVIDE WINDOW LINTEL BAND THROUGH OUT THE PERIPHERY OF THE BUILDING. AND DOOR LINTEL AS CUT LINTELS.

REV. No.	DESCRIPTION	CHECKED	APPROVED	DATE

OWNER	BHUTAN POWER CORPORATION LTD TRANSMISSION CONSTRUCTION DEPARTMENT		
PROJECT	CONSTRUCTION OF 66/33kV SUBSTATION AT JAMTSHOLING, SIPS00		
TITLE	CONTROL ROOM BUILDING		
DRAWN	D.KINLEY (MPE-CIVIL)	DATE	FEBRUARY 2021
CHECKED		SCALE	NTS
APPROVED		SHEET No: 15	
DRG. No:	66kV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/15	REV:	0

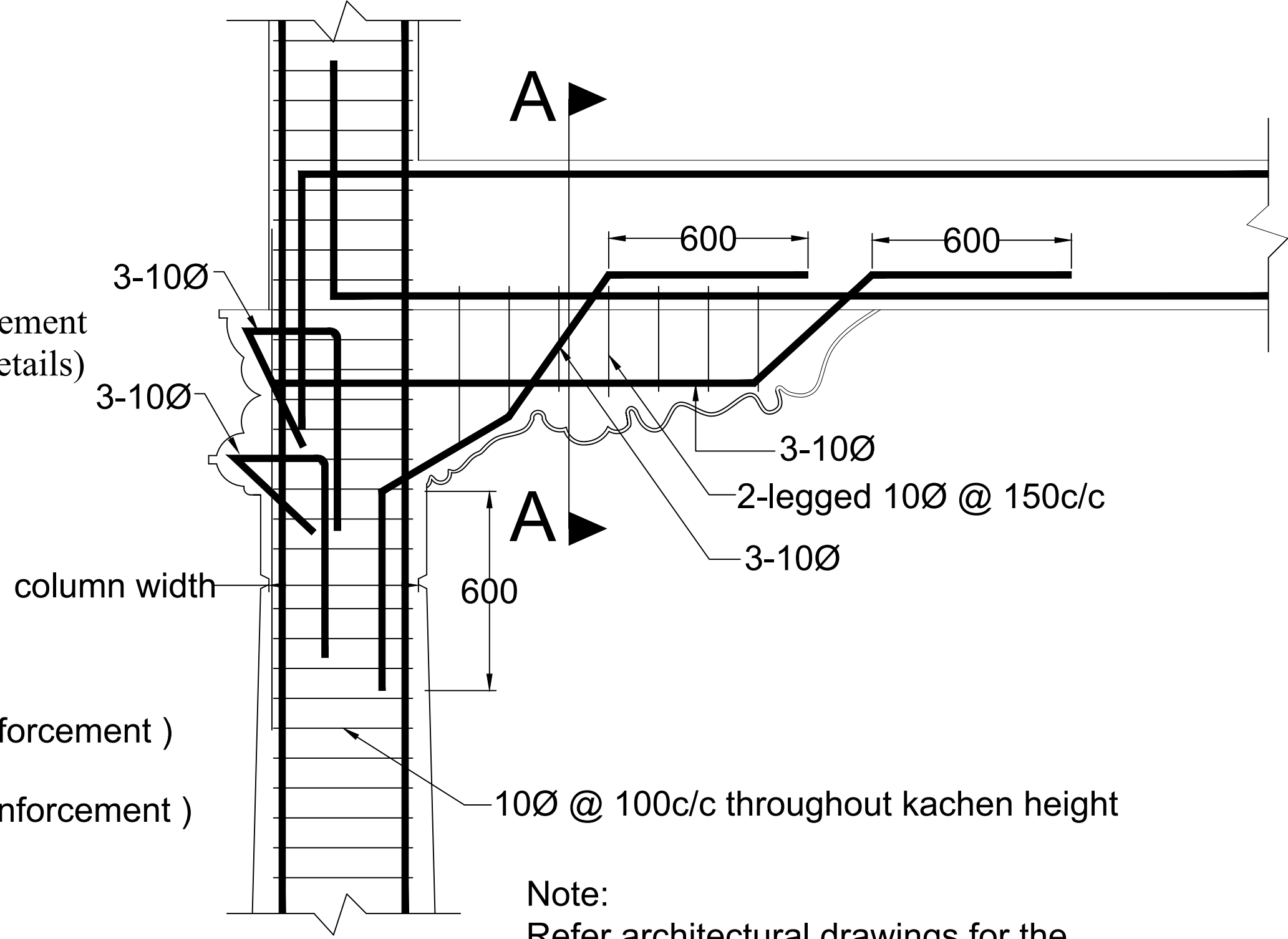


Beam reinforcement
(Refer beam details)

3-12Ø
(Diagonal reinforcement)

3-12Ø
(Horizontal reinforcement)

SECTION A-A (NTS)



