STRUCTURAL DESIGN

UNITED NATIONS DEVELOPMENT PROGRAMME, UNDP.

PROPOSED DEVELOPMENT AT NGARANNAM, MAFA, BORNO STATE.

STRUCTURAL DRAWING FOR CLINIC.
GENERAL NOTES

REINFORCED CONCRETE
1. DESIGN IS TO BS 8110
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)
3. UNLESS OTHERWISE INDICATED, REINFORCEMENT SHALL BE HIGH YIELD STEEL(TYPE 2), DENOTED BY 'Y', HAVING CHARACTERISTIC STRENGTH NOT LESS THAN 410N/MM2.
4. COVER TO REINFORCEMENT SHALL BE AS FOLLOWS:
   - FOUNDATION: 50MM (BOTTOM) 75MM (SIDES)
   - COLUMNS: 25MM
   - BEAMS: 25MM
   - SLABS: 20MM
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.
6. DIMENSIONS ARE IN MILLIMETRE (MM) AND MUST NOT BE SCALED AT ANY TIME.
7. FOUNDATION WAS DESIGNED FOR AN ASSUMED ALLOWABLE SOIL BEARING PRESSURE OF 150KN/M2.
8. THIS DESIGN ENGINEER WILL NOT TAKE RESPONSIBILITY FOR ANY WORK UNPERFORMED BY HIM.

BLOCKWORK
1. 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.
2. THE WALL THICKNESS OF THE BLOCKS SHOULD NOT BE MORE THAN 250MM.
3. THE MAXIMUM CRUSHING STRENGTH OF THE HOLLOW BLOCK IS TO BE 20N/MM2 OF GROSS AREA OF BLOCK AT 28 DAYS.
4. BLOCKWORK TIES BETWEEN BLOCKWORK WALL AND COLUMN/STANTIONS ARE TO BE PROVIDED AT EVERY COURSE. TIES TO BE 6MM BAR STRAPS 700MM LONG INTO THE BLOCKWORK.
5. MAXIMUM POUR HEIGHT FOR ALL FILLED BLOCK BLOCKWORK TO BE 2 COURSES AT A TIME.
6. ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWORK WITH DUE CONSULTATION WITH STRUCTURAL ENGINEERS. FITTING SERVICE PIPES INSIDE LOAD BEARING BLOCKWORK CORNERS MUST BE AVOIDED.

ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT’S DRAWINGS.

SAFE GROUND PRESSURE ASSUMED IS 150 KN/m2.

75mm CONC. BLINDING TO BE PROVIDED.

MINIMUM DEPTH OF FOUNDATION TO BE 1200mm.

USE CONCRETE NOMINAL MIX 1:3:6 FOR BLINDING.

CONC. CUBE STRENGTH OF 12:4 MIX FOR OTHER REINF. CONC. AT 28 DAYS

HIGH YIELD REINF. OF CHARACTERISTIC STRENGTH OF AT LEAST 410 N/mm2.

COVER TO MAIN REINFORCEMENTS TO BE 15mm IN SLAB, 25mm IN BEAM, 40mm IN COLUMNS AND 50mm IN FOUNDATIONS.

ALL DIMENSIONS ARE IN (MM).

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.

ENGINEERS SHALL NOT BE HELD RESPONSIBLE FOR JOBS NOT SUPERVISED BY THEM.

HOMES FOR NGARANNAM, MAYA UGA, BORNO.
230mm hollow block wall

B R C Wire mesh type A142 top

150mm slab

150mm slab

230mm Solid block wall

300mm hard core filling

1000 x 400mm Mass concrete foundation footing with 100mm blinding

General Notes:

1. Design is to BS 8110
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)
3. Unless otherwise indicated, reinforcement shall be high yield steel (Type 2), denoted by 'Y', having characteristic strength not less than 410N/mm².
4. Cover to reinforcement shall be:
   - Foundation: 50mm (bottom), 75mm (sides)
   - Columns: 25mm
   - Beams: 25mm
   - Slabs: 20mm
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.
6. Dimensions are in millimetre (mm) and must not be scaled at any time.
7. Foundation was designed for an assumed allowable soil bearing pressure of 150kN/m².
8. This design engineer will not take responsibility for any design disapproval.

