

STRUCTURAL DESIGN

UNITED NATIONS DEVELOPMENT PROGRAMME, UNDP.

PROPOSED DEVELOPMENT AT NGARANNAM, MAFA, BORNO STATE.

STRUCTURAL DRAWING FOR CLINIC.

GENERAL NOTES

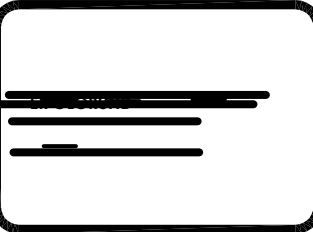
- 1
- ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S DRAWINGS.
- 2
- SAFE GROUND PRESSURE ASSUMED IS 150 KN/m2.
- 3
- 75mm CONC. BLINDING TO BE PROVIDED.
- 4
- MINIMUM DEPTH OF FOUNDATION TO BE 1200mm.
- 5
- USE CONCRETE NOMINAL MIX 1:3:6 FOR BLINDING.
- 6
- CONC. CUBE STRENGTH OF 1:2:4 MIX FOR OTHER REINF. CONC. AT 28 DAYS
- 7
- HIGH YIELD REINFT. OF CHARACTERISTIC STRENGTH OF AT LEAST 410 N/mm2.
- 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 CONCRETE SECTIONS MUST HAVE BEEN CHECKED AND CORRECT BY THE ENGINEER.
- 11
- ENGINEERS SHALL **NOT** BE HELD RESPONSIBLE FOR JOBS **NOT** SUPERVISED BY THEM.

GENERAL NOTES.

- REINFORCED CONCRETE**
- DESIGN IS TO BS 8110
 - 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)
 - UNLESS OTHERWISE INDICATED, REINFORCEMENT SHALL BE HIGH YIELD STEEL(TYPE 2), DENOTED BY 'Y', HAVING CHARACTERISTIC STRENGTH NOT LESS THAN 410N/MM2
 - COVER TO REINFORCEMENT SHALL BE THE
FOUNDATION: 50MM(BOTTOM)75MM(SIDES)
COLUMNS: 25MM
BEAMS: 25MM
SLABS: 20MM
 - DRAWINGS MUST BE READ IN CONJUNCTION WITH THE RELEVANT ARCHITECTURAL DRAWINGS AND IN CASE OF ANY DISCREPANCY REFER TO THE DESIGN ENGINEER FOR CLARIFICATION.
 - DIMENSIONS ARE IN MILLIMETRE(MM) AND MUST NOT BE SCALED AT ANY TIME.
 - FOUNDATION WAS DESIGNED FOR AN ASSUMED ALLOWABLE SOIL BEARING PRESSURE OF 150KN/M2
 - THIS DESIGN ENGINEER WILL NOT TAKE RESPONSIBILITY FOR ANY JOB NOT SUPERVISED BY HIM.

- BLOCKWORK**
- HOLLOW BLOCKWALLS BELOW GROUND SLAB LEVEL ARE TO BE FILLED WITH MASS CONCRETE. BACK FILLING IS TO BE CARRIED OUT SIMULTANEOUSLY ON BOTH SIDES.
 - THE WALL THICKNESS OF THE BLOCKS SHOULD NOT BE MORE THAN 25MM.
 - THE MAXIMUM CRUSHING STRENGTH OF THE HOLLOW BLOCK IS TO BE 20N/MM OF GROSS AREA OF BLOCK AT 28 DAYS.
 - BLOCKWORK TIES BETWEEN BLOCKWORK WALL AND COLUMNS/STANTIONS ARE TO BE PROVIDED AT EVERY COURSE. TIES TO BE 6MM BAR STRAPS 700M LONG INTO THE BLOCKWORK.
 - MAXIMUM POUR HEIGHT FOR ALL FILLED BLOCK BLOCKWORK TO BE 2 COURSES AT A TIME.
 - ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWALL AFTER DUE CONSULTATION WITH STRUCTURAL ENGINEERS. PUTTING SERVICE PIPES INSIDE LOAD BEARING BLOCKWORK CORNERS MUST BE AVOIDED.

No.	Revision/Notes.	Date.
1.	Issued for Tender	



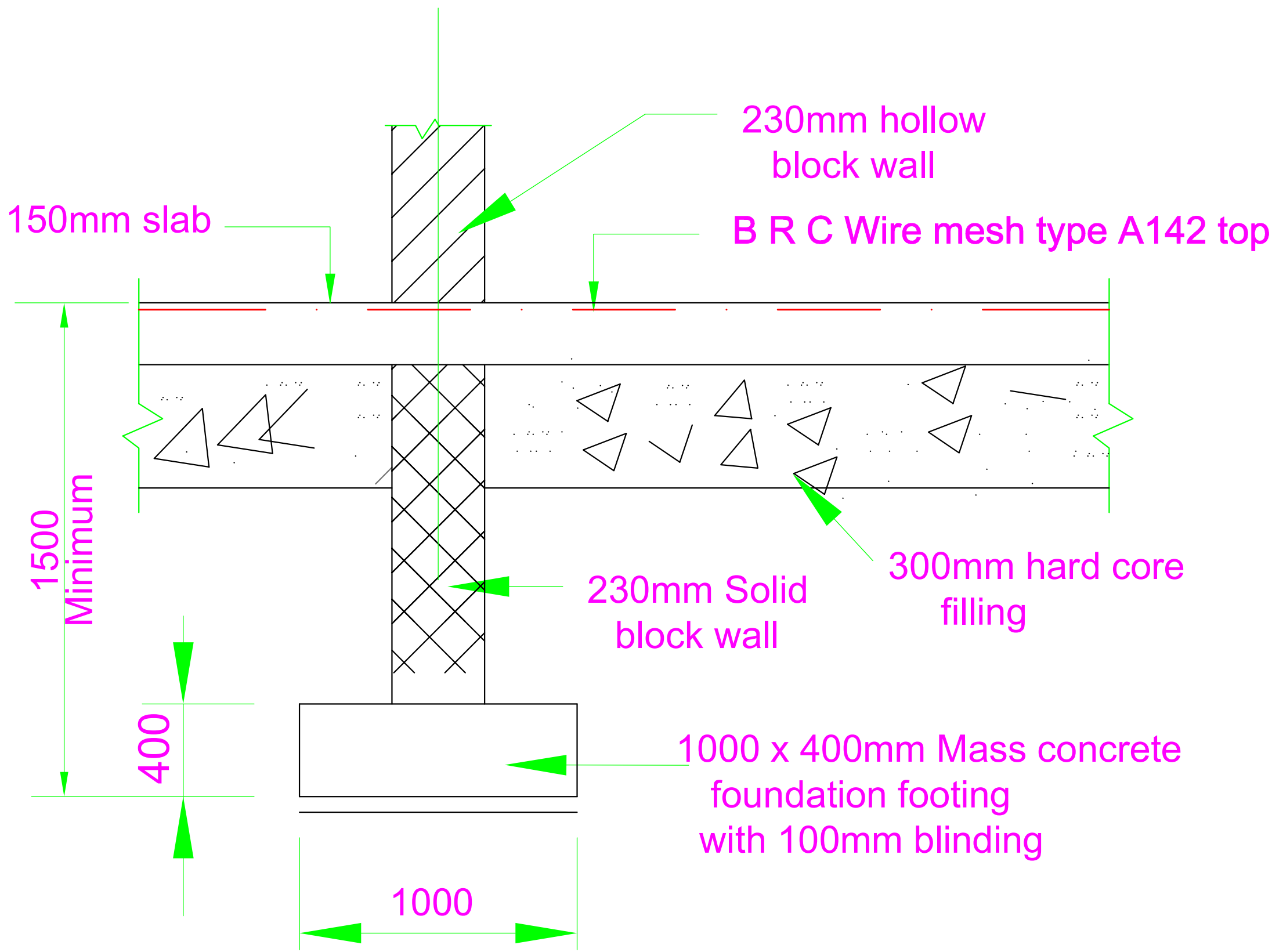
Project.

HOMES FOR NGARANNAM,
MAFA LGA, BORNO.

Drawing Title.

GENERAL NOTE

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DATE	MARCH, 2021	



SECT. 1- 1

Scale: 1:30

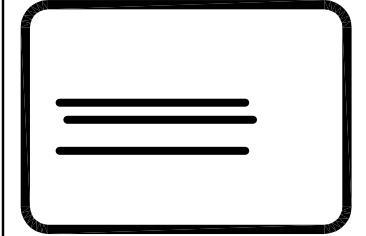
FOUNDATION SAMPLE

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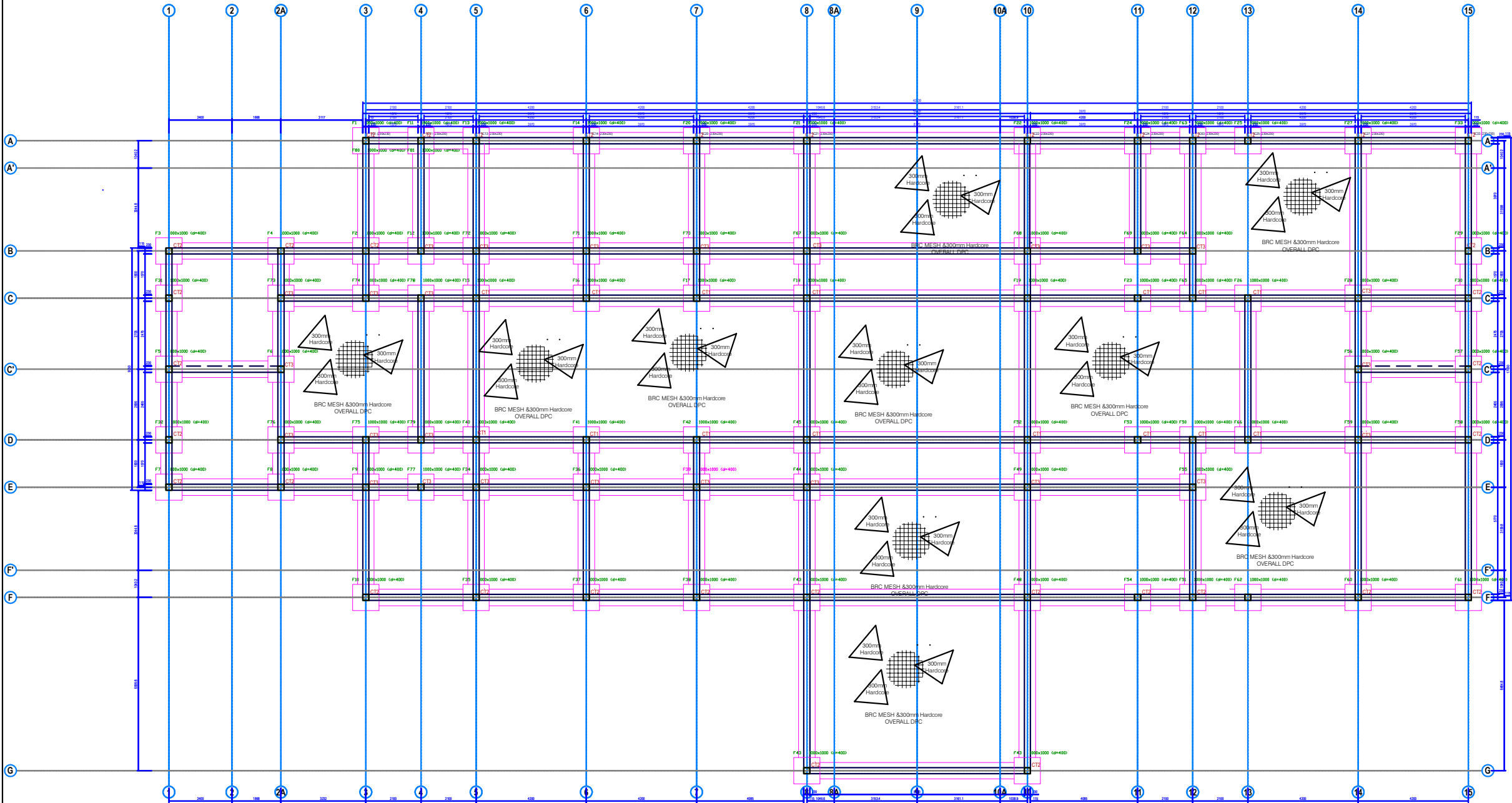
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Project.
**HOMES FOR NGARANNAM,
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Drawing Title.
FOUNDATION MATERIAL

DESIGN		SHEET No. A2 Scale: 1:50
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Codes	
Soil Parameters	
Soil Bearing Capacity (kN/m ²)	100 kN/m ²
Soil Cohesion (kN/m ²)	10 kN/m ²
Material Properties (Default)	
Concrete	C20/25
Reinforcement	Y12
Blockwork	1000
Slab	100
Beam	200
Column	300
Foundation	100

GENERAL NOTES.