column width

600

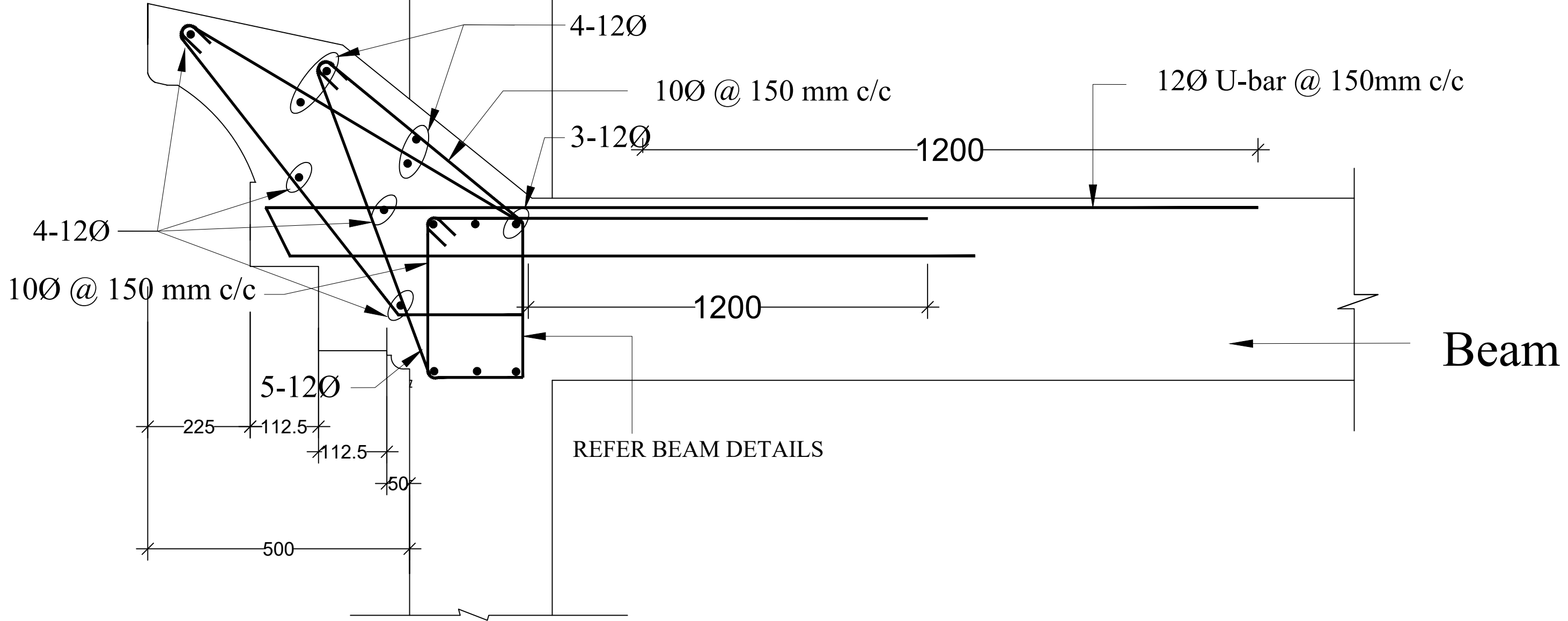
10Ø @ 100c/c throughout kachen height

Note:
Refer architectural drawings for the
location of kachen columns

KACHEN DETAILS

REV. No.	DESCRIPTION	CHECKED	APPROVED	DATE

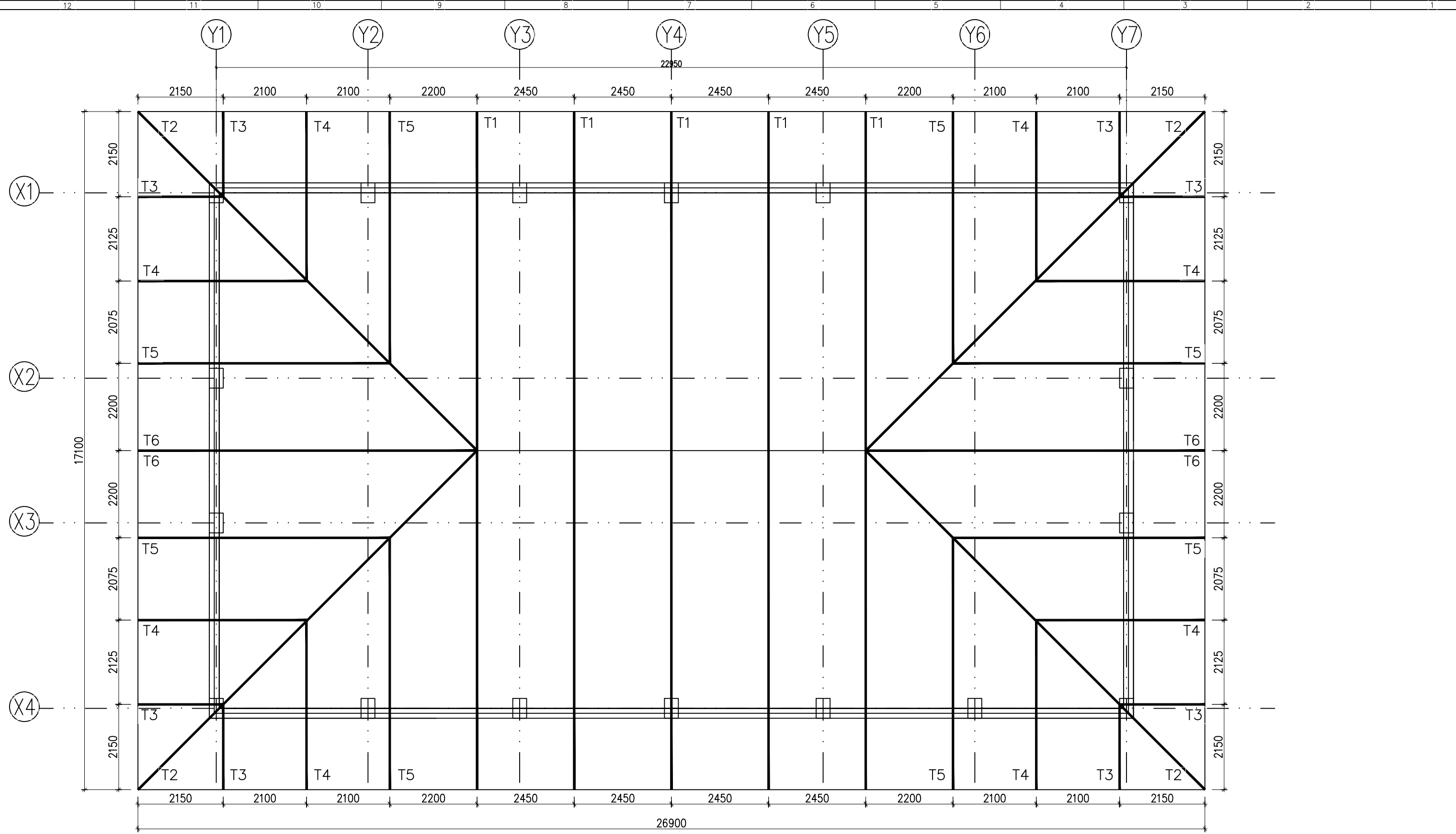
OWNER	BHUTAN POWER CORPORATION LTD TRANSMISSION CONSTRUCTION DEPARTMENT			
PROJECT	CONSTRUCTION OF 66/33kV SUBSTATION AT JAMTSHOLING, SIPSOO			
TITLE	CONTROL ROOM BUILDING			
DRAWN	D.KINLEY (MPE-CIVIL)	DATE	FEBRUARY 2021	
CHECKED		SCALE	NTS	
APPROVED		SHEET No: 16		
DRG. No:	66kV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/16			REV: 0



CORNICE DETAILS

REV. No.	DESCRIPTION	CHECKED	APPROVED	DATE

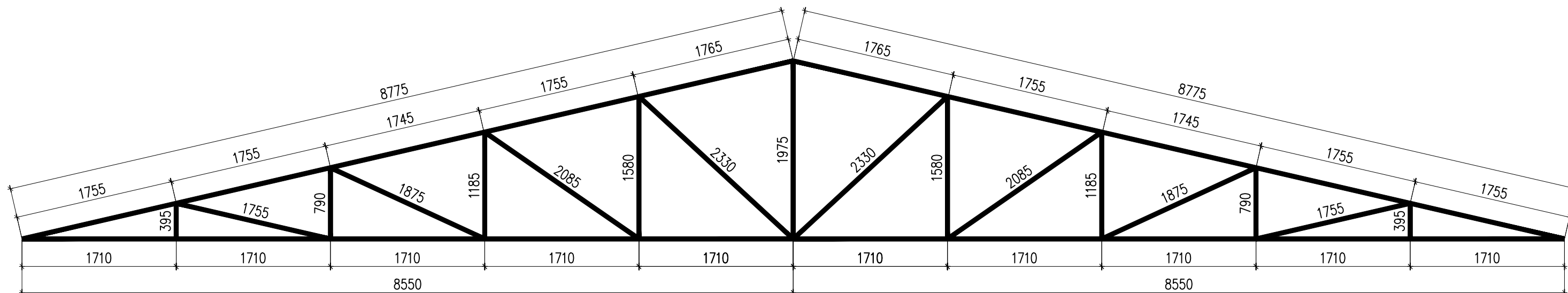
OWNER	BHUTAN POWER CORPORATION LTD TRANSMISSION CONSTRUCTION DEPARTMENT			
PROJECT	CONSTRUCTION OF 66/33kV SUBSTATION AT JAMTSHOLING, SIPSOO			
TITLE	CONTROL ROOM BUILDING			
DRAWN	D.KINLEY (MPE-CIVIL)	DATE	FEBRUARY 2021	
CHECKED		SCALE	NTS	
APPROVED		SHEET No: 17		
DRG. No:	66kV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/17			REV: 0



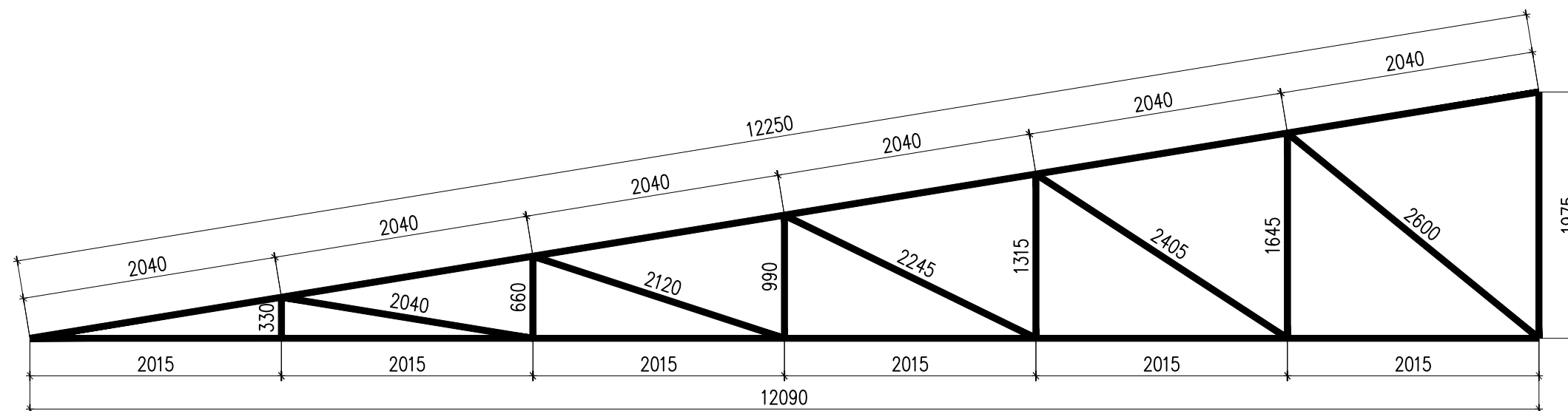
ROOF TRUSS LAYOUT PLAN

REV. No.	DESCRIPTION	CHECKED	APPROVED	DATE

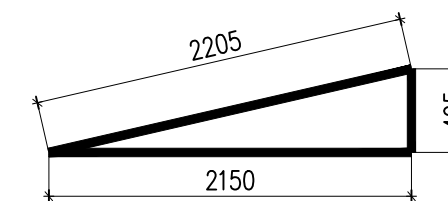
OWNER	BHUTAN POWER CORPORATION LTD TRANSMISSION CONSTRUCTION DEPARTMENT		
PROJECT	CONSTRUCTION OF 66/33kV SUBSTATION AT JAMTSHOLING, SIPS00		
TITLE	CONTROL ROOM BUILDING		
DRAWN	D.KINLEY (MPE-CIVIL)	DATE	FEBRUARY 2021
CHECKED		SCALE	NTS
APPROVED		SHEET No: 18	
DRG. No:	66kV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/18		REV: 0