Blockwork:

1. 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.
2. The wall thickness of the blocks should not be more than 25mm.
3. The maximum crushing strength of the hollow block is to be 20N/mm² of gross area of block at 28 days.
4. Blockwork ties between blockwork wall and columns/stanchions are to be provided at every course. Ties to be 6mm bar straps 700mm long into the blockwork.
5. Maximum pour height for all filled blockwork to be 2 courses at a time.
6. All service pipes shall only be put inside blockwork with due consultation with structural engineers. Putting service pipes inside loaded bearing blockwork - corners must be avoided.

Foundation Sample:

SECT. 1-1

Scale: 1:30

HOMES FOR NGABANMAR, MAFA LGA, BORNO.
GENERAL NOTES.

1. DESIGN IS TO BS 8110
2. CONCRETE GRADES ARE TO BE AS INDICATED ON DRAWING.
3. UNLESS OTHERWISE INDICATED, REINFORCEMENT SHALL BE HIGH YIELD STEEL WITH CHARACTERISTIC STRENGTH NOT LESS THAN 250 N/M².
4. COVER TO REINFORCEMENT SHALLOW THE FOLLOWING MINIMUM:
   - FONDATION: 150 MM
   - SLABS: 20 MM
   - COLUMNS: 20 MM
5. MAXIMUM POUR HEIGHT FOR ALL CONCRETE SLABS: 20 N/MM²
6. DIMENSIONS ARE IN MILLIMETRE (MM)
7. ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWORK AT A TIME.
8. FIGURES IN BRACKET DENOTE MAXIMUM SIZE AVAILABLE WITHIN GROUND LEVEL.

LOAD BEARING BLOCKWORK     CORNERS

1. HOLLOW BLOCKWALLS BELOW GROUND LEVEL ARE TO BE FILLED WITH MASS CONCRETE. BACK FILLING IS TO BE CARVED OUT SIMULTANEOUSLY ON BOTH SIDES.
2. THE WALL THICKNESS OF THE BLOCKS SHOULD NOT BE MORE THAN 250 MM.
3. THE MAXIMUM CRUSHING STRENGTH OF THE HOLLOW BLOCK IS TO BE 200 N/MM² OF MASS CONCRETE. BACK FILLING IS TO BE FILLED WITH MASS CONCRETE.
GENERAL NOTES:

1. DESIGN IS TO BS 8110
2. CONCRETE GRADES AND TOWELS IN SHEETS SHOWN IN RED. FURTHER INFORMATION: SCALD
3. COLUMN: SUA
4. BEAVER: 230
5. UNLESS OTHERWISE INDICATED, REINFORCEMENT SHALL BE HIGH YIELD GRADE 410. MINIMUM YIELD STRENGTH NOT LESS THAN 550N/MM².
6. COVER TO REINFORCEMENT SHALL BE 50MM BESIDE FLOORS, 25MM BESIDE WALLS.
7. Latex Web Rebar Material - C20/25

Soil Parameters

Soil Bearing Capacity (kN/m²) 150.00

HOMES FOR NGARANIAN,
MATA USA, BONDI.

FLOOR BEAM DETAILS
GENERAL NOTES.

1. DESIGNS TO BS 8110
2. CONCRETE GRADE IS C20/25
3. UNLESS OTHERWISE INDICATED, REBAR DIA SHALL BE HIGH YIELD STEEL GRADE 410
4. COVER TO REINFORCEMENT SHALL BE HIGH YIELD STEEL GRADE 410
5. DRAWINGS MUST BE READ IN CONJUNCTION WITH THE SPECIFICATIONS AND THESE MUST BE CONSULTED IN CONJUNCTION WITH THE DRAWINGS IN THIS ISSUE.
6. ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWORK USING DUE CARE AND CONSENT WITH STRUCTURAL ENGINEERS. CUTTING SERVICE PIPES INSIDE LOAD BEARING BLOCKWORK - CORNERS MUST BE AVOIDED.
7. FOUNDATION WAS DESIGNED FOR AN SOIL BEARING CAPACITY NOT LESS THAN 150KN/M2
8. COVER TO REINFORCEMENT SHALL BE HIGH YIELD STEEL GRADE 410
9. MAXIMUM POUR HEIGHT FOR ALL SLAB LEVEL ARE TO BE FILLED WITH MASS CONCRETE, BACKFILL TO BE CLEANED OUT SIMULTANEOUSLY ON BOTH SIDES.
10. HOLLOW BLOCKWALLS BELOW GROUND BLOCKWORK WALL AND BLOCKWORK TIES BETWEEN BLOCKWORK WALLS AND COLUMNS TIES ARE TO BE PROVIDED AT EVERY COURSE. TIES TO BE 25MM STIRRUP 700MM LONG INTO THE BLOCKWORK.
11. ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWORK USING DUE CARE AND CONSENT WITH STRUCTURAL ENGINEERS. CUTTING SERVICE PIPES INSIDE LOAD BEARING BLOCKWORK - CORNERS MUST BE AVOIDED.
GENERAL NOTES.