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- COVER TO REINFORCEMENT SHALL BE THE:
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- FOUNDATION WAS DESIGNED FOR AN ASSUMED ALLOWABLE SOIL BEARING PRESSURE OF 150 KNM²
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BLOCKWORK

- HOLLOW BLOCK WALLS BELOW GROUND SLAB LEVEL ARE TO BE FILLED WITH MASS CONCRETE. BACK FILLING IS TO BE CARRIED OUT SIMULTANEOUSLY ON BOTH SIDES.
- THE WALL THICKNESS OF THE BLOCKS SHOULD NOT BE MORE THAN 250MM.
- THE MAXIMUM CRUSHING STRENGTH OF THE HOLLOW BLOCK IS TO BE 20N/MM² OF GROSS AREA OF BLOCK AT 28 DAYS.
- BLOCKWORK TIES BETWEEN BLOCKWORK WALL AND COLUMNS/STANTIONS ARE TO BE PROVIDED AT EVERY COURSE. TIES TO BE 6MM BAR STRAPS 700MM LONG INTO THE BLOCKWORK.
- MAXIMUM POUR HEIGHT FOR ALL FILLED BLOCK BLOCKWORK TO BE 2 COURSES AT A TIME.
- ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWORK AFTER DUE CONSULTATION WITH STRUCTURAL ENGINEERS. PUTTING SERVICE PIPES INSIDE LOAD BEARING BLOCKWORK CORNERS MUST BE AVOIDED.

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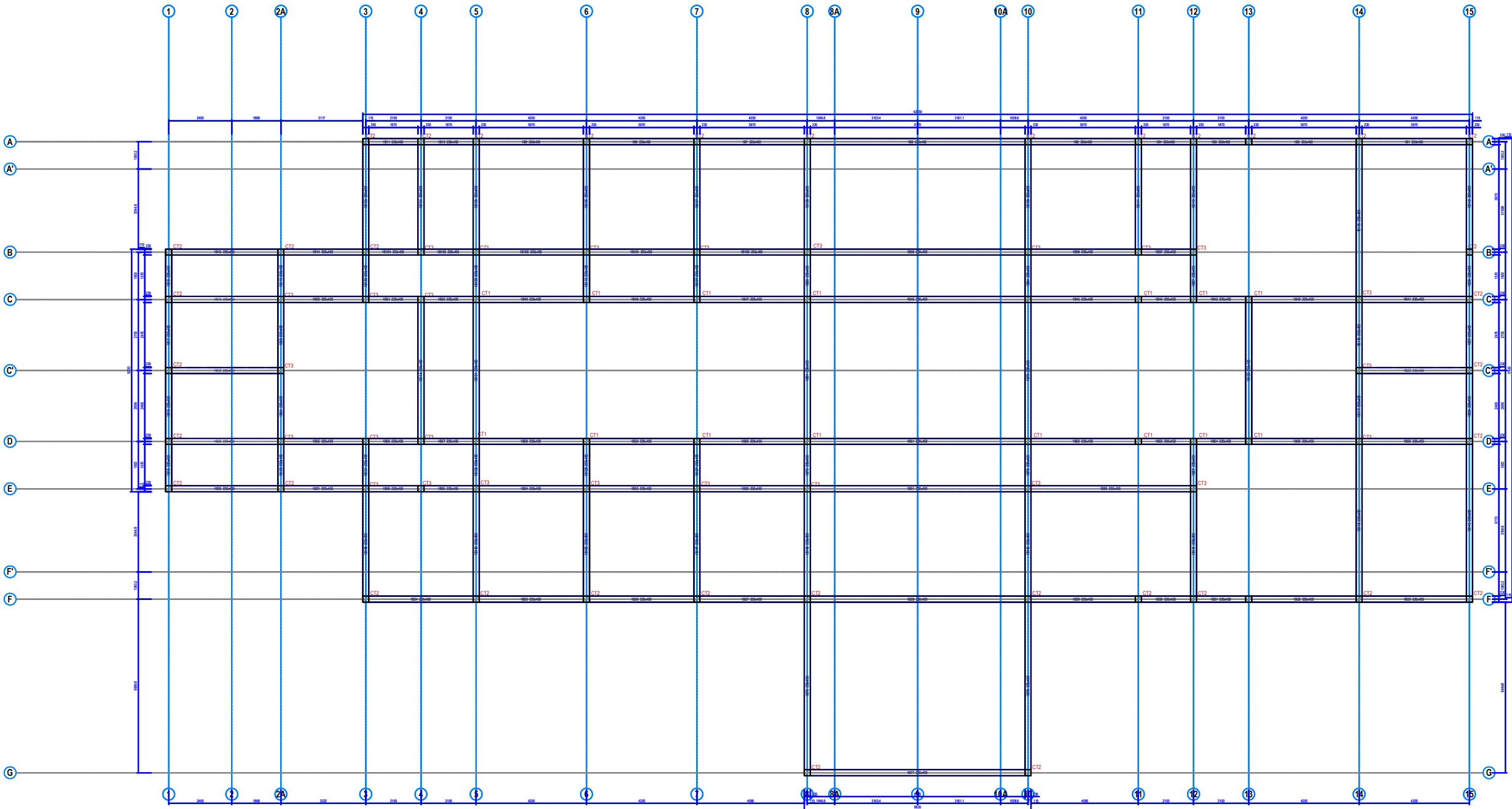
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HOMES FOR NGARANNAM,
MAFA LGA, BORNO.

Drawing Title.

FOUNDATION DETAILS

DESIGN		SHEET No. 01 Scale: 1:50
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CAD		
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FLOOR BEAM DETAILS

Codes	
BS 8110:1997 (2008)	
Soil Parameters	
Soil Bearing Capacity (kN/m ²)	150.00
Edgewise Friction (kN/m ²)	5000.000
Material Properties (Default)	
Material	Ratio (Def)
Columns	C2000
Walls	C2000
Beams	C2000
Slabs	C2000
Footing	C2000
Links	C2000

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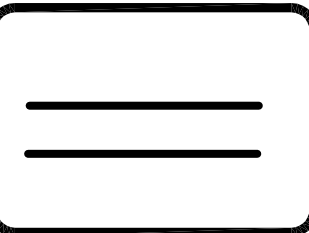
- COVER TO REINFORCEMENT SHALL BE THE FUNDATION:
 - 50MM(BOTTOM)75MM(SIDES)
 - COLUMNS: 25MM
 - BEAMS: 20MM
 - SLABS: 20MM

- DRAWINGS MUST BE READ IN CONJUNCTION WITH THE RELEVANT ARCHITECTURAL DRAWINGS AND IN CASE OF ANY DISCREPANCY REFER TO THE DESIGN ENGINEER FOR CLARIFICATION.
- DIMENSIONS ARE IN MILLIMETRE(MM) ANDMUST NOT BE SCALED AT ANY TIME.
- FOUNDATION WAS DESIGNED FOR AN ASSUMED ALLOWABLE SOIL BEARING PRESSURE OF 150KN/M2
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BLOCKWORK

- HOLLOW BLOCKWALLS BELOW GROUND SLAB LEVEL ARE TO BE FILLED WITH MASS CONCRETE. BACK FILLING IS TO BE CARRIED OUT SIMULTANEOUSLY ON BOTH SIDES.
- THE WALL THICKNESS OF THE BLOCKS SHOULD NOT BE MORE THAN 25MM.
- THE MAXIMUM CRUSHING STRENGTH OF THE HOLLOW BLOCK IS TO BE 20N/MM OF GROSS AREA OF BLOCK AT 28 DAYS.
- BLOCKWORK TIES BETWEEN BLOCKWORK WALL AND COLUMNS/STANTIONS ARE TO BE PROVIDED AT EVERY COURSE. TIES TO BE 6MM BAR STRAPS 700M LONG INTO THE BLOCKWORK.
- MAXIMUM POUR HEIGHT FOR ALL FILLED BLOCK BLOCKWORK TO BE 2 COURSES AT A TIME.
- ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWALL AFTER DUE CONSULTATION WITH STRUCTURAL ENGINEERS. PUTTING SERVICE PIPES INSIDE LOAD BEARING BLOCKWORK CORNERS MUST BE AVOIDED.

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Project.
**HOMES FOR NGARANNAM,
MAFA LGA, BORNO.**

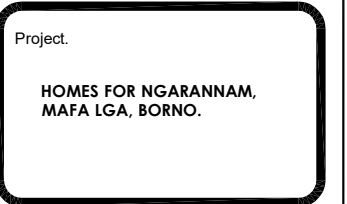
Drawing Title.
GROUND BEAMS LAYOUT

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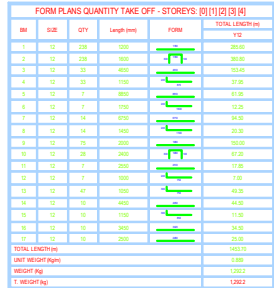
REINFORCED CONCRETE

- ## BLOCKWORK

- | | | |
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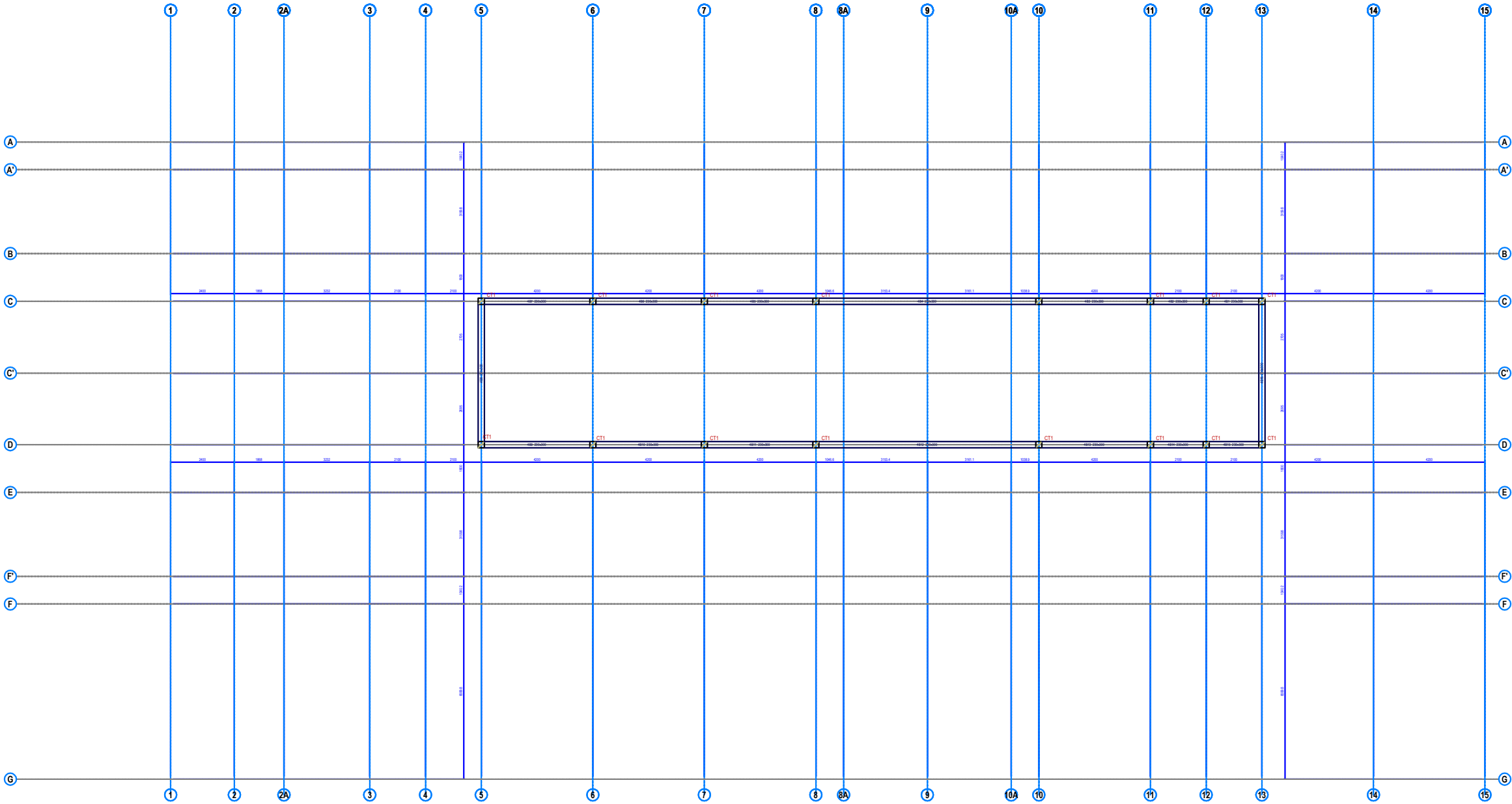