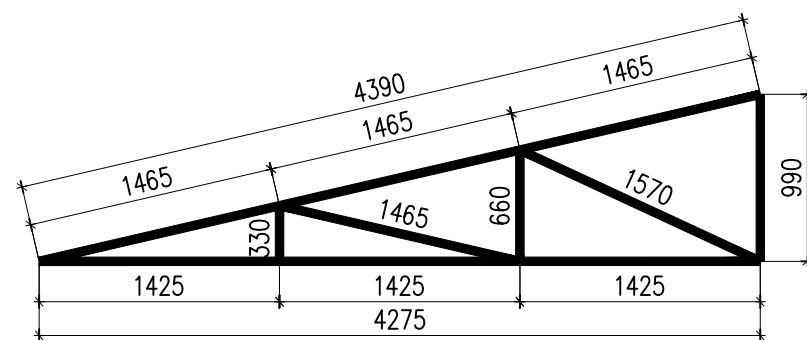
T1



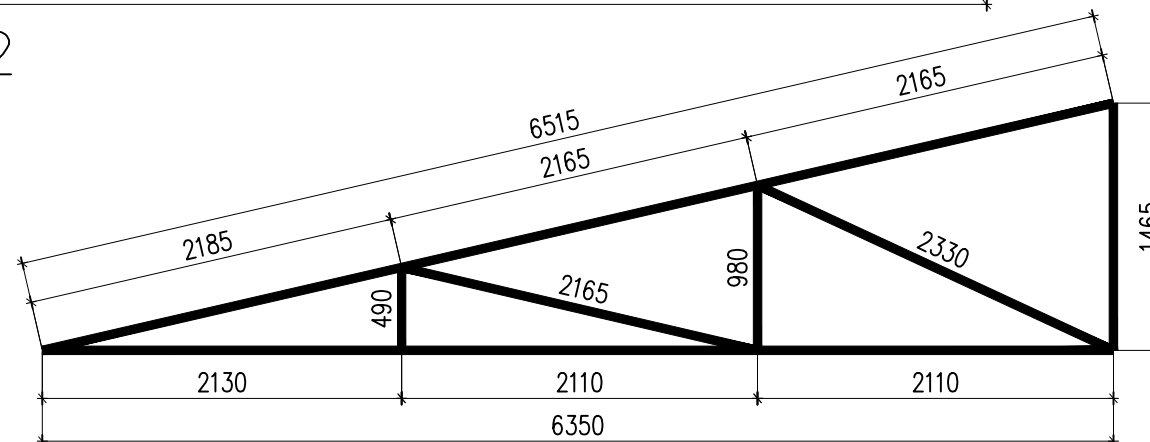
T2



T3



T4

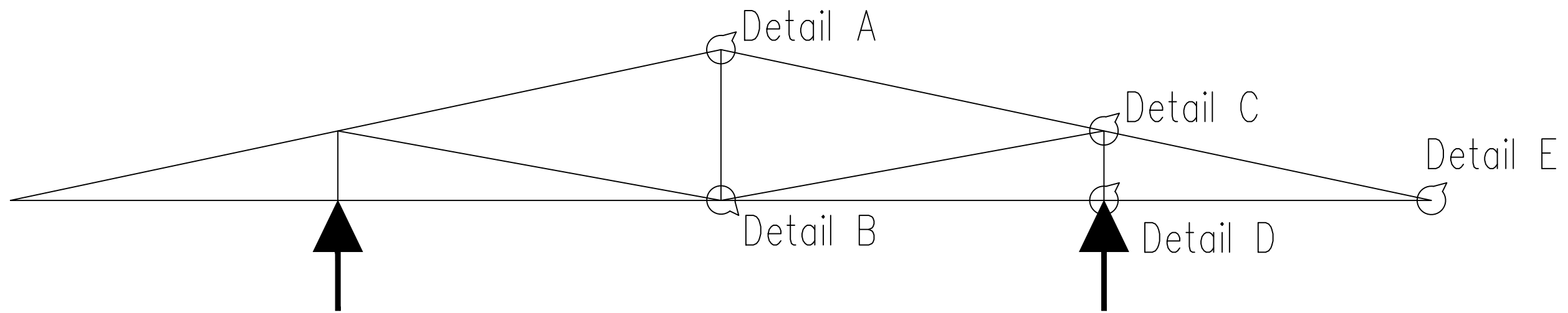


T5

TRUSS DETAILS

REV. No.	DESCRIPTION	CHECKED	APPROVED	DATE

OWNER	BHUTAN POWER CORPORATION LTD TRANSMISSION CONSTRUCTION DEPARTMENT		
PROJECT	CONSTRUCTION OF 66/33kV SUBSTATION AT JAMTSHOLING, SIPS00		
TITLE	CONTROL ROOM BUILDING		
DRAWN	D.KINLEY (MPE-CIVIL)	DATE	FEBRUARY 2021
CHECKED		SCALE	NTS
APPROVED		SHEET No: 19	
DRG. No:	66kV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/19		REV: 0

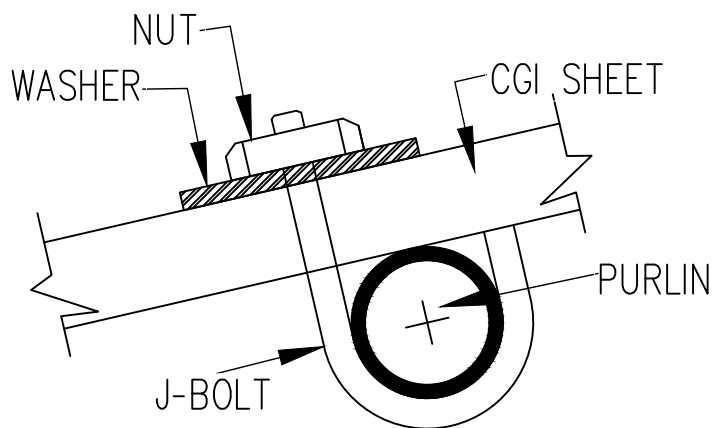


TRUSS MEMBER SIZE

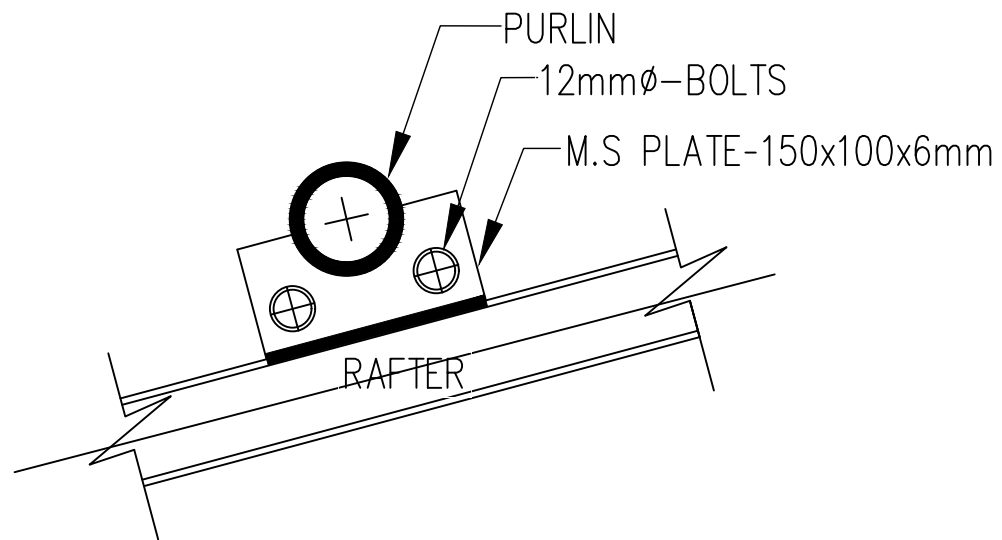
Sl. No	MEMBERS	SIZE
1	Bottom Chords	76.1mm OD, 3.65mm thick, 6.53kg/m
2	Rafters	76.1mm OD, 3.65mm thick, 6.53kg/m
3	Vertical struts	60.3mm OD, 3.65mm thick, 5.1kg/m
4	Inclined struts	60.3mm OD, 3.65mm thick, 5.1kg/m
5	Purlins	60.3mm OD, 3.65mm thick, 5.1kg/m