1. **DESIGN IS TO BS 8110**
2. **CONCRETE GRADES ARE TO FOLLOWS WITH FIGURES IN BRACKET DENOTING MAXIMUM SIZE AGGREGATE:**
   - **FOUNDATION** 30(25)
   - **COLUMNS** 30(20)
   - **BEAMS & SLABS** 30(20)
3. **UNLESS OTHERWISE INDICATED, REINFORCEMENT SHALL BE HIGH YIELD STEEL, DENOTED BY 'Y', HAVING CHARACTERISTIC STRENGTH NOT LESS THAN 410N/MM².
4. **COVER TO REINFORCEMENT SHALL BE THE FOUNDATION:** 50MM (BOTTOM) 75MM (SIDES)
   - **COLUMNS:** 25MM
   - **BEAMS:** 25MM
   - **SLABS:** 20MM
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.
6. **DIMENSIONS ARE IN MILLIMETRE (MM) AND MUST NOT BE SCALLED AT ANY TIME.**
7. **FOUNDATION WAS DESIGNED FOR AN ASSUMED ALLOWABLE SOIL BEARING PRESSURE OF 150KN/M²**
8. **THIS DESIGN ENGINEER WILL NOT TAKE RESPONSIBILITY FOR ANY JOB NOT SUPERVISED BY HIM.**

BLOCKWORK
1. **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.**
2. **THE WALL THICKNESS OF THE BLOCKS SHOULD NOT BE MORE THAN 25MM.**
3. **THE MAXIMUM CRUSHING STRENGTH OF THE HOLLOW BLOCK IS TO BE 20N/MM² OF GROSS AREA OF BLOCK AT 28 DAYS.**
4. **BLOKWORK TIES BETWEEN BLOCKWORK WALL AND COLUMN/STANDOFF COLUMNS ARE TO BE PROVIDED AT EVERY COURSE. TIES TO BE 6MM BAR STRAPS 700MM LONG INTO THE BLOCKWORK.**
5. **MAXIMUM POUR HEIGHT FOR ALL FILLED BLOCK BLOCKWORK TO BE 2 COURSES AT A TIME.**
6. **ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWORK IN THE FORM OF BOXES, PUTTING SERVICE PIPES INSIDE LOAD BEARING BLOCKWORK - CORNERS MUST BE AVOIDED.**

ROOF COLUMNS & BEAMS FLOOR LAYOUT

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

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**Issued for Tender**

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**Sheets 04 05**
GENERAL NOTES.

1. DESIGN IS TO BS 8110
2. CONCRETE GRADE AND FORMS TO BE AS PER REQUIRED.
3. UNLESS OTHERWISE NOTED, ALL REINFORCEMENTS SHALL BE HIGH YIELD STEEL (TYPE 2) DENOTED BY 'Y', HAVING CHARACTERISTIC STRENGTH NOT LESS THAN 410N/MM².
4. COVER TO REINFORCEMENT SHALL BE:
   - FOUNDATION: 50MM (BOTTOM) 75MM (SIDES)
   - COLUMNS: 25MM
   - BEAMS: 25MM
   - SLABS: 20MM
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.
6. DIMENSIONS ARE IN MILLIMETRE (MM) AND MUST NOT BE SCALING AT ANY TIME.
7. FOUNDATION WAS DESIGNED FOR AN ASSUMED ALLOWABLE SOIL BEARING PRESSURE OF 150KN/M².
8. THIS DESIGN ENGINEER WILL NOT TAKE RESPONSIBILITY FOR ANY JOB NOT SUPERVISED BY HIM.