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Codes		
623115-99162338		
Soil Parameters		
Soil Bearing Capacity (kN/m ²)	120.00	
Subgrade Reaction (kN/m ³)	5.8333 000	
Material Properties (Default)		
	Material	Rebar Grade
Columns	C30/35	Grade 410 (Type 2)
	C30/35	Grade 410 (Type 2)
Walls	Long. Wall Rebar	Grade 410 (Type 2)
	Lat. Wall Rebar	Grade 410 (Type 2)
Beams	C30/35	Grade 410 (Type 2)
Slabs	C30/35	Grade 410 (Type 2)
Fills	C30/35	Grade 410 (Type 2)
Footings	C30/35	Grade 410 (Type 2)
Links	C30/35	Grade 410 (Type 2)

ROOF COLUMNS & BEAMS FLOOR LAYOUT



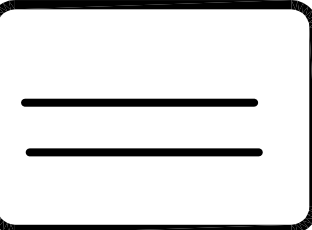
ROOF COLUMNS &
BEAMS FLOOR LAYOUT

GENERAL NOTES.

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-FOUNDATION 30(25)
-COLUMNS 30(20)
-BEAMS & SLABS 30(20)
 - UNLESS OTHERWISE INDICATED, REINFORCEMENT SHALL BE HIGH YIELD STEEL(TYPE 2), DENOTED BY 'Y', HAVING CHARACTERISTIC STRENGHT NOT LESS THAN 410N/MM2
 - COVER TO REINFORCEMENT SHALL BE THE
FOUNDATION: 75MM(SIDES)
COLUMNS: 25MM
BEAMS: 25MM
SLABS: 20MM
 - DRAWINGS MUST BE READ IN CONJUNCTION WITH THE RELEVANT ARCHITECTURAL DRAWINGS AND IN CASE OF ANY DISCREPANCY REFER TO THE DESIGN ENGINEER FOR CLARIFICATION.
 - DIMENSIONS ARE IN MILLIMETRE(MM) ANDMUST NOT BE SCALED AT ANY TIME.
 - FOUNDATION WAS DESIGNED FOR AN ASSUMED ALLOWABLE SOIL BEARING PRESSURE OF 150KN/M2
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- BLOCKWORK**
- HOLLOW BLOCKWALLS BELOW GROUND SLAB LEVEL ARE TO BE FILLED WITH MASS CONCRETE. BACK FILLING IS TO BE CARRIED OUT SIMULTANEOUSLY ON BOTH SIDES.
 - THE WALL THICKNESS OF THE BLOCK SHOULD NOT BE MORE THAN 25MM.
 - THE MAXIMUM CRUSHING STRENGTH OF THE HOLLOW BLOCK IS TO BE 20N/MM OF GROSS AREA OF BLOCK AT 28 DAYS.
 - BLOCKWORK TIES BETWEEN BLOCKWORK WALL AND COLUMNS/STANTIONS ARE TO BE PROVIDED AT EVERY COURSE. TIES TO BE 6MM BAR STRAPS 700M LONG INTO THE BLOCKWORK.
 - MAXIMUM POUR HEIGHT FOR ALL FILLED BLOCK BLOCKWORK TO BE 2 COURSES AT A TIME.
 - ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWALL AFTER DUE CONSULTATION WITH STRUCTURAL ENGINEERS. PUTTING SERVICE PIPES INSIDE LOAD BEARING BLOCKWORK CORNERS MUST BE AVOIDED.

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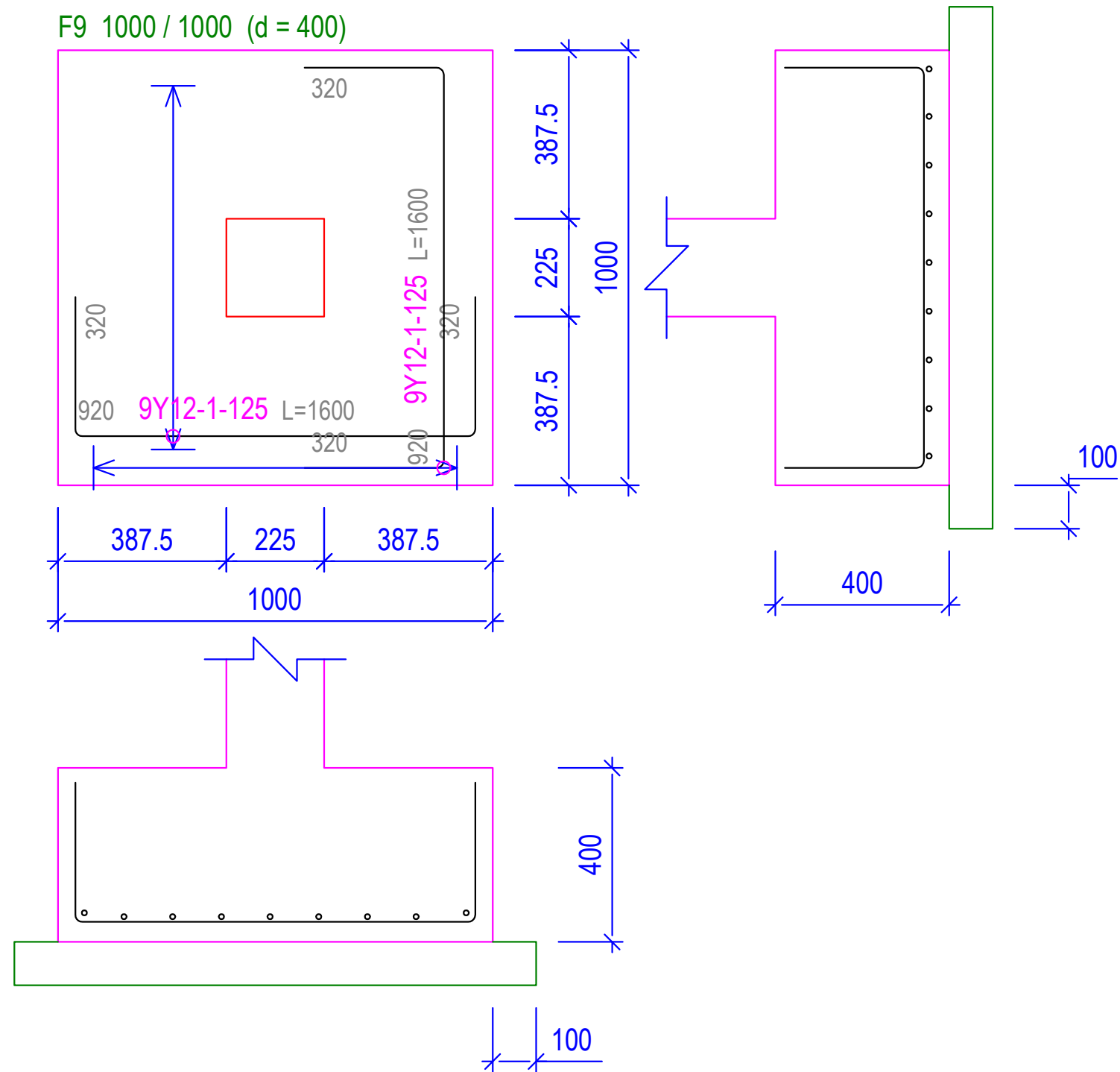
Project.

HOMES FOR NGARANNAM,
MAFA LGA, BORNO.

Drawing Title.

SLAB R.BAR DETAILS

DESIGN		SHEET No. 04 Scale: 1:50
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COLUMN BASE DETAILS

GENERAL NOTES.

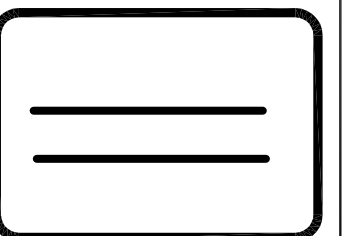
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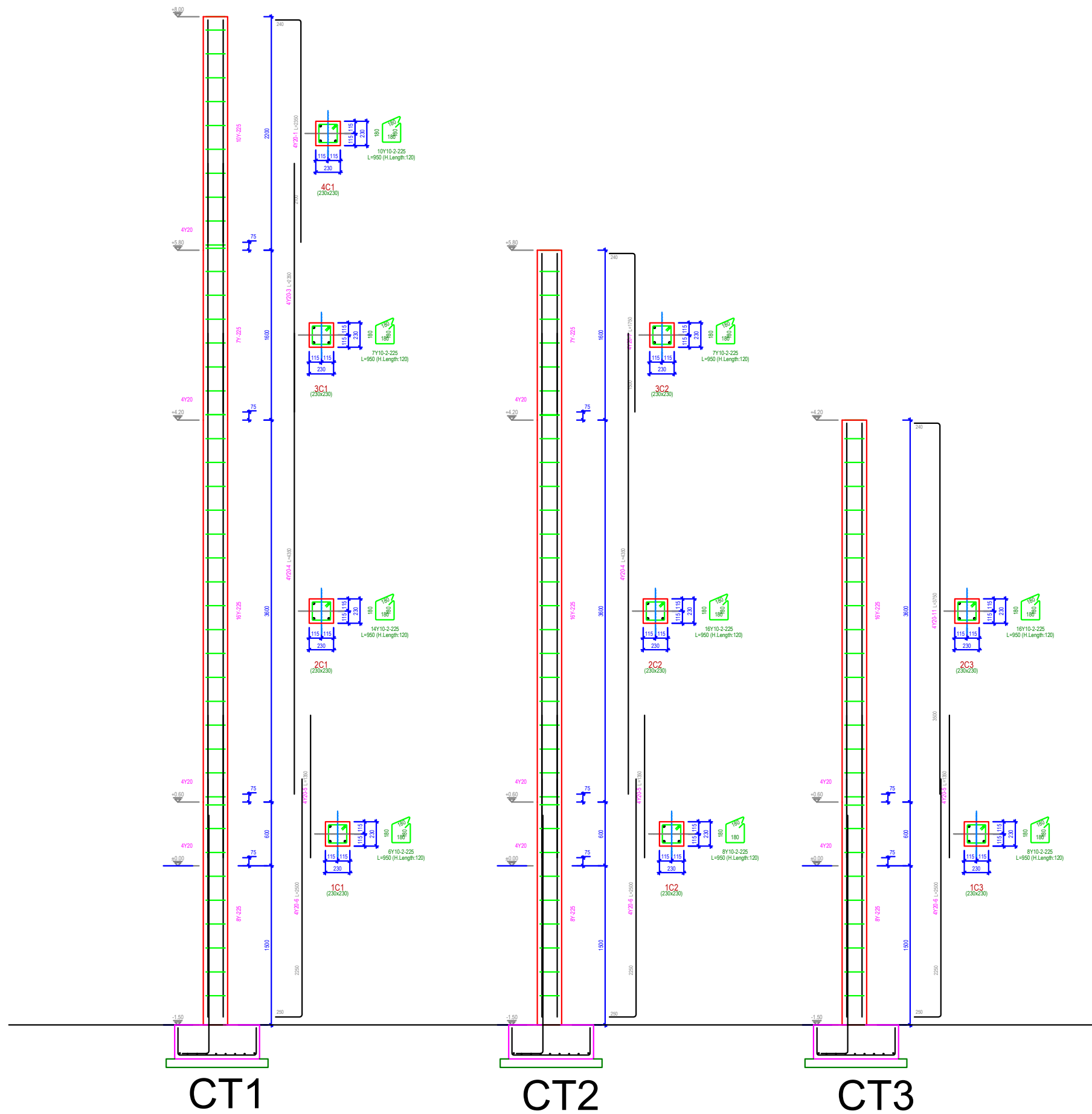
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PAD FOOTING DETAILS

DESIGN		SHEET No. 05 Scale: 1:50
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COLUMN DETAILS

GENERAL NOTES.