REV. No.	DESCRIPTION	CHECKED	APPROVED	DATE

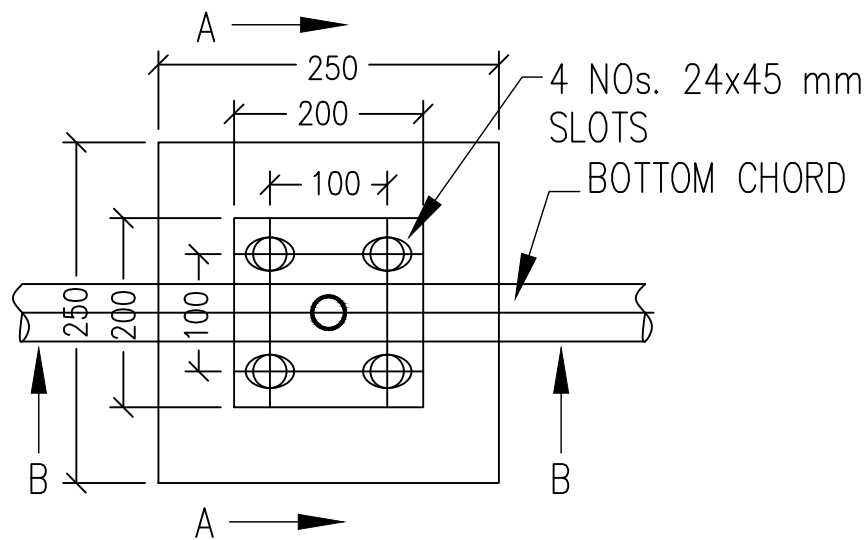
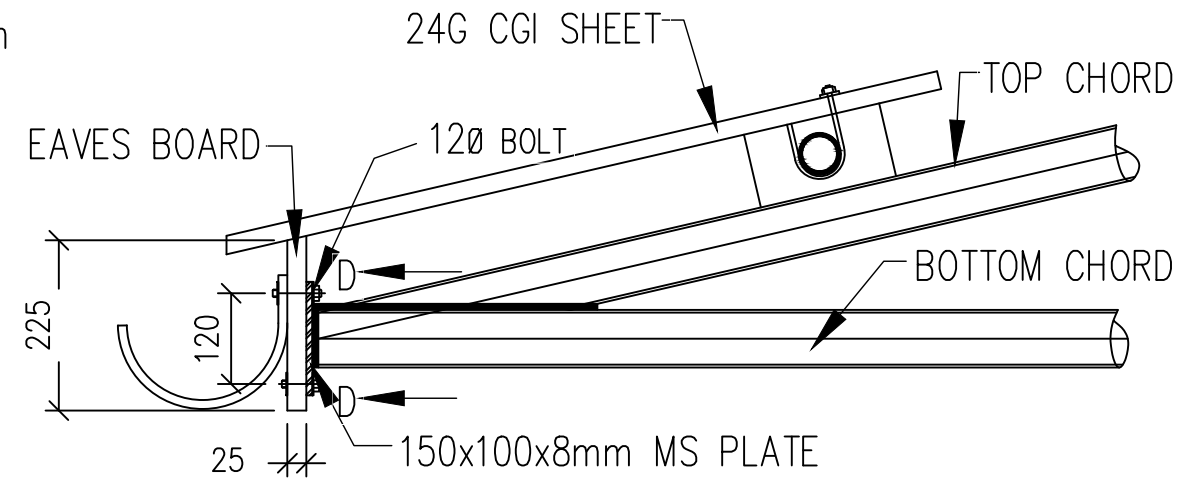
OWNER	BHUTAN POWER CORPORATION LTD TRANSMISSION CONSTRUCTION DEPARTMENT			
PROJECT	CONSTRUCTION OF 66/33kV SUBSTATION AT JAMTSHOLING, SIPSOO			
TITLE	CONTROL ROOM BUILDING			
DRAWN	D.KINLEY (MPE-CIVIL)	DATE	FEBRUARY 2021	
CHECKED		SCALE	NTS	
APPROVED		SHEET No: 20		
DRG. No:	66kV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/20			REV: 0



