

STRUCTURAL DESIGN

UNITED NATIONS DEVELOPMENT PROGRAMME

SCHOOL IN NGARANAM

GENERAL NOTES		NOTES:
1	ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S DRAWINGS.	<div>1. Design is to BS 8110</div> <div>2. Concrete grades are to be as follows with figures in bracket denoting maximum size aggregate: -Foundation 30(25) -Columns 30(20) -Beams & Slabs 30(20)</div> <div>3. Unless otherwise indicated, reinforcement shall be high yield steel (type 2), denoted by 'Y', having characteristic strenght not less than 410N/mm²</div> <div>4. Cover to reinforcement shall be the following: Foundation: 50mm(bottom)/75mm(sides) Columns: 25mm Beams: 25mm Slabs: 20mm</div> <div>5. Drawings must be read in conjunction with the relevant architectural drawings and in case of any discrepancy refer to the design engineer for clarification.</div> <div>6. Dimensions are in millimetre(mm) and must not be scaled at any time.</div> <div>7. Foundation was designed for an assumed allowable soil bearing pressure of 150kN/m²</div> <div>8. This design engineer will not take responsibility for any job not supervised by him.</div>
2	SAFE GROUND PRESSURE ASSUMED IS 150 KN/m ² .	
3	75mm CONC. BLINDING TO BE PROVIDED.	
4	MINIMUM DEPTH OF FOUNDATION TO BE 1200mm.	
5	USE CONCRETE NOMINAL MIX 1:3:6 FOR BLINDING.	
6	CONC. CUBE STRENGTH OF 1:2:4 MIX FOR OTHER REINF. CONC. AT 28 DAYS	
7	HIGH YIELD REINFT. OF CHARACTERISTIC STRENGTH OF AT LEAST 410 N/mm ² .	
8	COVER TO MAIN REINFORCEMENTS TO BE 15mm IN SLAB, 25mm IN BEAM, 40mm IN COLUMNS AND 50mm IN FOUNDATIONS .	
9	ALL DIMENSIONS ARE IN (MM).	
10	NO CONCRETE WORK SHALL BE CARRIED OUT UNTIL ALL STEEL REINFORCEMENT AND FORMWORK FOR CONCERTE SECTIONS MUST HAVE BEEN CHECKED AND CORRECT BY THE ENGINEER.	
11	ENGINEERS SHALL <u>NOT</u> BE HELD RESPONSIBLE FOR JOBS <u>NOT</u> SUPERVISED BY THEM.	
		<div>Project: PROPOSED RESIDENTIAL DEVELOPMENT, AT NGARANINAM,MAFA LGA, BORNO STATE.</div> <div>Client: UNITED NATIONS DEVELOPMENT PROGRAMME, UNDP.</div> <div>Drawing Title: GEN. NOTES</div> <div>Scale1:50</div> <div>DateFEBRUARY, 2021</div> <div>Project Name:</div> <div>Drawing No. SWD/02</div> <div></div>

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Project:
PROPOSED RESIDENTIAL DEVELOPMENT,
AT
NGARANNAM,MAFA LGA, BORNO STATE.

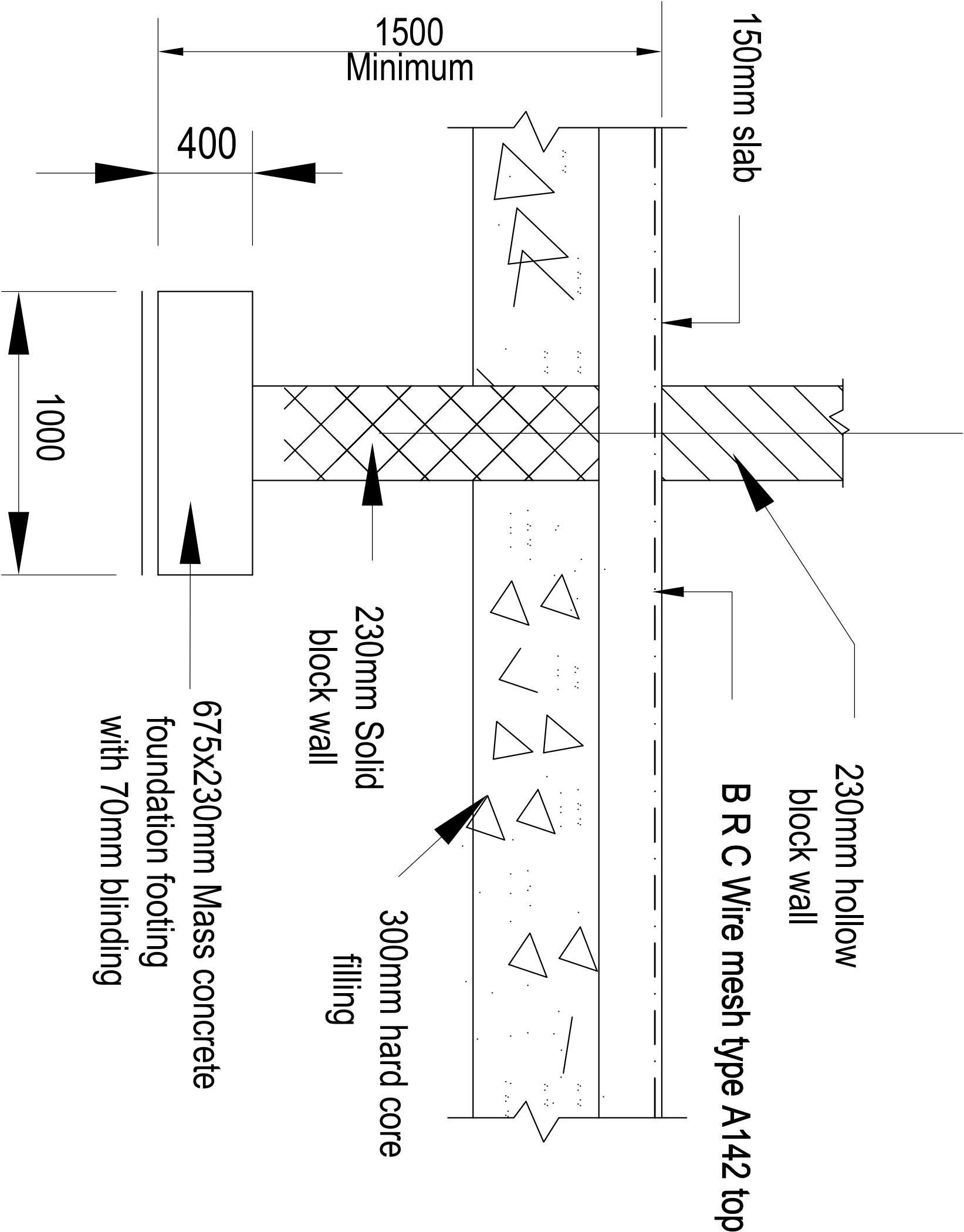
Client:
UNITED NATIONS DEVELOPMENT PROGRAMME, UNDP.