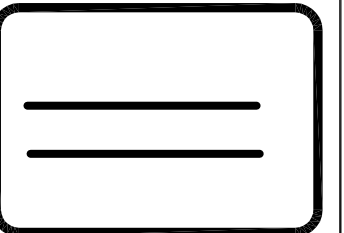
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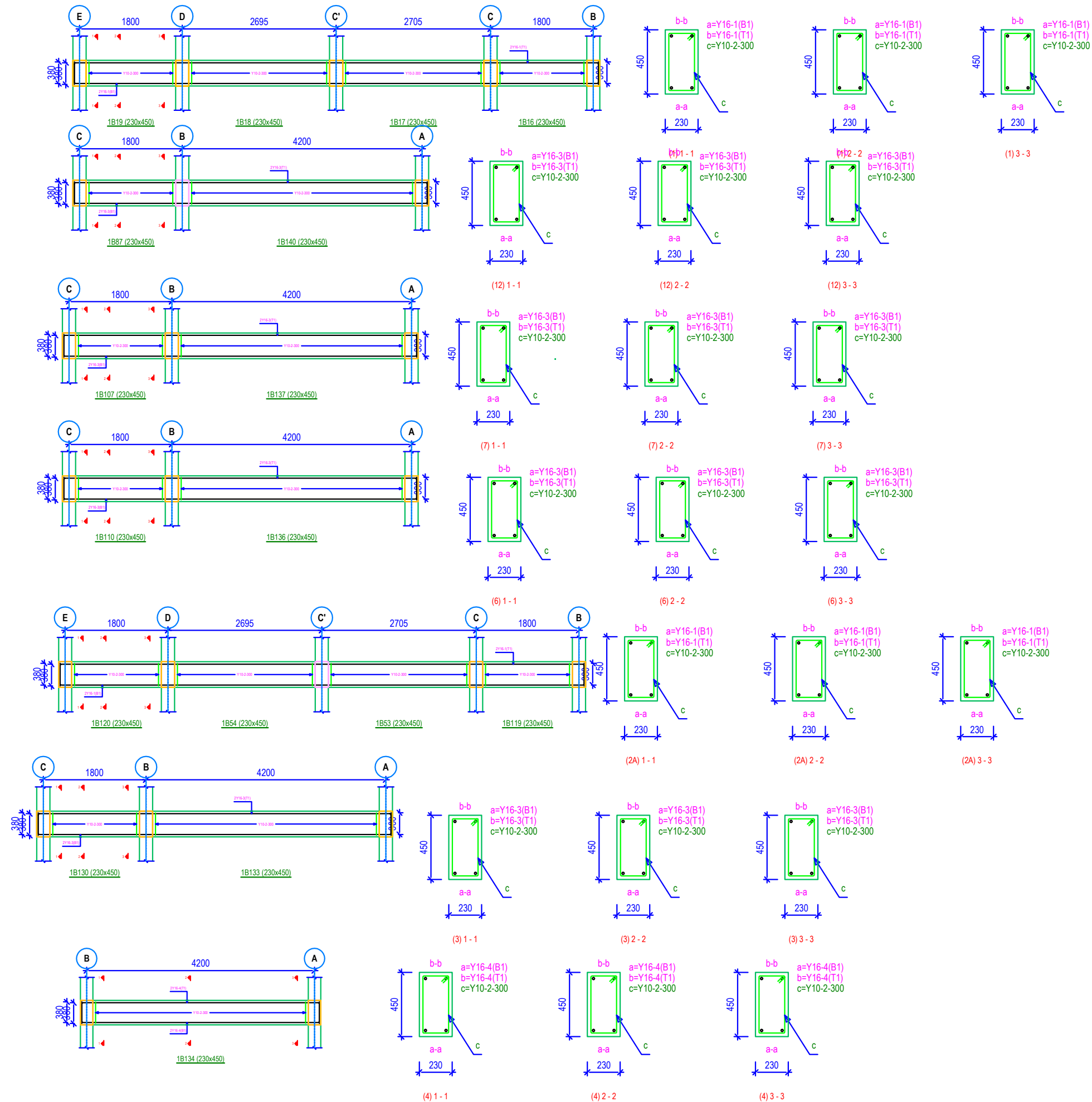
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**HOMES FOR NGARANNAM,
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COLUMN DETAILS

DESIGN		SHEET No. 06 Scale: 1:50
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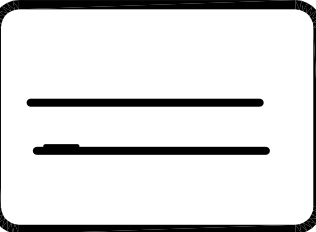


FLOOR BEAM DETAILS

GENERAL NOTES.

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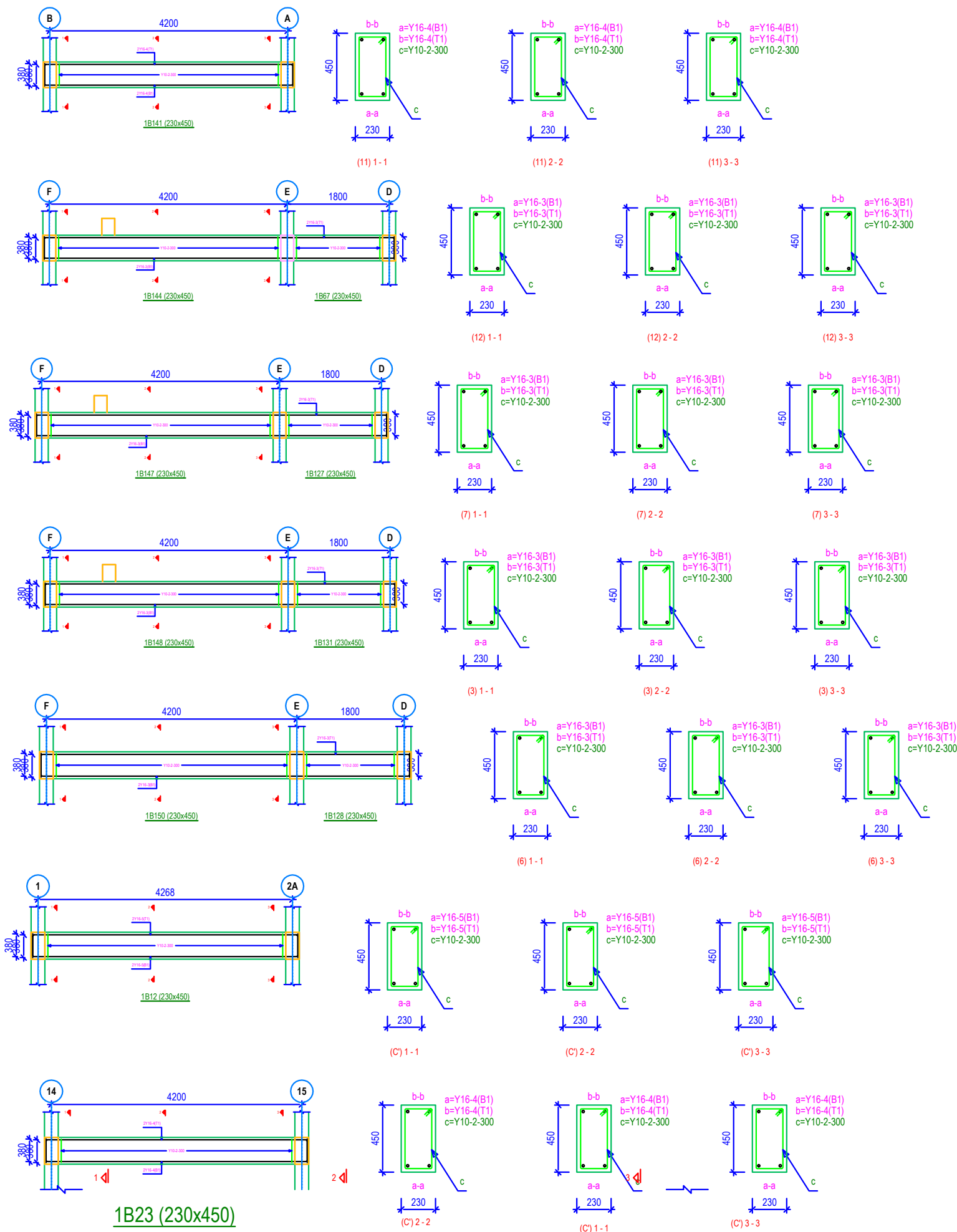
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BEAM R.BAR DETAILS

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CAD		Scale: 1:50
DATE	MARCH, 2021	

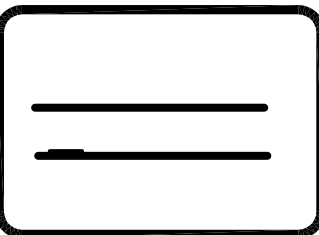


FLOOR BEAM DETAILS CONT.

GENERAL NOTES.

- REINFORCED CONCRETE**
- DESIGN IS TO BS 8110
 - 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)
 - UNLESS OTHERWISE INDICATED, REINFORCEMENT SHALL BE HIGH YIELD STEEL (TYPE 2), DENOTED BY 'Y', HAVING CHARACTERISTIC STRENGTH NOT LESS THAN 410N/MM²
 - COVER TO REINFORCEMENT SHALL BE THE:
 - FOUNDATION: 50MM (BOTTOM) 75MM (SIDES)
 - COLUMNS: 25MM
 - BEAMS: 25MM
 - SLABS: 20MM
 - DRAWINGS MUST BE READ IN CONJUNCTION WITH THE RELEVANT ARCHITECTURAL DRAWINGS AND IN CASE OF ANY DISCREPANCY REFER TO THE DESIGN ENGINEER FOR CLARIFICATION.
 - DIMENSIONS ARE IN MILLIMETRE (MM) AND MUST NOT BE SCALED AT ANY TIME.
 - FOUNDATION WAS DESIGNED FOR AN ASSUMED ALLOWABLE SOIL BEARING PRESSURE OF 150K/NM²
 - THIS DESIGN ENGINEER WILL NOT TAKE RESPONSIBILITY FOR ANY JOB NOT SUPERVISED BY HIM.
- BLOCKWORK**
- HOLLOW BLOCK WALLS BELOW GROUND SLAB LEVEL ARE TO BE FILLED WITH MASS CONCRETE. BACK FILLING IS TO BE CARRIED OUT SIMULTANEOUSLY ON BOTH SIDES.
 - THE WALL THICKNESS OF THE BLOCKS SHOULD NOT BE MORE THAN 25MM.
 - THE MAXIMUM CRUSHING STRENGTH OF THE HOLLOW BLOCK IS TO BE 20N/MM² OF GROSS AREA OF BLOCK AT 28 DAYS.
 - BLOCKWORK TIES BETWEEN BLOCKWORK WALL AND COLUMNS/STANTIONS ARE TO BE PROVIDED AT EVERY COURSE. TIES TO BE 6MM BAR STRAPS 700MM LONG INTO THE BLOCKWORK.
 - MAXIMUM POUR HEIGHT FOR ALL FILLED BLOCK BLOCKWORK TO BE 2 COURSES AT A TIME.
 - ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWORK AFTER DUE CONSULTATION WITH STRUCTURAL ENGINEERS. PUTTING SERVICE PIPES INSIDE LOAD BEARING BLOCKWORK CORNERS MUST BE AVOIDED.