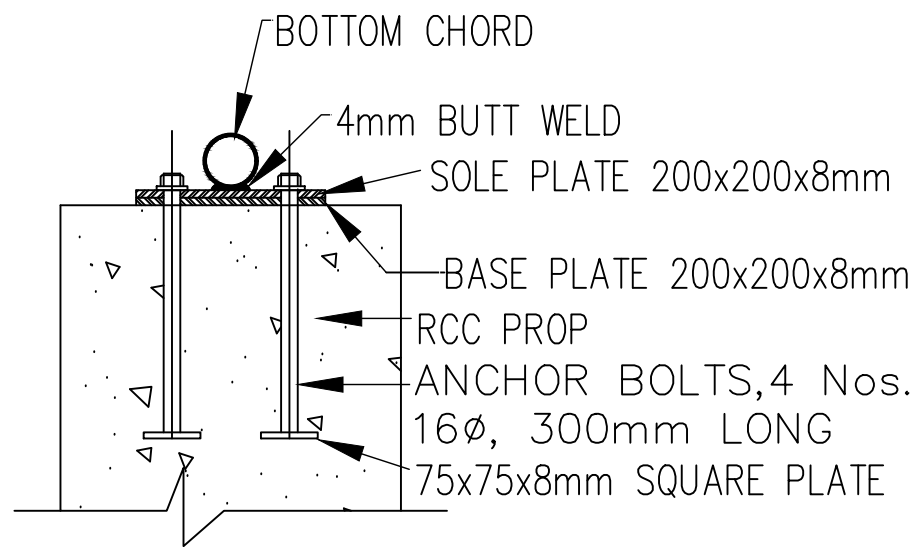
CONNECTION OF CGI SHEET TO PURLIN



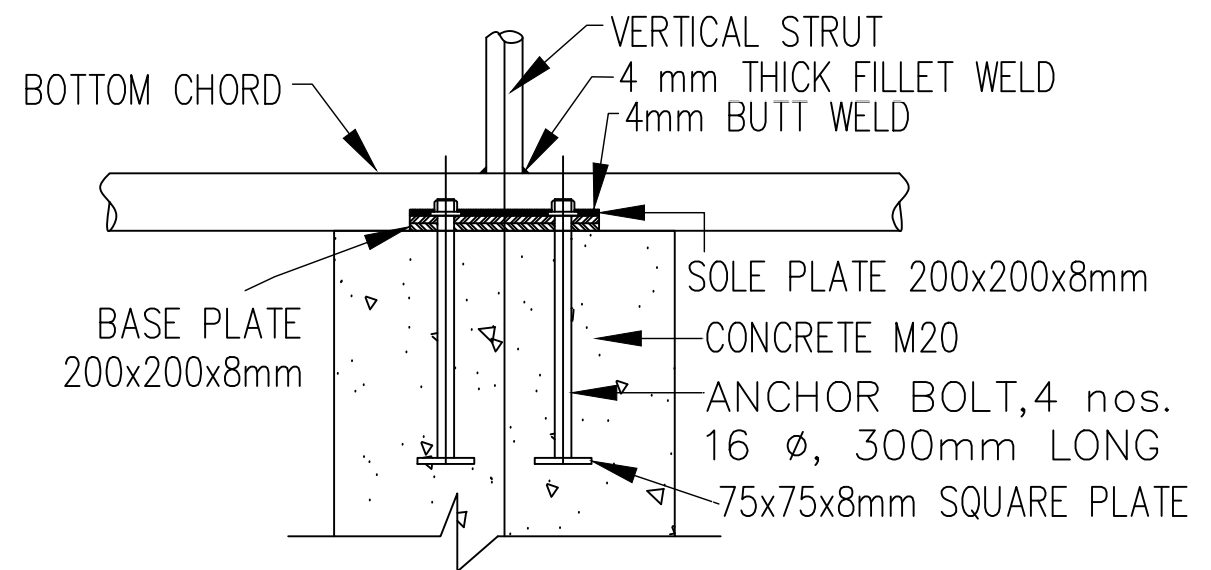
RAFTER AND PURLIN CLEAT JOINING DETAILS



TRUSS HOLDING DOWN DETAILS



SECTION A-A

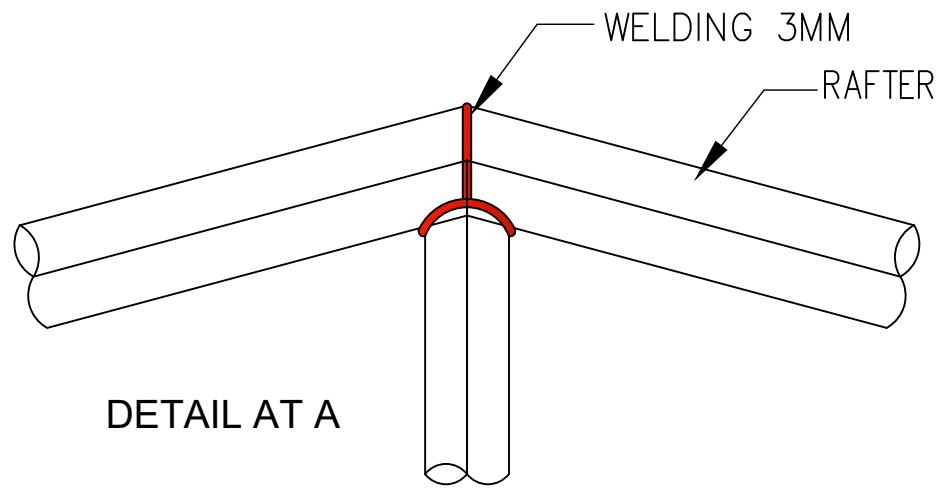


SECTION B-B

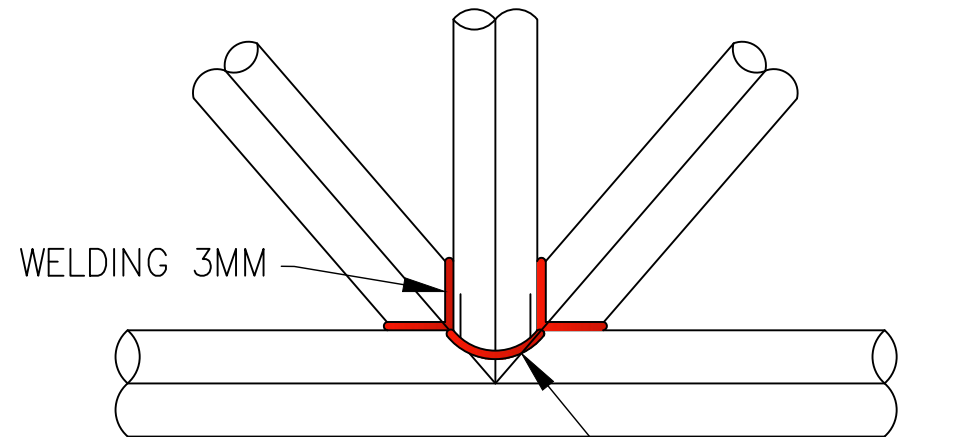
TYPICAL TRUSS JOINERY DETAILS

REV. No.	DESCRIPTION	CHECKED	APPROVED	DATE

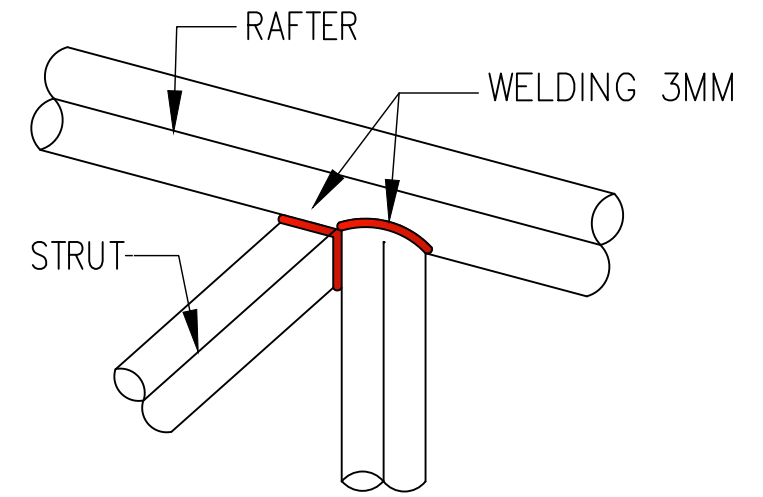
OWNER	BHUTAN POWER CORPORATION LTD TRANSMISSION CONSTRUCTION DEPARTMENT			
TITLE	CONSTRUCTION OF 66/33kV SUBSTATION AT JAMTSHOLING, SIPS00			
DRAWN	D.KINLEY (MPE-CIVIL)	DATE	FEBRUARY 2021	
CHECKED		SCALE	NTS	
APPROVED		SHEET No: 21		
DRG. No:	66kV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/21			REV: 0



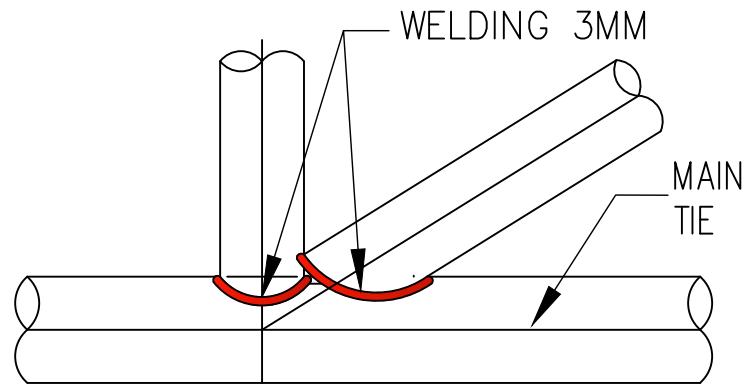
DETAIL AT A



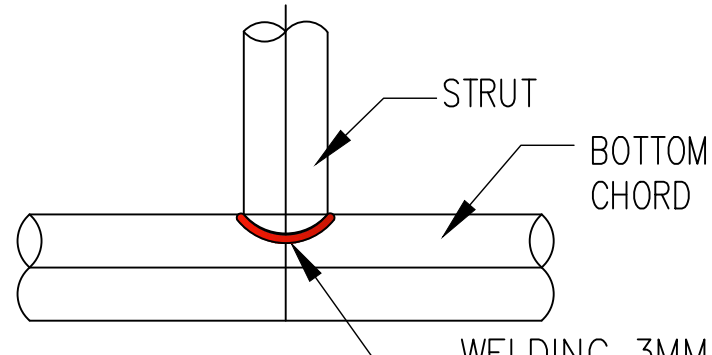
DETAIL AT B



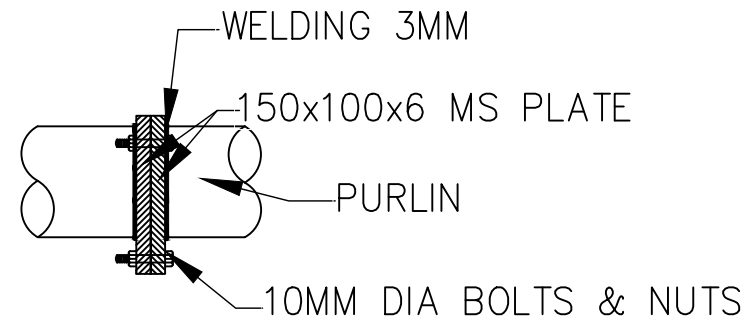
DETAIL AT C



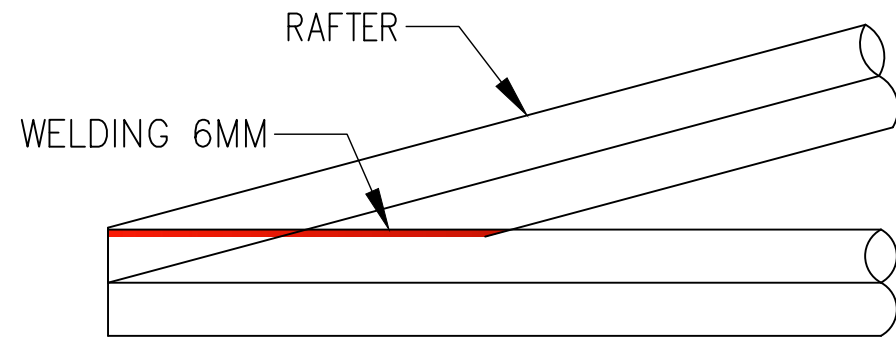
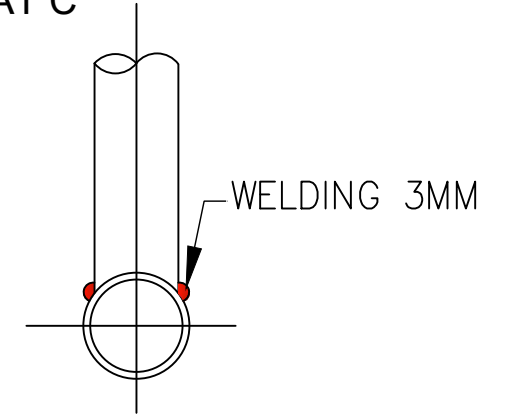
DETAIL AT D