Drawing Title:

FOUNDATION SAMPLE

Scale	1:50
Date	MARCH, 2021
Project Name.	SCHOOL
Drawing No.	SWD/02

1



SECT. 1-1

Scale: 1:30

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Project:

PROPOSED RESIDENTIAL DEVELOPMENT,
AT
NGARANNAM,MAFA LGA, BORNO STATE.

Client:
UNITED NATIONS DEVELOPMENT PROGRAMME, UNDP.

Drawing Title:

Foundation layout

Scale

1:50

Date

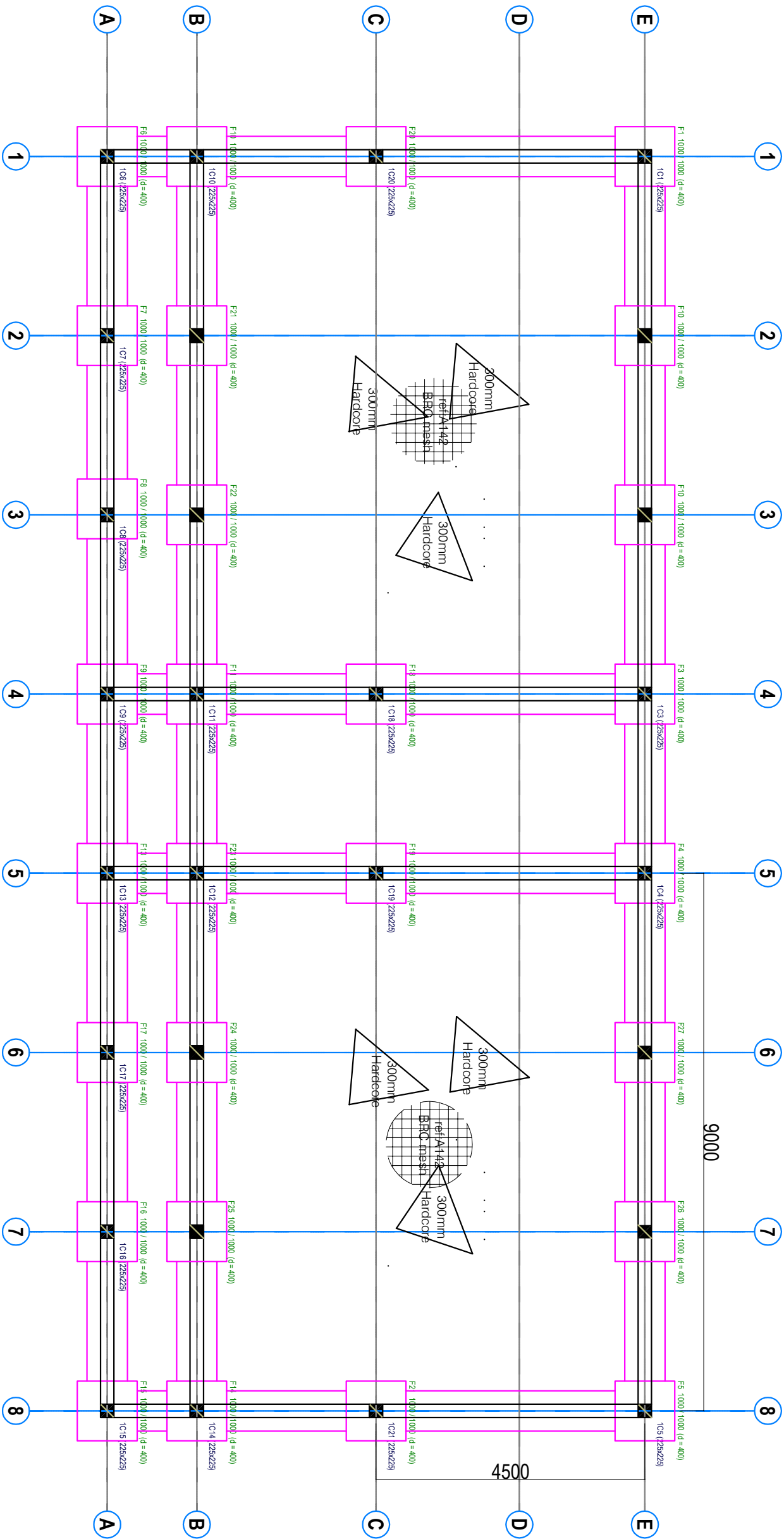
FEBRUARY, 2021

Project Name.

SCHOOL

Drawing No.

SWD/01



Foundation Details

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Drawing Title:

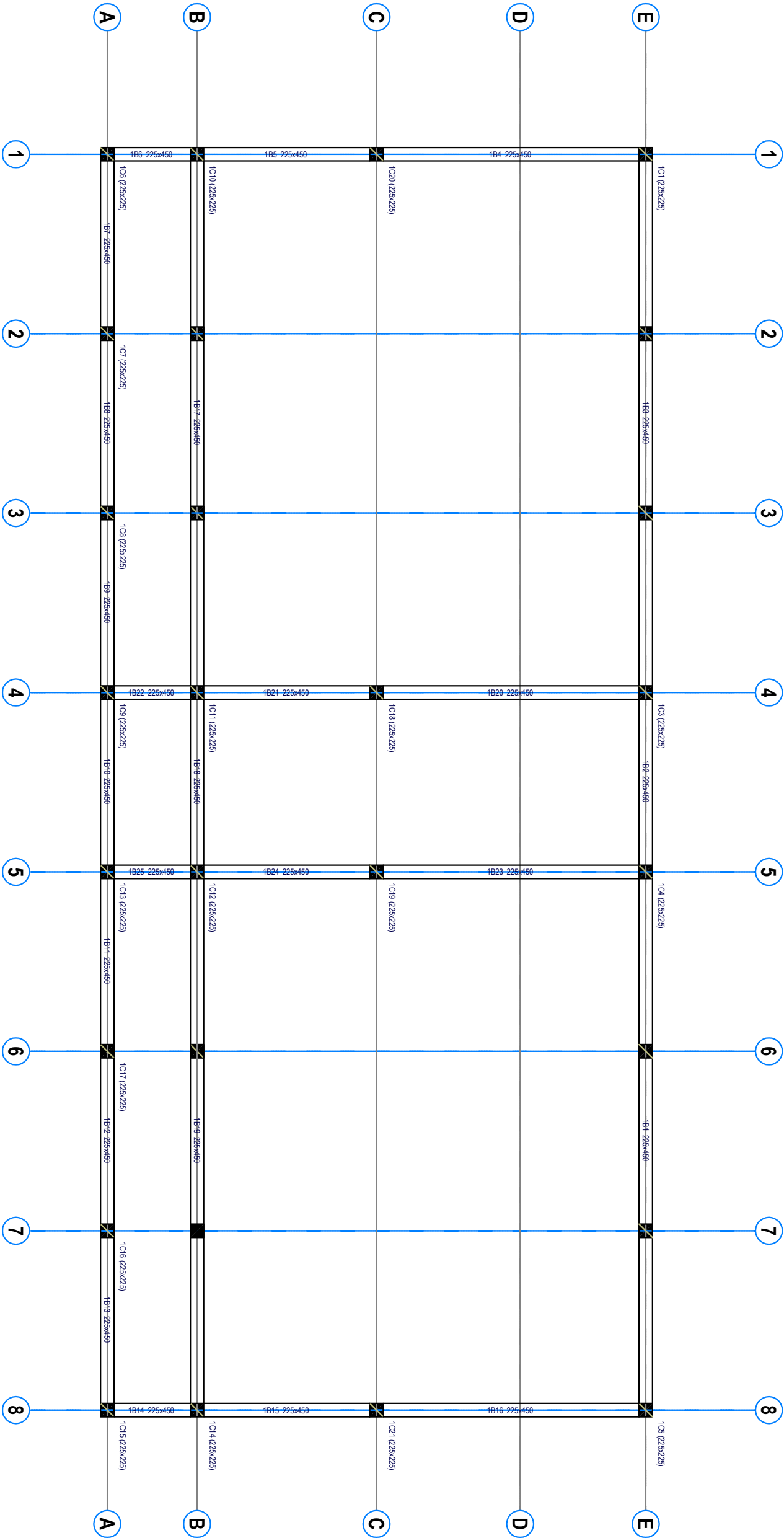
Ground & Roof Beams
layout

Scale 1:50

Date FEBRUARY, 2021

Project Name. SCHOOL

Drawing No. SWD/02



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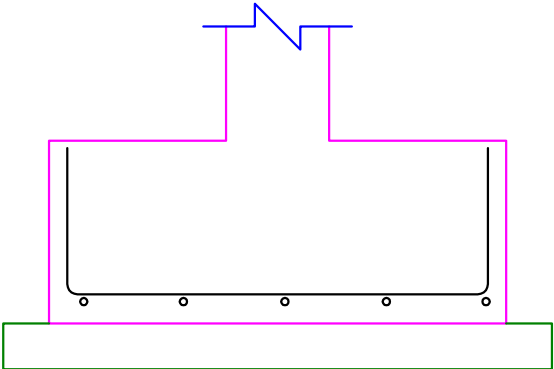
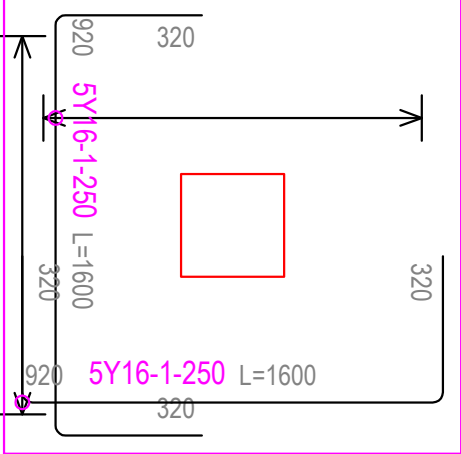
Client:
UNITED NATIONS DEVELOPMENT PROGRAMME, UNDP.

Drawing Title:

COLUMN BASE DETAILS

Scale	1:50
Date	FEBRUARY, 2021
Project Name:	SCHOOL
Drawing No.	SWD/03

F6 1000 / 1000 (d = 400)



PAD FOOTINGS QUANTITY TAKE OFF					
BM	SIZE	QTY	Length (mm)	FORM	TOTAL LENGTH (m)
					Y16
1	16	200	1600		320.00
TOTAL LENGTH (m)					320.00
UNIT WEIGHT (kg/m)					1.580
WEIGHT (kg)					505.7
T. WEIGHT (kg)					505.7

Codes