No.	Revision/Notes.	Date.
1.	Issued for Tender	



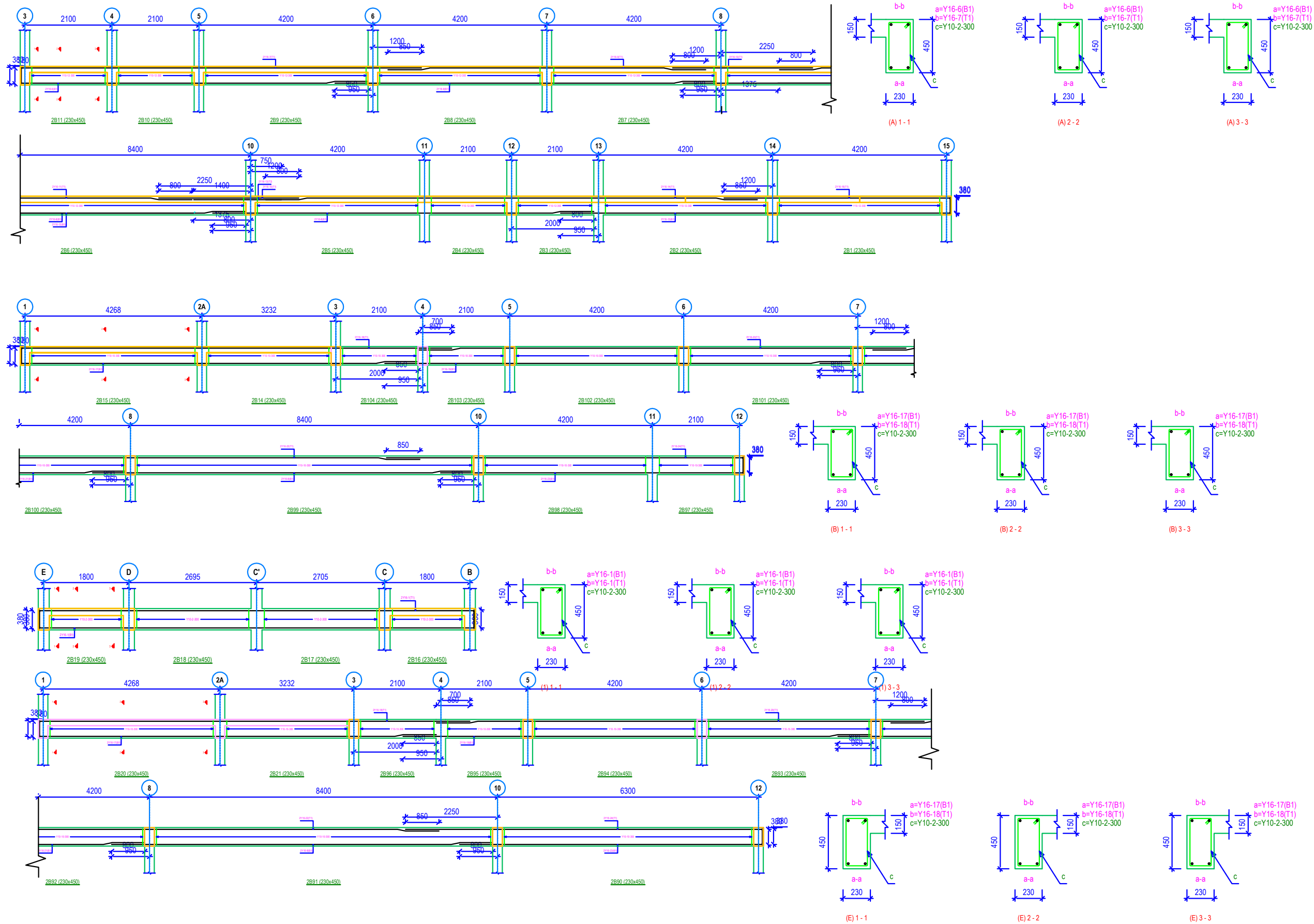
Project.

HOMES FOR NGARANNAM,
MAFA LGA, BORNO.

Drawing Title.

BEAM R.BAR DETAILS

DESIGN		SHEET No.
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CAD		Scale: 1:50
DATE	MARCH, 2021	



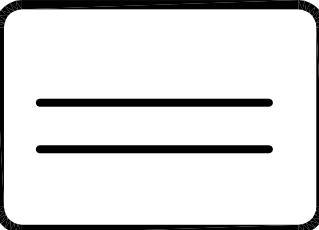
ROOF BEAM DETAILS

GENERAL NOTES.

- REINFORCED CONCRETE**
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 - COLUMNS: 25MM
 - BEAMS: 25MM
 - SLABS: 20MM
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 - DIMENSIONS ARE IN MILLIMETRE (MM) AND MUST NOT BE SCALED AT ANY TIME.
 - FOUNDATION WAS DESIGNED FOR AN ASSUMED ALLOWABLE SOIL BEARING PRESSURE OF 150KN/M²
 - THIS DESIGN ENGINEER WILL NOT TAKE RESPONSIBILITY FOR ANY JOB NOT SUPERVISED BY HIM.

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No.	Revision/Notes.	Date.
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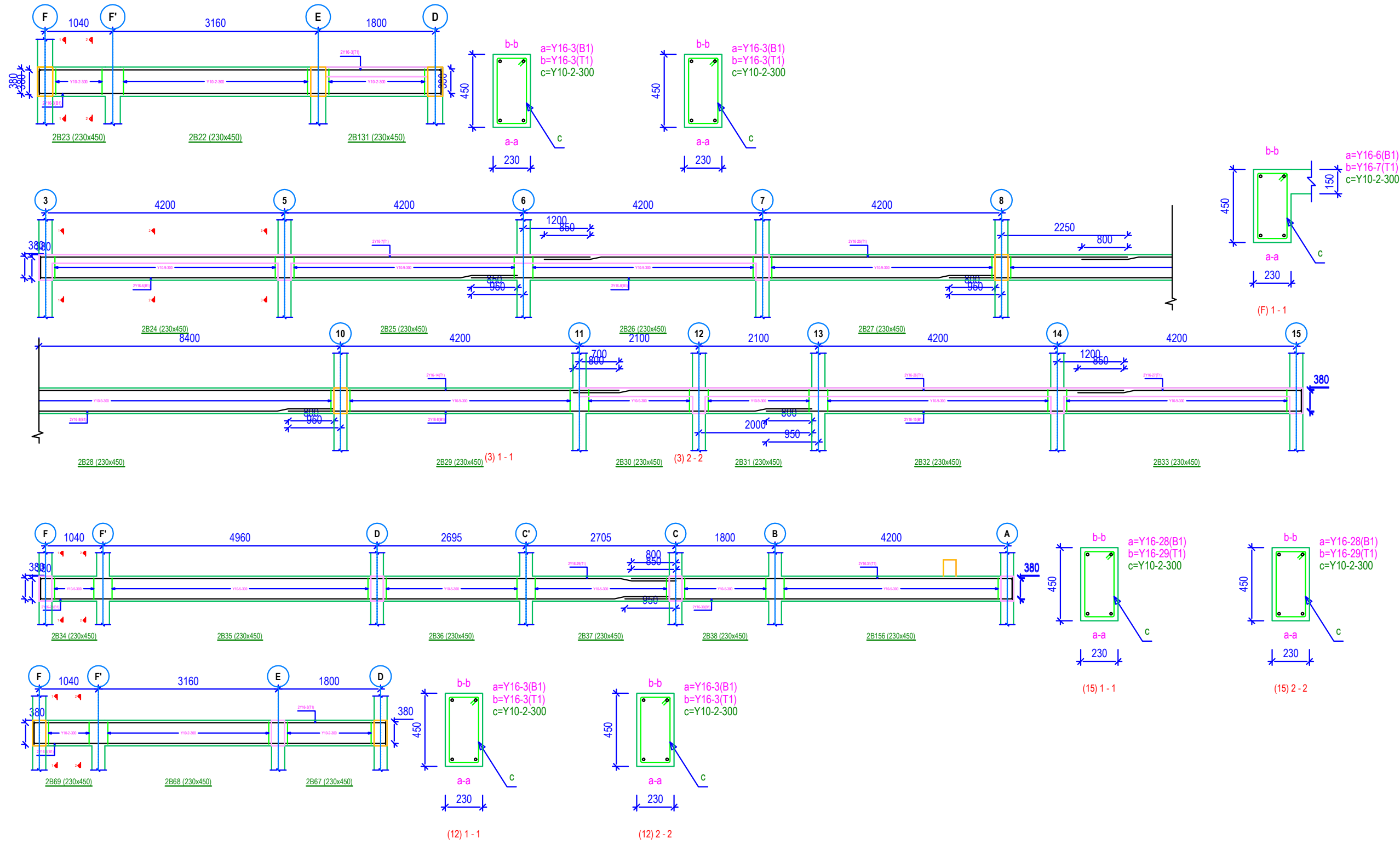
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HOMES FOR NGARANNAM, MAFA LGA, BORNO.

Drawing Title.

BEAM R.BAR DETAILS

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DATE	MARCH, 2021	

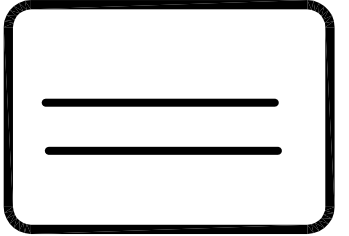


ROOF BEAM DETAILS CONT.

GENERAL NOTES.

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 - MAXIMUM POUR HEIGHT FOR ALL FILLED BLOCK BLOCKWORK TO BE 2 COURSES AT A TIME.
 - ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWORK WALL AFTER DUE CONSULTATION WITH STRUCTURAL ENGINEERS. PUTTING SERVICE PIPES INSIDE LOAD BEARING BLOCKWORK CORNERS MUST BE AVOIDED.

No.	Revision/Notes.	Date.
1.	Issued for Tender	



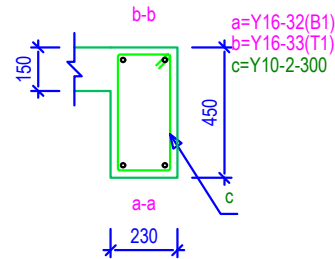
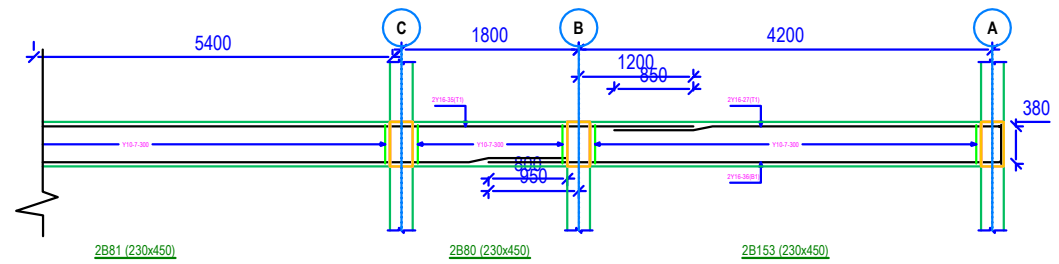
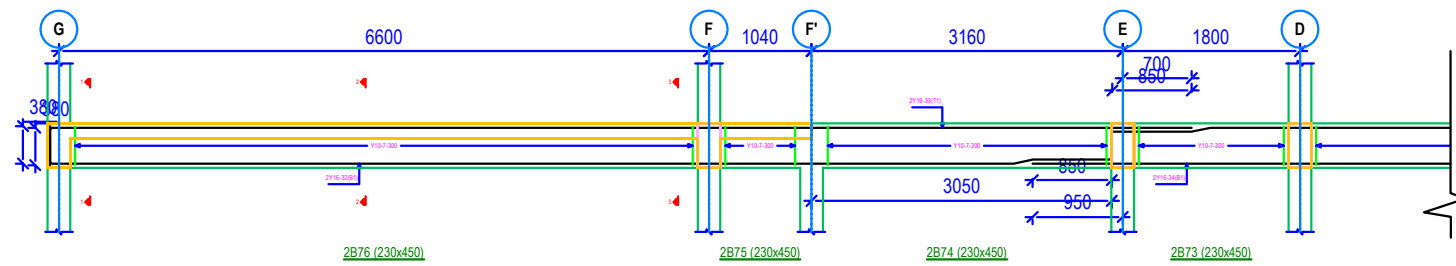
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**HOMES FOR NGARANNAM,
MAFA LGA, BORNO.**

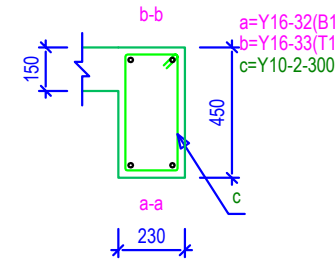
Drawing Title.