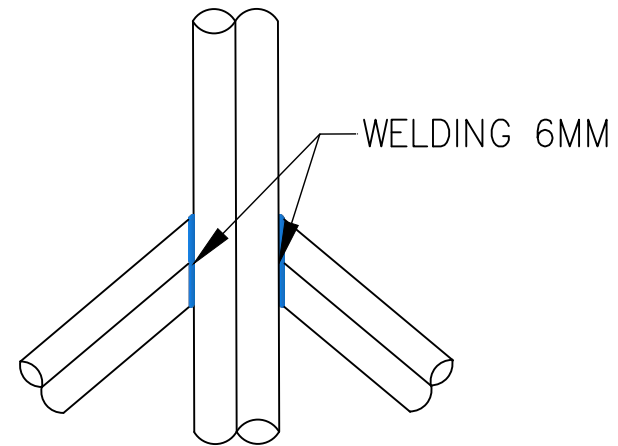
DETAIL AT E



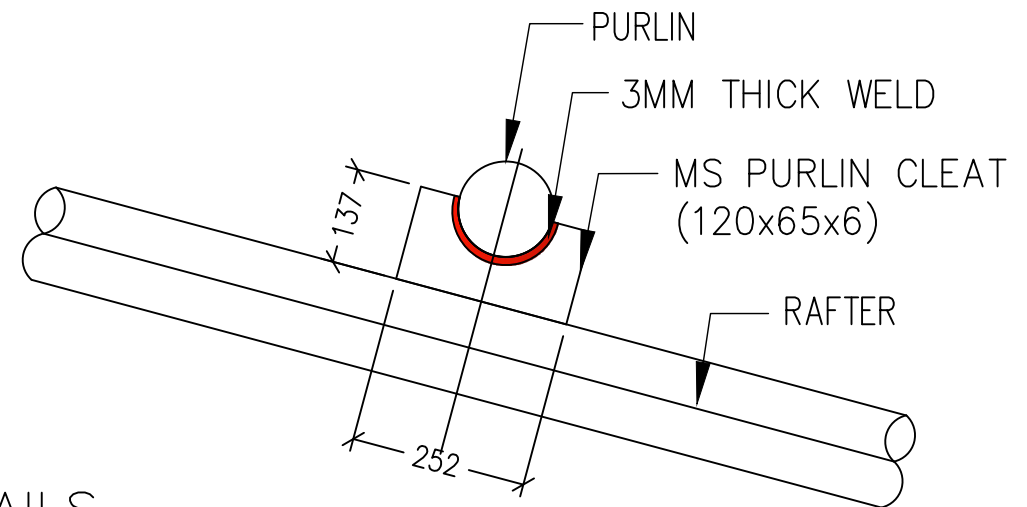
TYPICAL PURLIN & RAFTER JOINERY DETAIL



DETAIL AT F

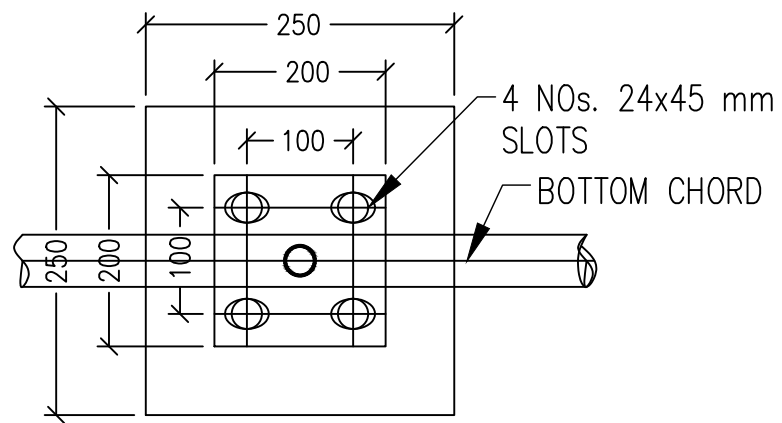


TYPICAL TRUSS JOINERY DETAILS

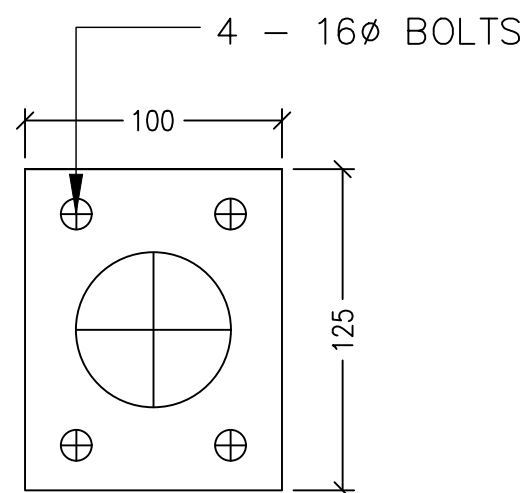


REV. No.	DESCRIPTION	CHECKED	APPROVED	DATE

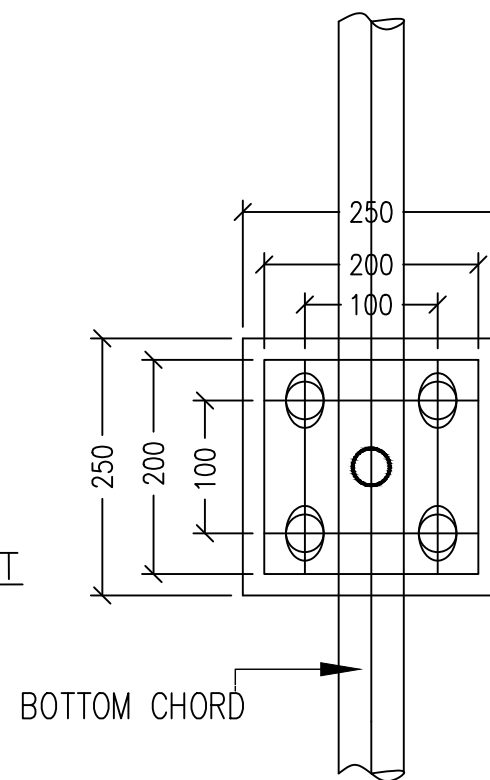
OWNER	BHUTAN POWER CORPORATION LTD TRANSMISSION CONSTRUCTION DEPARTMENT			
	CONSTRUCTION OF 66/33kV SUBSTATION AT JAMTSHOLING, SIPS00			
TITLE	CONTROL ROOM BUILDING			
DRAWN	D.KINLEY (MPE-CIVIL)	DATE	FEBRUARY 2021	
CHECKED		SCALE	NTS	
APPROVED		SHEET No: 22		
DRG. No:	66kV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/22			REV: 0



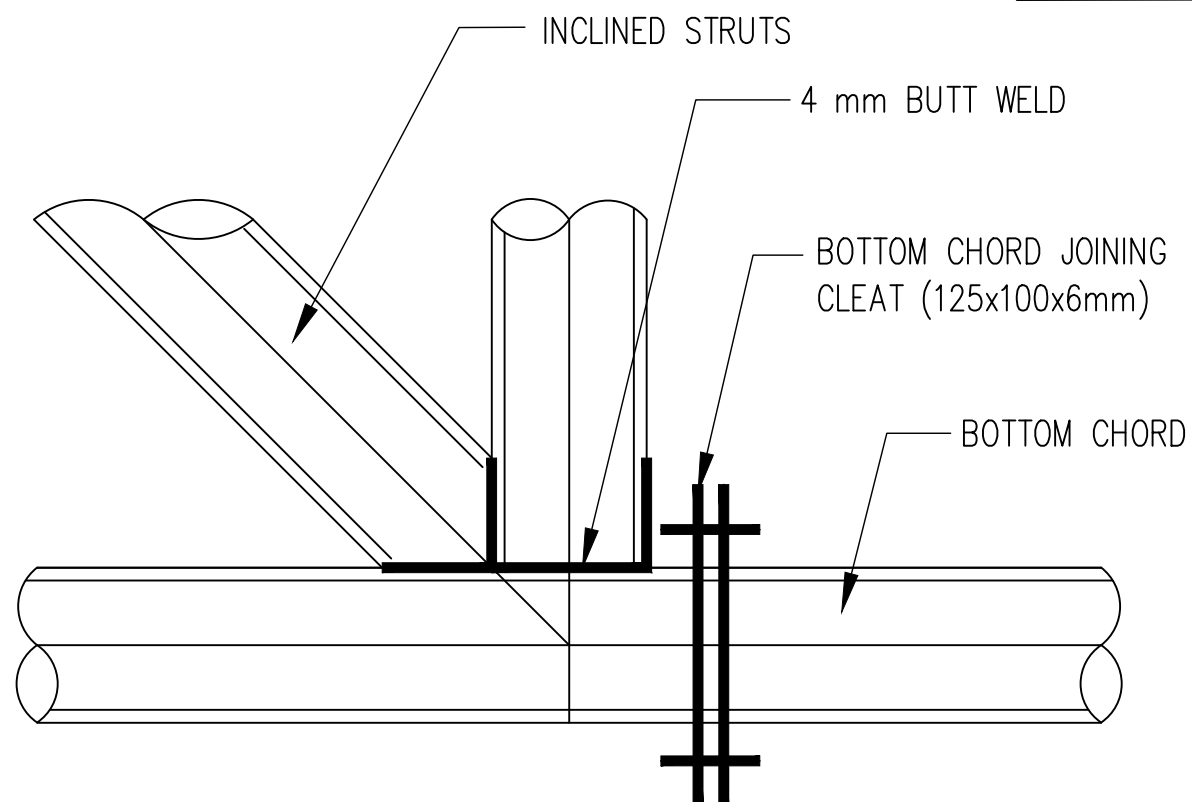
TRUSS HOLD-DOWN IN X DIRECTION



BOTTOM CHORD JOINING PLATE/CLEAT



TRUSS HOLD-DOWN IN Y DIRECTION



BOTTOM CHORD JOINING DETAILS

NOTE:

1. ALL THE SECTION DETAILS WILL BE SAME AS SHOWN BY SECTIONS A-A & B-B
2. THE PURLINS ARE SPACED AT 1200mm C/C

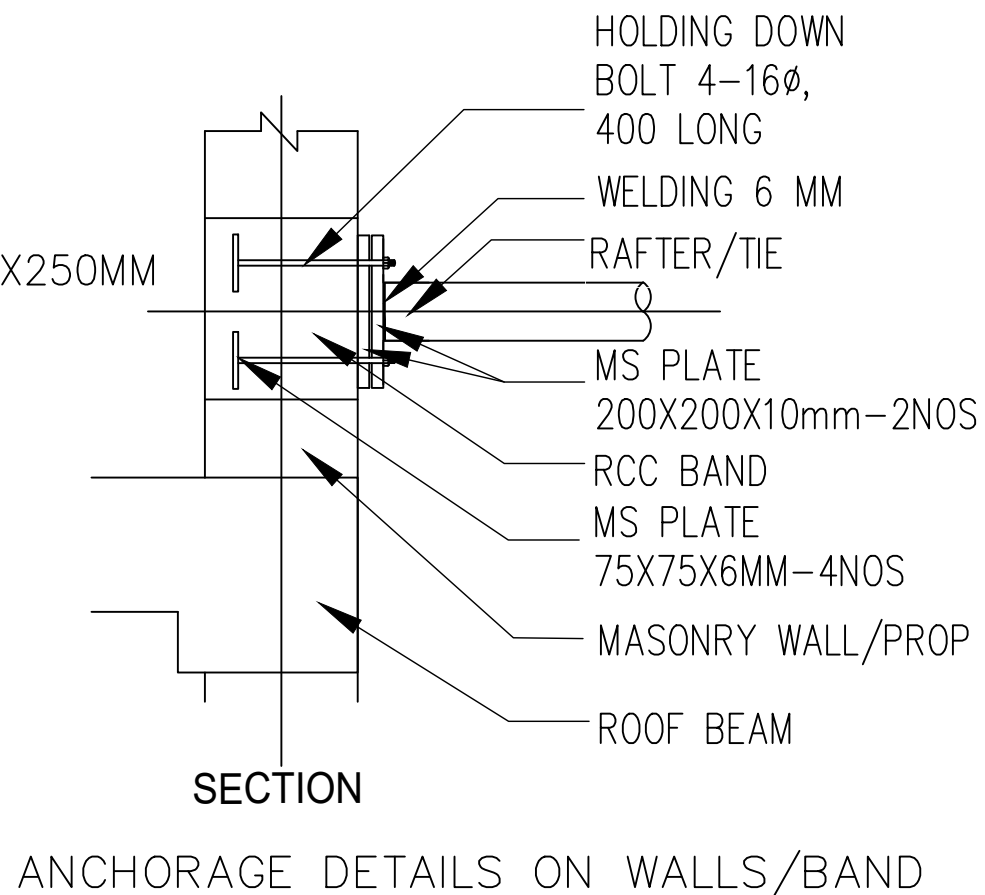
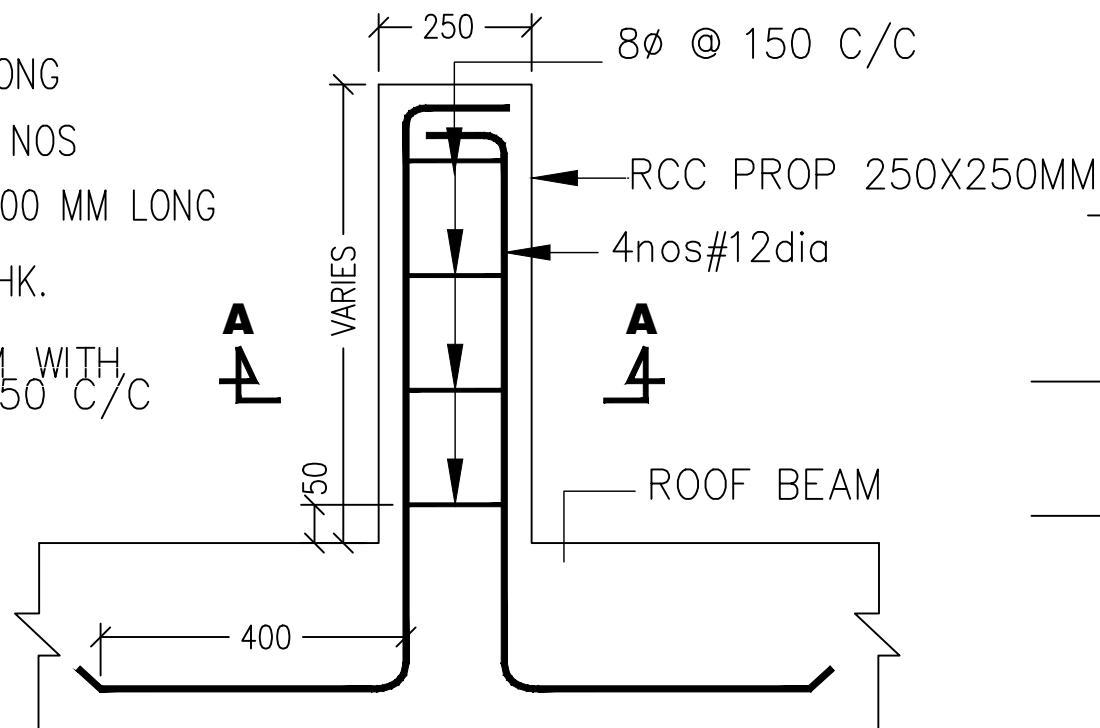
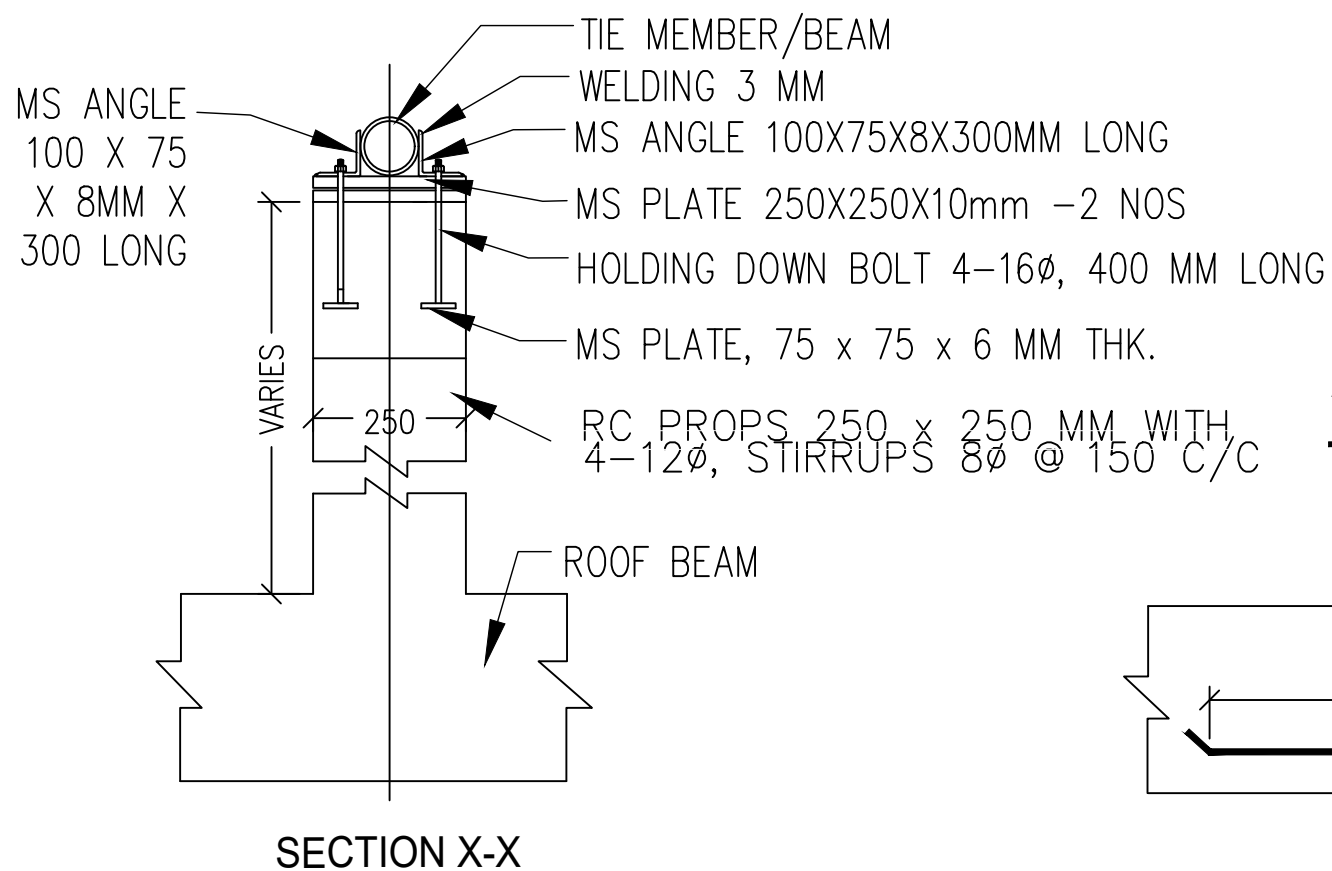
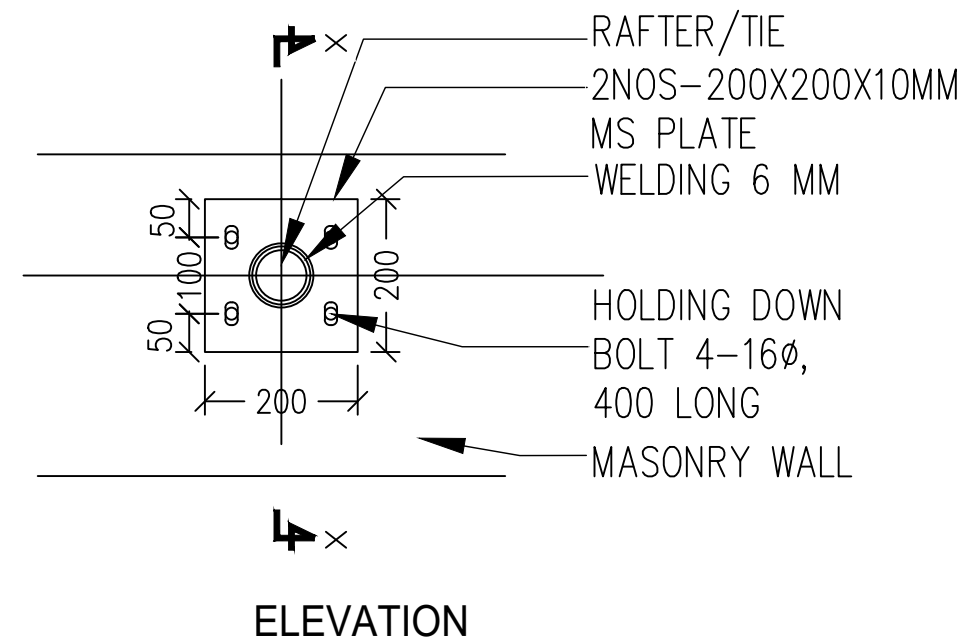
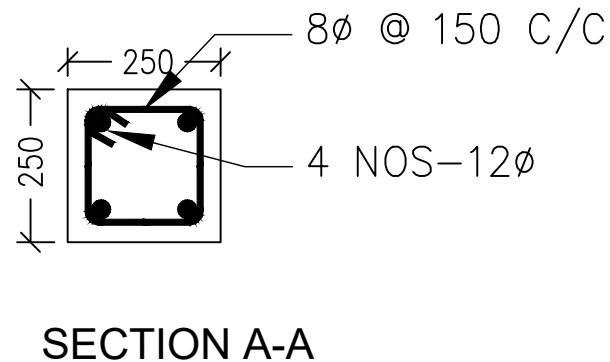
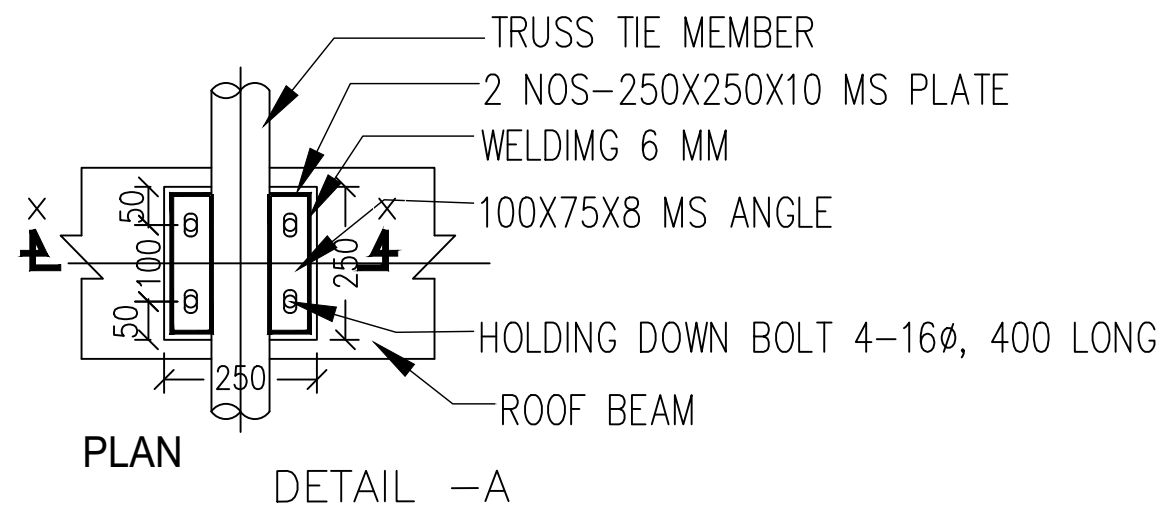
NOTES (FOR ROOF TRUSS):