BS8110-1997, BS6399

Soil Parameters

Soil Bearing Capacity (kN/m ²)	150.00
Subgrade Reaction (kN/m ³)	50000.000

Material Properties (Default)

	Material	Rebar Grade
Columns	C20/25	Grade 410 (Type 2)
	C20/25	Grade 410 (Type 2)
Walls	Long. Web Rebar	Grade 410 (Type 2)
	Lat. Web Rebar	Grade 410 (Type 2)
Beams	C20/25	Grade 410 (Type 2)
Slabs	C20/25	Grade 410 (Type 2)
Ribs	C20/25	Grade 410 (Type 2)
Footings	C20/25	Grade 410 (Type 2)
Links	C20/25	Grade 410 (Type 2)

COLUMN-BASE SECTIONS

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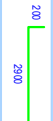


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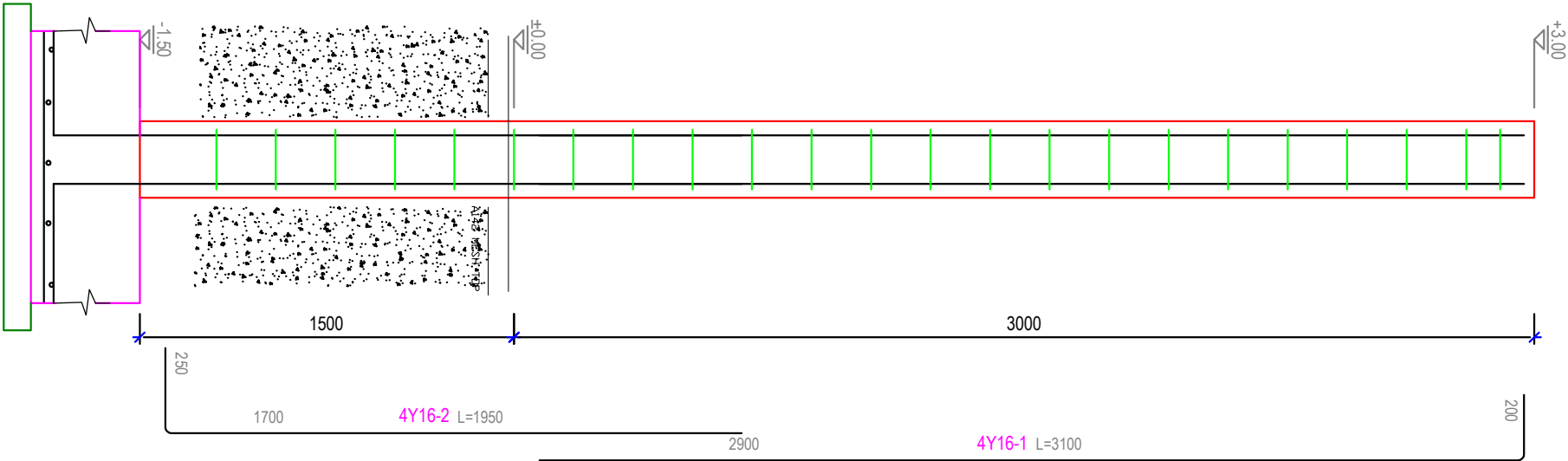
Drawing Title:

COLUMN & BASE DETAILS

Scale	1:50
Date	FEBRUARY, 2021
Project Name.	SCHOOL
Drawing No.	SWD/04

COLUMN ELEVATIONS QUANTITY TAKE OFF - STOREYS:

BM	SIZE	QTY	Length (mm)	FORM	TOTAL LENGTH (m)	
					Y8	Y16
1	16	80	3100			248.00
2	16	80	1950			156.00
3	8	436	900		392.40	
TOTAL LENGTH (m)					392.40	404.00
UNIT WEIGHT (Kg/m)					0.395	1.580
WEIGHT (Kg)					155.0	638.4
T. WEIGHT (kg)					793.4	



COLUMN TYPES AND DETAILS

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PROPOSED RESIDENTIAL DEVELOPMENT,
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UNITED NATIONS DEVELOPMENT PROGRAMME

UNDP

Drawing Title:

ROOF BEAMS

Scale

1:50

Date

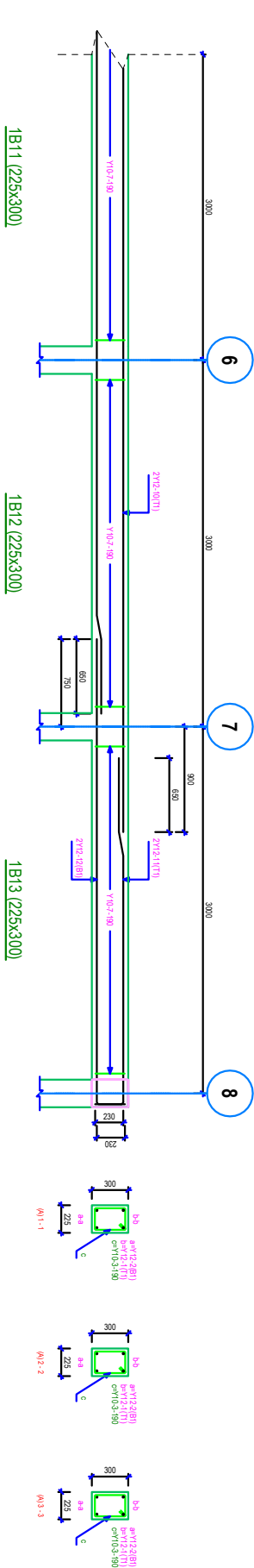
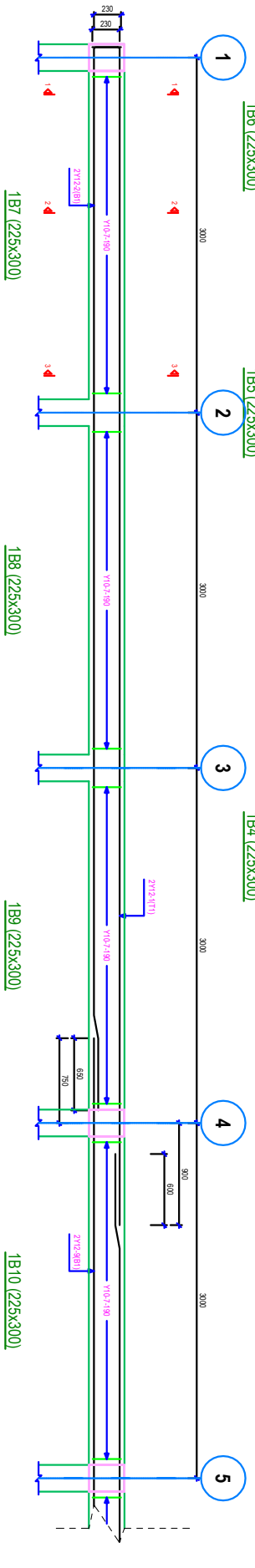
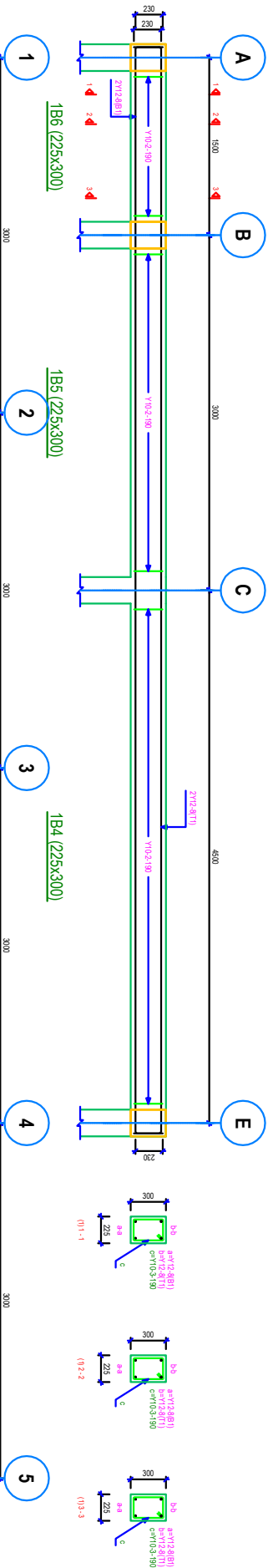
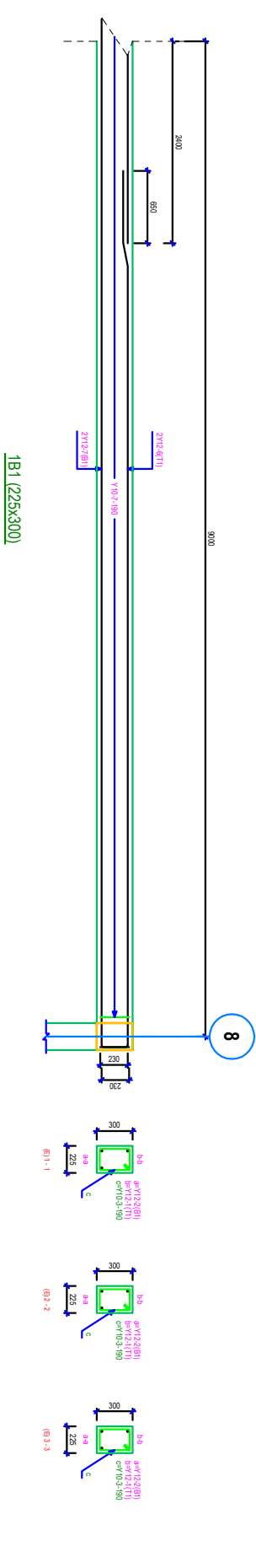
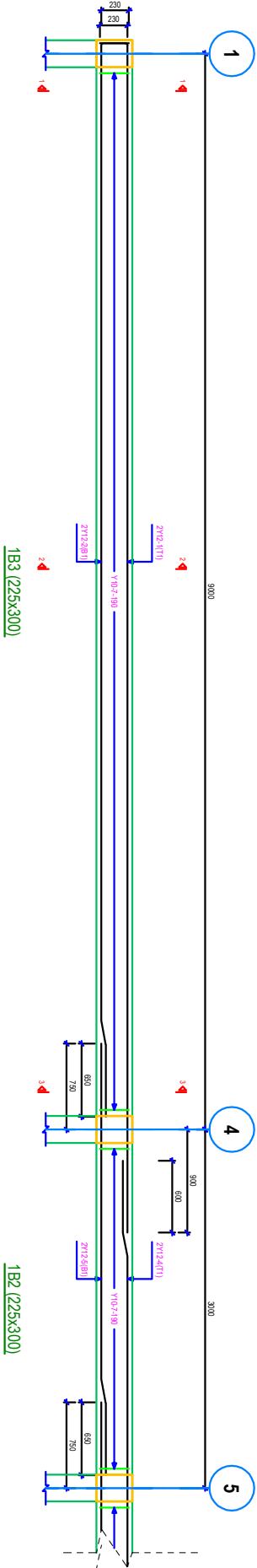
FEBRUARY , 2021