BEAM R.BAR DETAILS

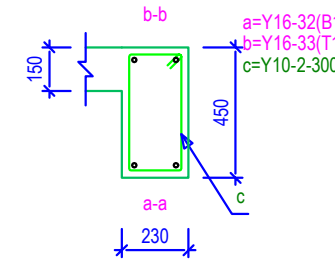
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DATE	MARCH, 2021	



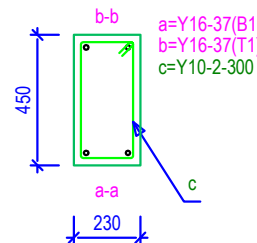
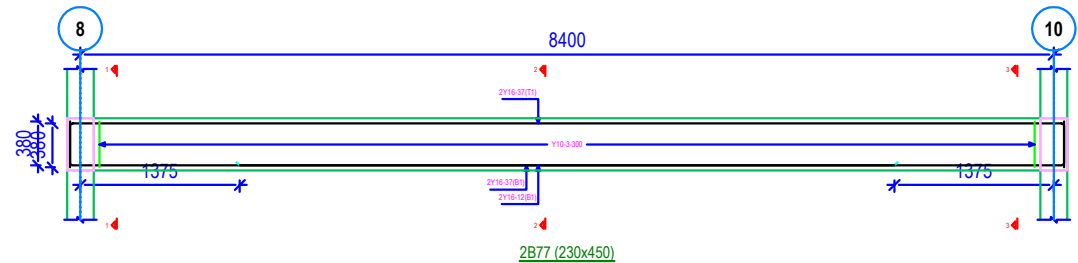
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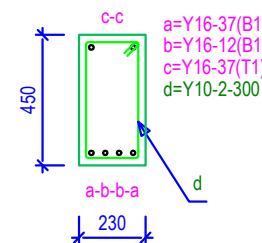
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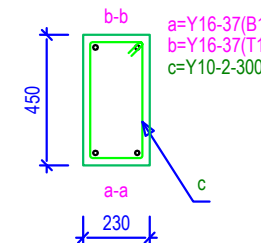
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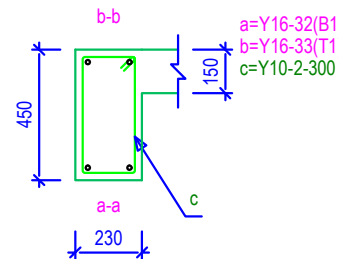
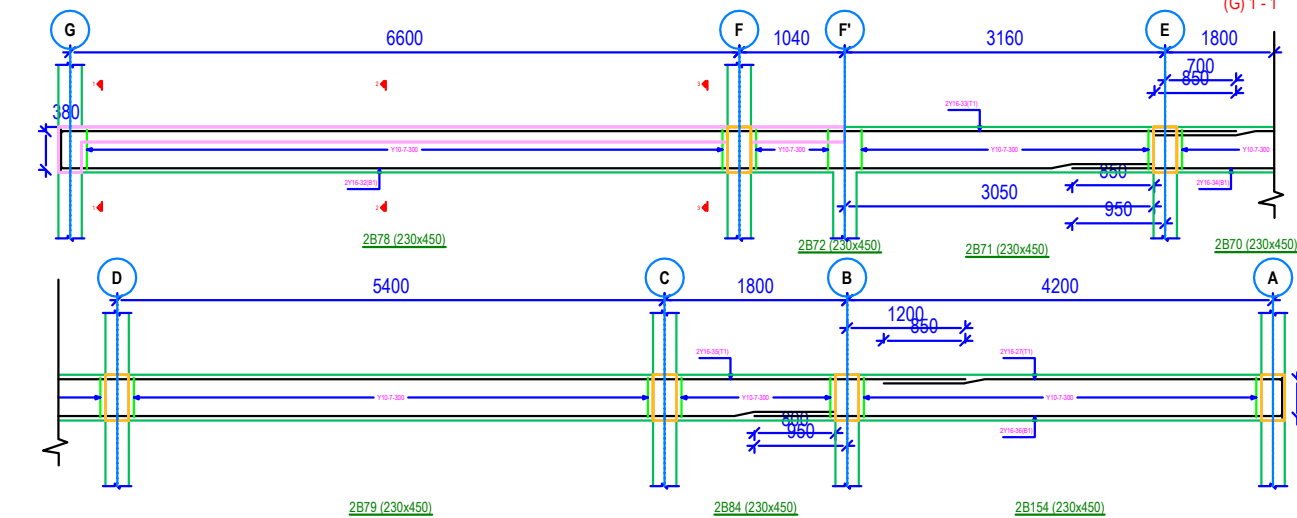
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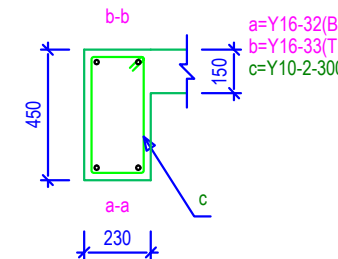
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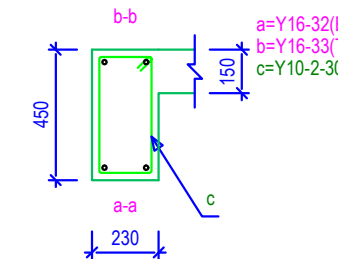
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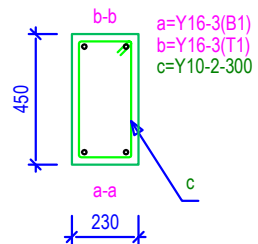
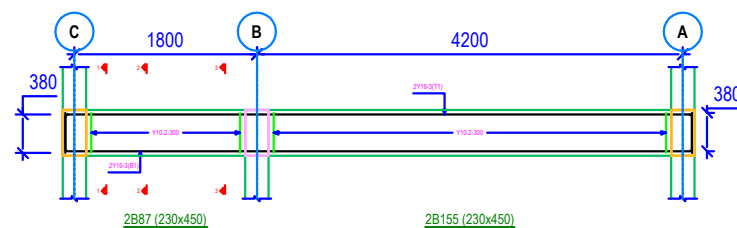
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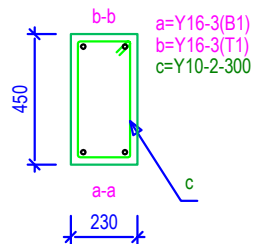
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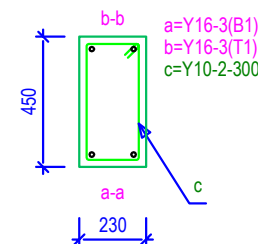
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(12) 2 - 2



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ROOF BEAM DETAILS CONT.

GENERAL NOTES.

REINFORCED CONCRETE

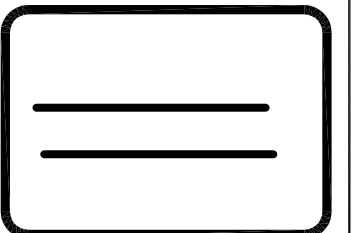
- DESIGN IS TO BS 8110
- CONCRETE GRADES ARE TO BE AS FOLLOWS WITH FIGURES IN BRACKET DENOTING MAXIMUM SIZE AGGREGATE:
 - FOUNDATION 30(25)
 - COLUMNS 30(20)
 - BEAMS & SLABS 30(20)
- UNLESS OTHERWISE INDICATED, REINFORCEMENT SHALL BE HIGH YIELD STEEL (TYPE 2), DENOTED BY "Y", HAVING CHARACTERISTIC STRENGTH NOT LESS THAN 410N/MM²

- COVER TO REINFORCEMENT SHALL BE THE
 - FOUNDATION: 50MM (BOTTOM) 75MM (SIDES)
 - COLUMNS: 25MM
 - BEAMS: 25MM
 - SLABS: 20MM
- DRAWINGS MUST BE READ IN CONJUNCTION WITH THE RELEVANT ARCHITECTURAL DRAWINGS AND IN CASE OF ANY DISCREPANCY REFER TO THE DESIGN ENGINEER FOR CLARIFICATION.
- DIMENSIONS ARE IN MILLIMETRE (MM) AND MUST NOT BE SCALED AT ANY TIME.
- FOUNDATION WAS DESIGNED FOR AN ASSUMED ALLOWABLE SOIL BEARING PRESSURE OF 150KNN/M²
- THIS DESIGN ENGINEER WILL NOT TAKE RESPONSIBILITY FOR ANY JOB NOT SUPERVISED BY HIM.

BLOCKWORK

- HOLLOW BLOCK WALLS BELOW GROUND SLAB LEVEL ARE TO BE FILLED WITH MASS CONCRETE. BACK FILLING IS TO BE CARRIED OUT SIMULTANEOUSLY ON BOTH SIDES.
- THE WALL THICKNESS OF THE BLOCKS SHOULD NOT BE MORE THAN 25MM.
- THE MAXIMUM CRUSHING STRENGTH OF THE HOLLOW BLOCK IS TO BE 20N/MM² OF GROSS AREA OF BLOCK AT 28 DAYS.
- BLOCKWORK TIES BETWEEN BLOCKWORK WALL AND COLUMNS/STANTIONS ARE TO BE PROVIDED AT EVERY COURSE. TIES TO BE 6MM BAR STRAPS 700MM LONG INTO THE BLOCKWORK.
- MAXIMUM POUR HEIGHT FOR ALL FILLED BLOCK BLOCKWORK TO BE 2 COURSES AT A TIME.
- ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWORK AFTER DUE CONSULTATION WITH STRUCTURAL ENGINEERS. PUTTING SERVICE PIPES INSIDE LOAD BEARING BLOCKWORK CORNERS MUST BE AVOIDED.

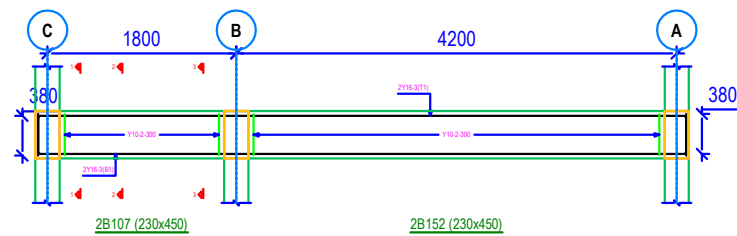
No.	Revision/Notes.	Date.
1.	Issued for Tender	



Project.
HOMES FOR NGARANNAM, MAFA LGA, BORNO.