BLOCKWORK
1. 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.
2. THE WALL THICKNESS OF THE BLOCKS SHOULD NOT BE MORE THAN 250MM.
3. THE MAXIMUM CRUSHING STRENGTH OF THE HOLLOW BLOCK IS TO BE 20N/MM² OF GROSS AREA OF BLOCK AT 28 DAYS.
4. BLOCKWORK TIES BETWEEN BLOCKWORK WALL AND COLONNADE/STANDS ARE TO BE PROVIDED AT EVERY COURSE. TIE TO BE 6MM BAR STRAPS 700MM LONG INTO THE BLOCKWORK.
5. MAXIMUM POUR HEIGHT FOR ALL FILLED BLOCKWORK TO BE 2 COURSES AT A TIME.
6. ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWORK WITH DUE CONSENTATION WITH STRUCTURAL ENGINEERS. PUTTING SERVICE PIPES INSIDE LOAD BEARING BLOCKWORK - CORNERS MUST BE AVOIDED.
REINFORCED CONCRETE

1. DESIGN IS TO BS 8110
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)
3. UNLESS OTHERWISE INDICATED, REINFORCEMENT SHALL BE HIGH YIELD STEEL (TYPE 2), DENOTED BY 'Y', HAVING CHARACTERIC STRENGTH NOT LESS THAN 410N/MM2
4. COVER TO REINFORCEMENT SHALL BE THE FOUNDATION:
   - BOTTOM: 50MM
   - SIDES: 75MM
   - COLUMNS: 25MM
   - BEAMS: 25MM
   - SLABS: 20MM
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.
6. DIMENSIONS ARE IN MILLIMETRE (MM) AND MUST NOT BE SCALED AT ANY TIME.
7. FOUNDATION WAS DESIGNED FOR AN ASSUMED ALLOWABLE SOIL BEARING PRESSURE OF 150KN/M2
8. THIS DESIGN ENGINEER WILL NOT TAKE RESPONSIBILITY FOR ANY JOB NOT SUPERVISED BY HIM.

BLOCKWORK
1. HOLLOW BLOCKWALLS BELOW GROUND SLAB LEVEL ARE TO BE FILLED WITH MASS CONCRETE. BACK FILLING IS TO BE CARRIED OUT SIMULTANEOUSLY ON BOTH SIDES.
2. THE WALL THICKNESS OF THE BLOCKS SHOULD NOT BE MORE THAN 25MM.
3. THE MAXIMUM CRUSHING STRENGTH OF THE HOLLOW BLOCK IS TO BE 20N/MM2.
4. BLOCKWORK TIES BETWEEN BLOCKWORK WALL AND COLUMNS/STATIONS ARE TO BE PROVIDED AT EVERY COURSE. TIES TO BE 6MM BAR STRAPS 700MM LONG INTO THE BLOCKWORK.
5. MAXIMUM POUR HEIGHT FOR ALL FILLED BLOCKWORK TO BE 2 COURSES AT A TIME.
6. ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWORK WITH DUE CONSIDERATION TO STRUCTURAL ENGINEERS. PUTTING SERVICE PIPES INSIDE LOAD BEARING BLOCKWORK CORNERS MUST BE AVOIDED.
<p>FLOOR BEAM DETAILS</p>
GENERAL NOTES:

1. DESIGN IS TO BS 8110
2. CONCRETE IS M20 MINIMUM. USE LESS AGGREGATE OR NOT MORE THAN MAXIMUM SIZE RECOMMENDED. SCAFFOLDING SUGGESTED.
3. COLUMN: 30(25)
4. FONDATION: 30(25)
5. MAXIMUM POUR HEIGHT FOR ALL AGGREGATE: 30(25)
6. DRAWINGS MUST BE READ IN CONJUNCTION WITH THE RELEVANT ARCHITECTURAL DRAWINGS AND A COPY OF ANY CORRESPONDENCE REFER TO THE DESIGN ENGINEER FOR CLARIFICATION.
7. DRAWINGS MUST NOT BE CIRCULATED AT ANY TIME WITHOUT THE AUTHORIZATION OF THE DESIGN ENGINEER.
8. COVER TO REINFORCEMENT SHALL NOT BE MORE THAN 25MM.
9. THE WALL THICKNESS OF THE BLOCKS SHOULD NOT BE MORE THAN 250MM.
10. ALL SERVICE PIPES SHALL ONLY BE PLACED INSIDE BLOCKWORK. PUTTING SERVICE PIPES INSIDE USE MERCHANT BLOCKWORK - CORNERS MUST BE AVOIDED.