Project Name:

SCHOOL

Drawing No.

SWD/04



ROOF BEAMS DETAIL

BEAM ELEVATIONS QUANTITY TAKE OFF - STORE VS. [0] (1)						TOTAL LENGTH (m)	
BAI	SIZE	QTY	Length (mm)	FORM		Y10	Y12
1	12	6	10200	1.8	1.8	61.20	
2	12	6	5700	1.0	1.0	55.50	
3	10	142	1100	1.4	1.4	154.20	
4	12	4	5100	0.8	0.8	20.40	
5	12	4	3900	0.6	0.6	14.40	
6	12	4	7800	1.2	1.2	39.60	
7	12	4	10050	0.8	0.8	40.20	
8	12	16	5600	0.8	0.8	154.40	
9	12	2	9600	0.6	0.6	19.20	
10	12	2	9600	0.6	0.6	19.20	
11	12	2	3100	0.6	0.6	6.20	
12	12	2	4500	0.6	0.6	8.10	
TOTAL LENGTH (m)						164.20	429.20
UNIT WEIGHT (kg/m)						0.017	0.089
TOTAL WEIGHT (kg)						96.4	371.8
T. Weight (kg)							478.2

Codes		
BS 8110:1997/BS 8110		
Soil Bearing Capacity (kN/m ²)		
Standard Practice (kN/m ²)		
5000.000		
Material Properties (Default)		
Material	Rebar Grade	
Columns	C20/25	Grade 410 (Type 2)
Walls	C20/25	Grade 410 (Type 2)
Long Wall Rebar	C20/25	Grade 410 (Type 2)
Beams	C20/25	Grade 410 (Type 2)
Slabs	C20/25	Grade 410 (Type 2)
Roof	C20/25	Grade 410 (Type 2)
Found	C20/25	Grade 410 (Type 2)
Links	C20/25	Grade 410 (Type 2)

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UNITED NATIONS DEVELOPMENT PROGRAMME

UNDP

Drawing Title:

ROOF BEAMS

Scale

1:50

Date

FEBRUARY , 2021

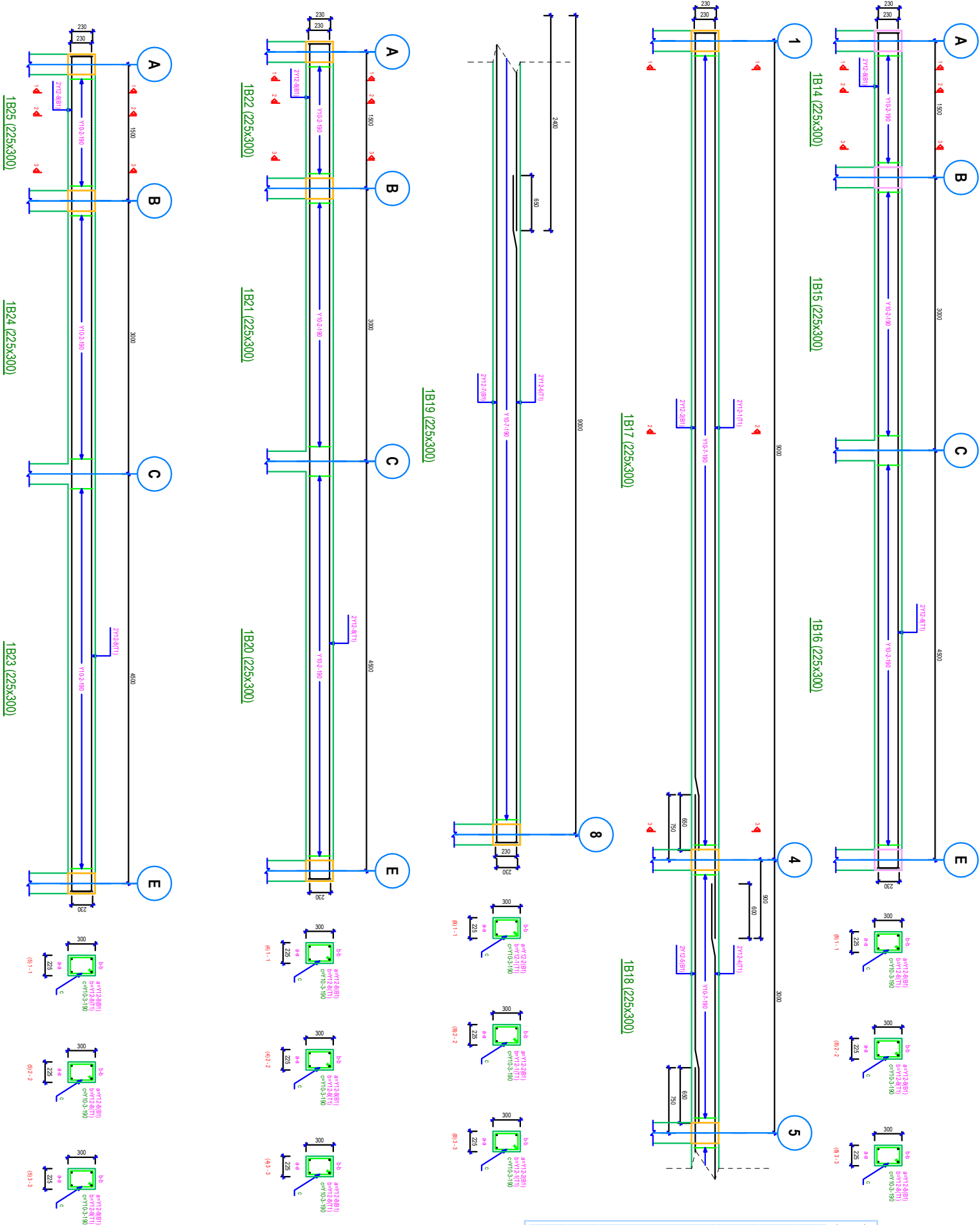
Project Name:

SCHOOL

Drawing No.