Drawing Title.
BEAMS R.BAR DETAILS

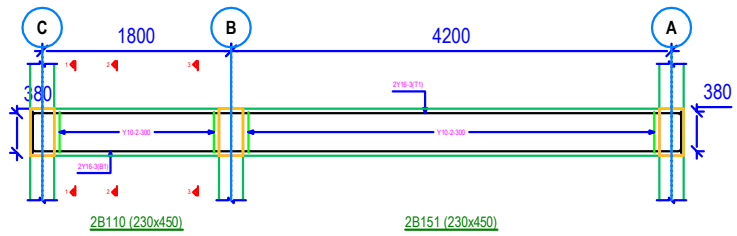
DESIGN		SHEET No.
CHECKED		11
CAD		Scale: 1:50
DATE	MARCH, 2021	



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b=Y16-3(T1)
c=Y10-2-300

b-b
a=Y16-3(B1)
b=Y16-3(T1)
c=Y10-2-300

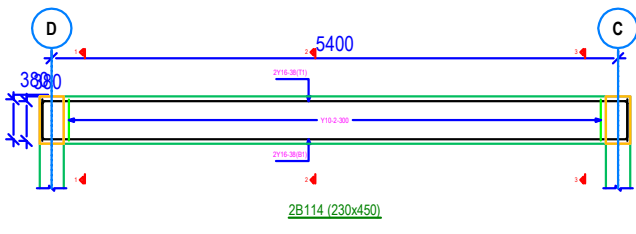
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a=Y16-3(B1)
b=Y16-3(T1)
c=Y10-2-300



b-b
a=Y16-3(B1)
b=Y16-3(T1)
c=Y10-2-300

b-b
a=Y16-3(B1)
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c=Y10-2-300

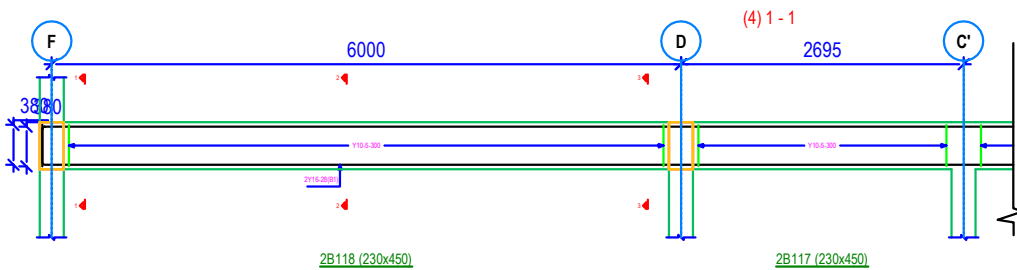
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b=Y16-3(T1)
c=Y10-2-300



b-b
a=Y16-38(B1)
b=Y16-38(T1)
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b-b
a=Y16-38(B1)
b=Y16-38(T1)
c=Y10-2-300

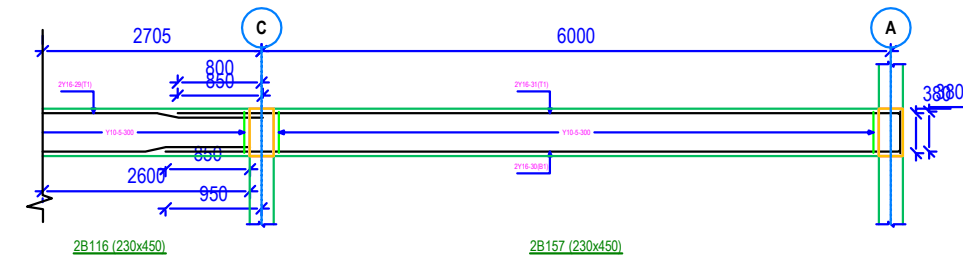
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(4) 2 - 2

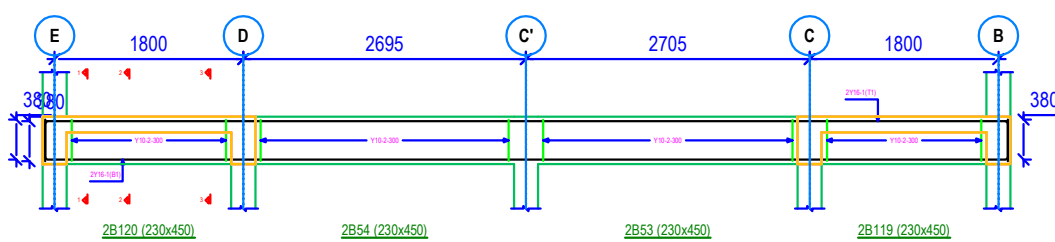
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b=Y16-29(T1)
c=Y10-2-300

b-b
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b=Y16-29(T1)
c=Y10-2-300

b-b
a=Y16-28(B1)
b=Y16-29(T1)
c=Y10-2-300



b-b
a=Y16-1(B1)
b=Y16-1(T1)
c=Y10-2-300

b-b
a=Y16-1(B1)
b=Y16-1(T1)
c=Y10-2-300

b-b
a=Y16-1(B1)
b=Y16-1(T1)
c=Y10-2-300

a-a
230

a-a
230

a-a
230

(2A) 1 - 1

(2A) 2 - 2

(2A) 3 - 3

ROOF BEAM DETAILS CONT.

GENERAL NOTES.

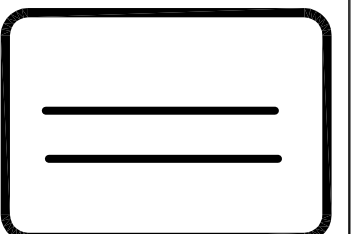
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SLABS:
20MM
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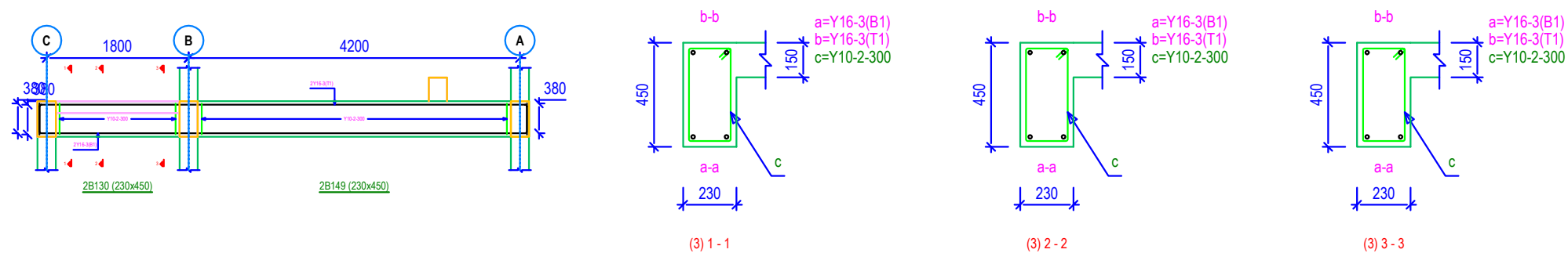
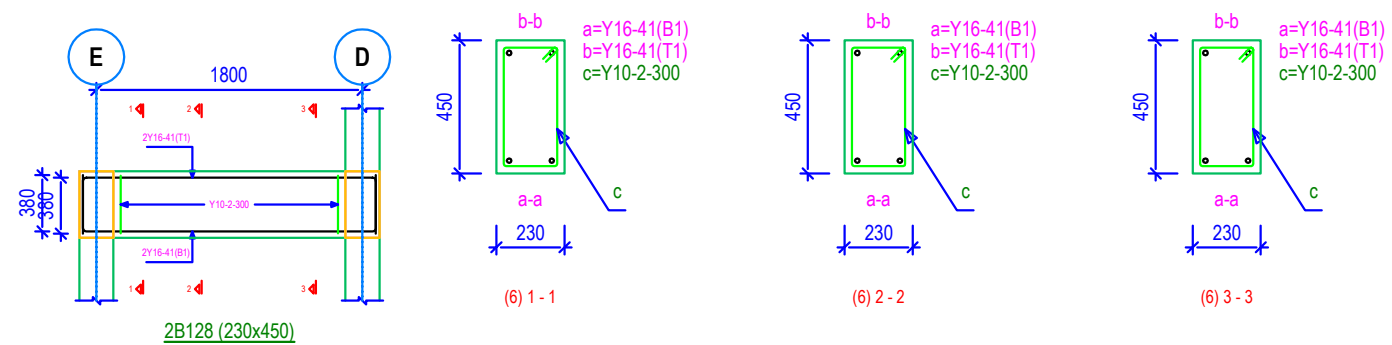
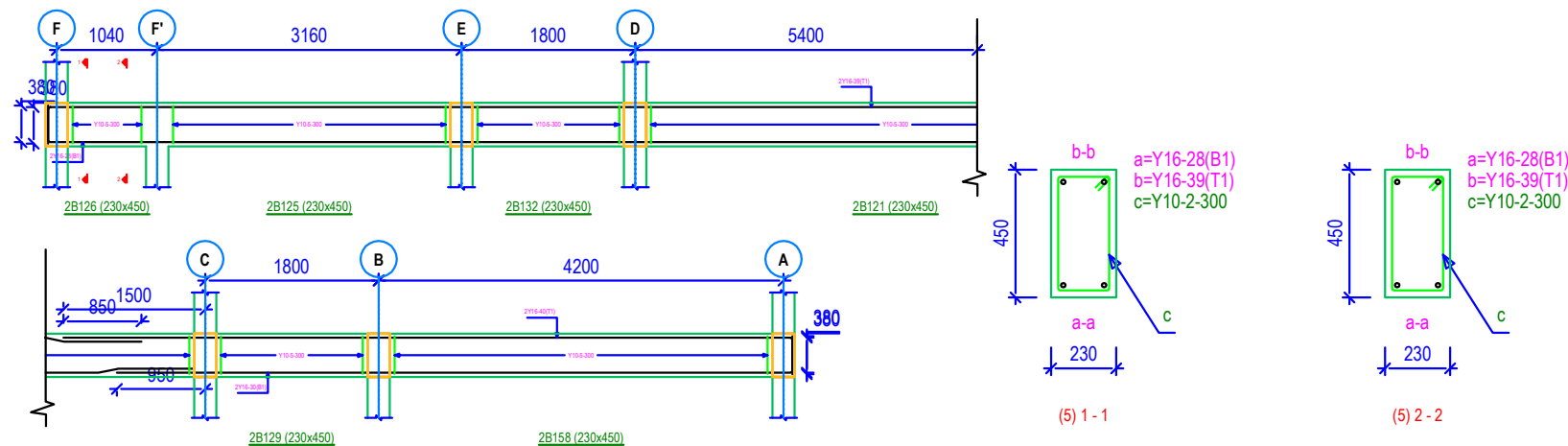
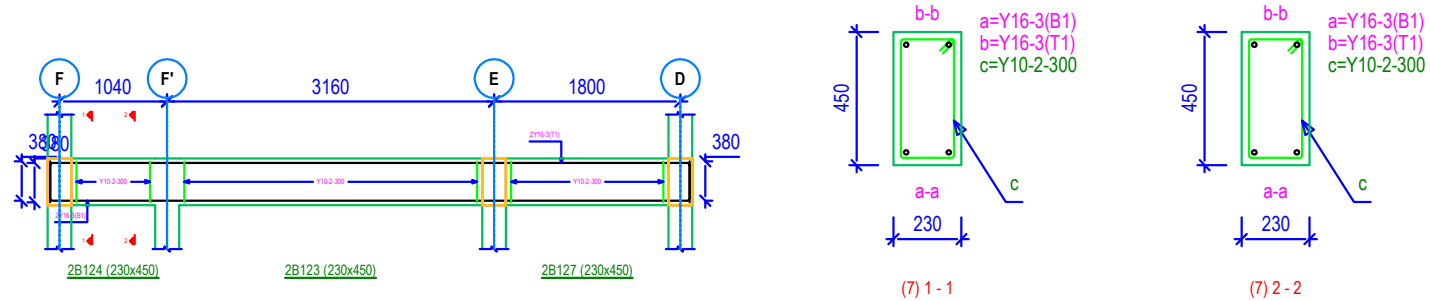
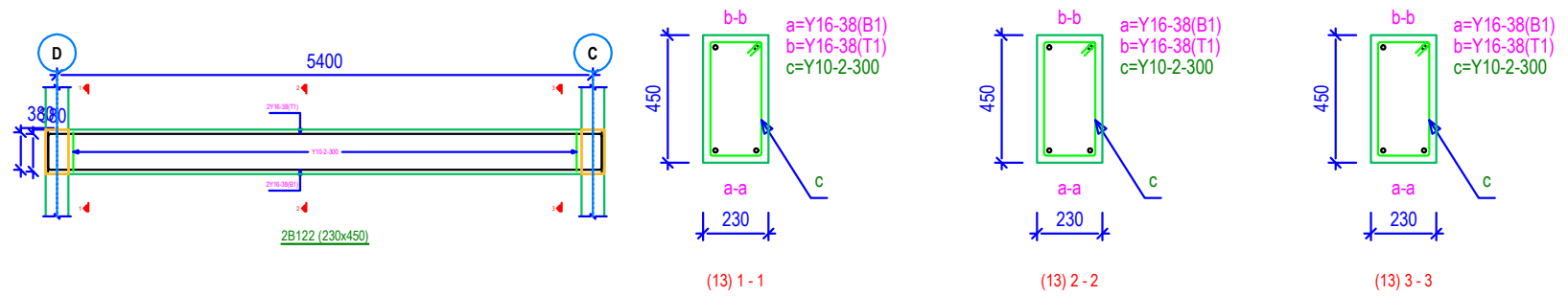
No.	Revision/Notes.	Date.
1.	Issued for Tender	



Project.
HOMES FOR NGARANNAM, MAFA LGA, BORNO.