1. THE GUSSET PLATES ARE MS PLATE OF DIFFERENT THICKNESS AND DESIGN CONFIRMS TO IS 806:1968
2. WELDING SHALL CONFORM TO IS: 816
3. ALL ELECTRODES SHALL CONFORM TO IS: 814 (PART-1).
4. ALL M.S. BOLTS & NUTS SHALL CONFORM TO IS: 1363(PART1-3)
5. WASHERS SHALL CONFORM TO IS: 5369, IS: 5370, IS: 5372/IS: 5374
6. HOLE SIZE = DIA OF BOLT + 1.5mm.
7. ALL STRUCTURES AFTER FABRICATION SHALL BE PAINTED WITH ANTI-CORROSIVE PAINTS.
8. ALL STRUCTURAL STEEL CONTACT SURFACES SHALL BE CLEANED OF ANY RUST, OIL, GREASE etc. BEFORE WELDING/PAINTING.
9. WRITTEN DIMENSIONS SHALL BE FOLLOWED & DOUBT MUST BE CLARIFIED BEFORE EXECUTION OF THE WORK.
10. FABRICATION AND ERECTION WORK SHALL BE CARRIED OUT AS CHECKED BY ENGINEER-IN-CHARGE.

TYPICAL TRUSS JOINERY DETAILS

REV. No.	DESCRIPTION	CHECKED	APPROVED	DATE

OWNER	BHUTAN POWER CORPORATION LTD TRANSMISSION CONSTRUCTION DEPARTMENT		
PROJECT	CONSTRUCTION OF 66/33kV SUBSTATION AT JAMTSHOLING, SIPS00		
TITLE	CONTROL ROOM BUILDING		
DRAWN	D.KINLEY (MPE-CIVIL)	DATE	FEBRUARY 2021
CHECKED		SCALE	NTS
APPROVED		SHEET No: 23	
DRG. No:	66kV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/23	REV:	0



REV. No.	DESCRIPTION	CHECKED	APPROVED	DATE

OWNER	BHUTAN POWER CORPORATION LTD TRANSMISSION CONSTRUCTION DEPARTMENT		
PROJECT	CONSTRUCTION OF 66/33kV SUBSTATION AT JAMTSHOLING, SIPS00		
TITLE	CONTROL ROOM BUILDING		
DRAWN	D.KINLEY (MPE-CIVIL)	DATE	FEBRUARY 2021
CHECKED		SCALE	NTS
APPROVED		SHEET No:24	
DRG. No:	66kV SUBSTATION JAMTSHOLING/CONTROLROOM/STRUCTURAL/24	REV:	0