SWD/04

Concrete Beam Reinforcement Schedule (1)									
Beam		Top Reinforcement			Bottom Reinforcement			Slab Bars Reinforce	
Max Depth (mm)	Span (mm)	Left	Center	Right	Left	Center	Right	Left	Right
1B14	0	0	2Y12	2Y12	2Y12	2Y12			
1B15	0	0	2Y12	2Y12	2Y12	2Y12			
1B16	0	0	2Y12	2Y12	2Y12	2Y12			
1B17	0	0	2Y12	2Y12	2Y12	2Y12			
1B18	0	0	2Y12	2Y12	2Y12	2Y12			
1B19	0	0	2Y12	2Y12	2Y12	2Y12			
1B20	0	0	2Y12	2Y12	2Y12	2Y12			
1B21	0	0	2Y12	2Y12	2Y12	2Y12			
1B22	0	0	2Y12	2Y12	2Y12	2Y12			
1B23	0	0	2Y12	2Y12	2Y12	2Y12			
1B24	0	0	2Y12	2Y12	2Y12	2Y12			
1B25	0	0	2Y12	2Y12	2Y12	2Y12			
1B26	0	0	2Y12	2Y12	2Y12	2Y12			
1B27	0	0	2Y12	2Y12	2Y12	2Y12			
1B28	0	0	2Y12	2Y12	2Y12	2Y12			
1B29	0	0	2Y12	2Y12	2Y12	2Y12			
1B30	0	0	2Y12	2Y12	2Y12	2Y12			
1B31	0	0	2Y12	2Y12	2Y12	2Y12			
1B32	0	0	2Y12	2Y12	2Y12	2Y12			
1B33	0	0	2Y12	2Y12	2Y12	2Y12			
1B34	0	0	2Y12	2Y12	2Y12	2Y12			
1B35	0	0	2Y12	2Y12	2Y12	2Y12			
1B36	0	0	2Y12	2Y12	2Y12	2Y12			
1B37	0	0	2Y12	2Y12	2Y12	2Y12			
1B38	0	0	2Y12	2Y12	2Y12	2Y12			
1B39	0	0	2Y12	2Y12	2Y12	2Y12			
1B40	0	0	2Y12	2Y12	2Y12	2Y12			
1B41	0	0	2Y12	2Y12	2Y12	2Y12			
1B42	0	0	2Y12	2Y12	2Y12	2Y12			
1B43	0	0	2Y12	2Y12	2Y12	2Y12			
1B44	0	0	2Y12	2Y12	2Y12	2Y12			
1B45	0	0	2Y12	2Y12	2Y12	2Y12			
1B46	0	0	2Y12	2Y12	2Y12	2Y12			
1B47	0	0	2Y12	2Y12	2Y12	2Y12			
1B48	0	0	2Y12	2Y12	2Y12	2Y12			
1B49	0	0	2Y12	2Y12	2Y12	2Y12			
1B50	0	0	2Y12	2Y12	2Y12	2Y12			
1B51	0	0	2Y12	2Y12	2Y12	2Y12			
1B52	0	0	2Y12	2Y12	2Y12	2Y12			
1B53	0	0	2Y12	2Y12	2Y12	2Y12			
1B54	0	0	2Y12	2Y12	2Y12	2Y12			
1B55	0	0	2Y12	2Y12	2Y12	2Y12			
1B56	0	0	2Y12	2Y12	2Y12	2Y12			
1B57	0	0	2Y12	2Y12	2Y12	2Y12			
1B58	0	0	2Y12	2Y12	2Y12	2Y12			
1B59	0	0	2Y12	2Y12	2Y12	2Y12			
1B60	0	0	2Y12	2Y12	2Y12	2Y12			
1B61	0	0	2Y12	2Y12	2Y12	2Y12			
1B62	0	0	2Y12	2Y12	2Y12	2Y12			
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1B65	0	0	2Y12	2Y12	2Y12	2Y12			
1B66	0	0	2Y12	2Y12	2Y12	2Y12			
1B67	0	0	2Y12	2Y12	2Y12	2Y12			
1B68	0	0	2Y12	2Y12	2Y12	2Y12			
1B69	0	0	2Y12	2Y12	2Y12	2Y12			
1B70	0	0	2Y12	2Y12	2Y12	2Y12			
1B71	0	0	2Y12	2Y12	2Y12	2Y12			
1B72	0	0	2Y12	2Y12	2Y12	2Y12			
1B73	0	0	2Y12	2Y12	2Y12	2Y12			
1B74	0	0	2Y12	2Y12	2Y12	2Y12			
1B75	0	0	2Y12	2Y12	2Y12	2Y12			
1B76	0	0	2Y12	2Y12	2Y12	2Y12			
1B77	0	0	2Y12	2Y12	2Y12	2Y12			
1B78	0	0	2Y12	2Y12	2Y12	2Y12			
1B79	0	0	2Y12	2Y12	2Y12	2Y12			
1B80	0	0	2Y12	2Y12	2Y12	2Y12			
1B81	0	0	2Y12	2Y12	2Y12	2Y12			
1B82	0	0	2Y12	2Y12	2Y12	2Y12			
1B83	0	0	2Y12	2Y12	2Y12	2Y12			
1B84	0	0	2Y12	2Y12	2Y12	2Y12			
1B85	0	0	2Y12	2Y12	2Y12	2Y12			
1B86	0	0	2Y12	2Y12	2Y12	2Y12			
1B87	0	0	2Y12	2Y12	2Y12	2Y12			
1B88	0	0	2Y12	2Y12	2Y12	2Y12			
1B89	0	0	2Y12	2Y12	2Y12	2Y12			
1B90	0	0	2Y12	2Y12	2Y12	2Y12			
1B91	0	0	2Y12	2Y12	2Y12	2Y12			
1B92	0	0	2Y12	2Y12	2Y12	2Y12			
1B93	0	0	2Y12	2Y12	2Y12	2Y12			
1B94	0	0	2Y12	2Y12	2Y12	2Y12			
1B95	0	0	2Y12	2Y12	2Y12	2Y12			
1B96	0	0	2Y12	2Y12	2Y12	2Y12			
1B97	0	0	2Y12	2Y12	2Y12	2Y12			
1B98	0	0	2Y12	2Y12	2Y12	2Y12			
1B99	0	0	2Y12	2Y12	2Y12	2Y12			
1B100	0	0	2Y12	2Y12	2Y12	2Y12			



ROOF BEAMS DETAIL cont.