Drawing Title.
BEAM R.BAR DETAILS

DESIGN		SHEET No.
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CAD		Scale: 1:50
DATE	MARCH, 2021	



ROOF BEAM DETAILS CONT.

GENERAL NOTES.

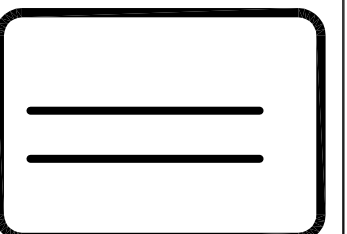
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SLABS: 20MM
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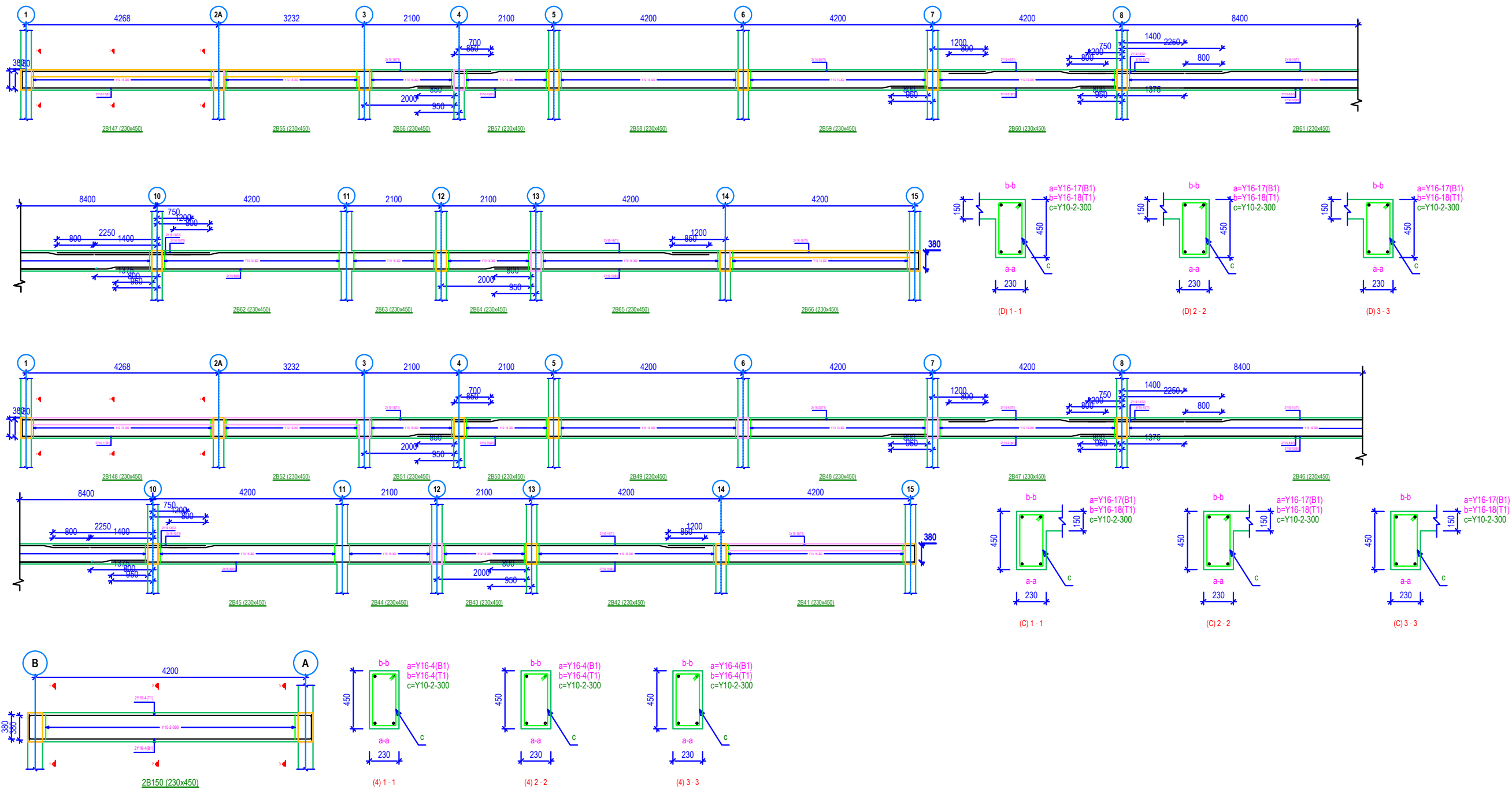
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**HOMES FOR NGARANNAM,
MAFA LGA, BORNO.**

Drawing Title.

BEAM R.BAR DETAILS

DESIGN		SHEET No.
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DATE	MARCH, 2021	



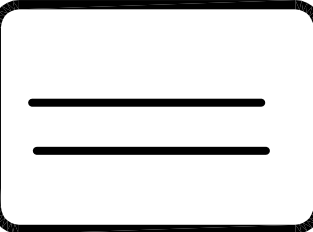
ROOF BEAM DETAILS CONT.

GENERAL NOTES.

- REINFORCED CONCRETE**
- DESIGN IS TO BS 8110
 - 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)
 - UNLESS OTHERWISE INDICATED, REINFORCEMENT SHALL BE HIGH YIELD STEEL (TYPE 2), DENOTED BY 'Y', HAVING CHARACTERISTIC STRENGTH NOT LESS THAN 410N/MM²
 - COVER TO REINFORCEMENT SHALL BE THE
FOUNDATION:
50MM(BOTTOM)/75MM(SIDES)
COLUMNS: 25MM
BEAMS: 25MM
SLABS: 20MM
 - DRAWINGS MUST BE READ IN CONJUNCTION WITH THE RELEVANT ARCHITECTURAL DRAWINGS AND IN CASE OF ANY DISCREPANCY REFER TO THE DESIGN ENGINEER FOR CLARIFICATION.
 - DIMENSIONS ARE IN MILLIMETRE(MM) AND MUST NOT BE SCALED AT ANY TIME.
 - FOUNDATION WAS DESIGNED FOR AN ASSUMED ALLOWABLE SOIL BEARING PRESSURE OF 150KNN/M²
 - THIS DESIGN ENGINEER WILL NOT TAKE RESPONSIBILITY FOR ANY JOB NOT SUPERVISED BY HIM.

- BLOCKWORK**
- HOLLOW BLOCK WALLS BELOW GROUND SLAB LEVEL ARE TO BE FILLED WITH MASS CONCRETE. BACK FILLING IS TO BE CARRIED OUT SIMULTANEOUSLY ON BOTH SIDES.
 - THE WALL THICKNESS OF THE BLOCKS SHOULD NOT BE MORE THAN 25MM.
 - THE MAXIMUM CRUSHING STRENGTH OF THE HOLLOW BLOCK IS TO BE 20N/MM² OF GROSS AREA OF BLOCK AT 28 DAYS.
 - BLOCKWORK TIES BETWEEN BLOCKWORK WALL AND COLUMNS/STANTIONS ARE TO BE PROVIDED AT EVERY COURSE. TIES TO BE 6MM BAR STRAPS 700M LONG INTO THE BLOCKWORK.
 - MAXIMUM POUR HEIGHT FOR ALL FILLED BLOCK BLOCKWORK TO BE 2 COURSES AT A TIME.
 - ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWORK AFTER DUE CONSULTATION WITH STRUCTURAL ENGINEERS. PUTTING SERVICE PIPES INSIDE LOAD BEARING BLOCKWORK CORNERS MUST BE AVOIDED.

No.	Revision/Notes.	Date.
1.	Issued for Tender	



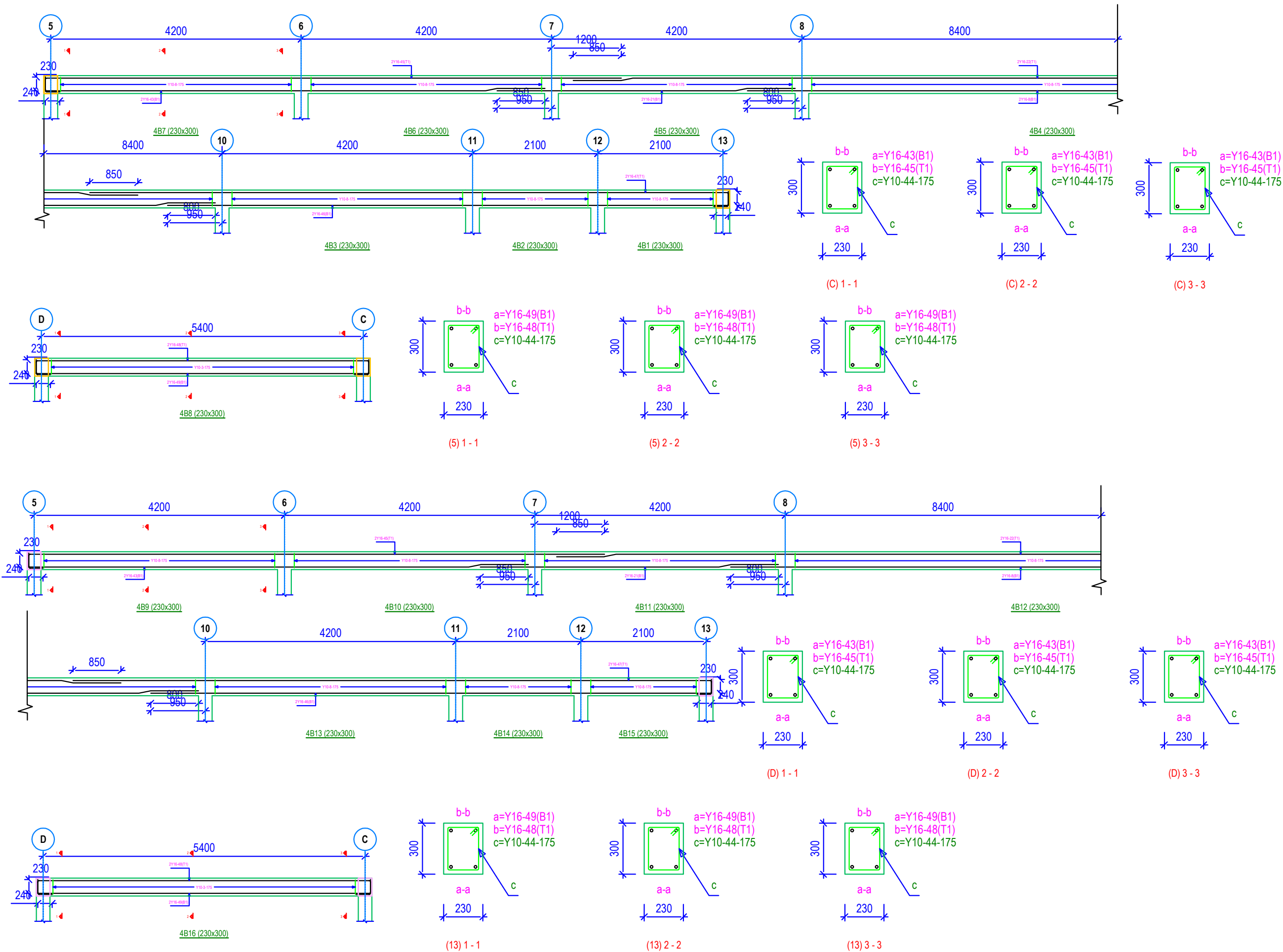
Project.

HOMES FOR NGARANNAM,
MAFA LGA, BORNO.

Drawing Title.

BEAM R.BAR DETAILS

DESIGN		SHEET No.
CHECKED		014
CAD		Scale: 1:50
DATE	MARCH, 2021	



ROOF BEAM DETAILS CONT.

GENERAL NOTES.

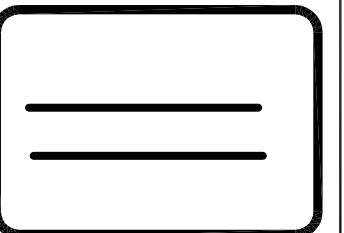
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Project.
**HOMES FOR NGARANNAM,
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BEAM R.BAR DETAILS

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