REINFORCED CONCRETE:

1. THE MAXIMUM CRUSHING STRENGTH OF THE HOLLOW BLOCK IS TO BE 20N/MM2. THE MAXIMUM POUR HEIGHT FOR ALL BLOCKWORK WALL AND BLOCKWORK TO BE 2 COURSES PER SLAB LEVEL ARE TO BE FILLED WITH MASS CONCRETE. BACK FILLING IS TO BE CONSIDERED OUT SIMULTANEOUSLY ON BOTH SIDES.
2. THE WALL THICKNESS OF THE BLOCKS SHOULD NOT BE MORE THAN 250MM.
3. THE MAXIMUM CRUSHING STRONGTH OF THE HOLLOW BLOCK IS TO BE 20N/MM2. THE MAXIMUM CRUSHING STRONGTH OF THE HOLLOW BLOCK IS TO BE 20N/MM2.
4. BLOCKWORK TIES BETWEEN BLOCKS TO BE 25MM. COLUMN/STANTIONS ARE TO BE 25MM. COLUMN/STANTIONS ARE TO BE 25MM.
5. MAXIMUM FOUR HEIGHT FOR ALL BLOCKWORK WALL. MINIMUM FOUR HEIGHT FOR ALL BLOCKWORK WALL. MINIMUM FOUR HEIGHT FOR ALL BLOCKWORK WALL.
6. ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWORK. USE MERCHANT BLOCKWORK. ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWORK. USE MERCHANT BLOCKWORK. ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWORK. USE MERCHANT BLOCKWORK.
7. FOUNDATION WAS DESIGNED FOR AN ASSUMED ALLOWABLE SOIL BEARING PRESSURE OF 150KN/M2.
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9. FILLING IS TO BE CARRIED OUT SIMULTANEOUSLY ON BOTH SIDES.
10. FOUNDATION WAS DESIGNED FOR AN ASSUMED ALLOWABLE SOIL BEARING PRESSURE OF 150KN/M2.

MATERIALS:

1. THE WALL THICKNESS OF THE BLOCKS SHOULD NOT BE MORE THAN 250MM.
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4. COVER TO REINFORCEMENT SHALL NOT BE MORE THAN 25MM.
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DESIGN IS TO BS 8110.

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10. COVER TO REINFORCEMENT SHALL NOT BE MORE THAN 25MM.

DESIGN IS TO BS 8110.
GENERAL NOTES.

1. DESIGN IS TO BS 8110
2. CONCRETE GRADES ARE TO BE AS PER FIGURES IN BRACKET. STEEL (TYPE 2), DENOTED BY 'Y', HAS CHARACTERCISTIC STRENGTH NOT LESS THAN 410N/MM²
3. UNLESS OTHERWISE INDICATED, REINFORCEMENT SHALL BE HIGH YIELD STEEL WITH CHARACTERISTIC STRENGTH NOT LESS THAN 500N/MM²
4. COVER TO REINFORCEMENT SHALL NOT BE LESS THAN 75MM
5. FOUNDATION WAS DESIGNED FOR AN ASSUMED ALLOWABLE SOIL BEARING PRESSURE OF 150KN/M² AND MUX NOT BE SCALDED AT ANY TIME.
6. ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWORK WITH DUE CONSULTATION WITH STRUCTURAL ENGINEER. FITTING SERVICE PIPES INSIDE LOAD Bearing BLOCKWORK - CORNERS MUST BE AVOIDED.
7. CONCRETE GRADES MUST BE AVOIDED.
8. COVER TO REINFORCEMENT SHALL NOT BE LESS THAN 75MM
9. FOUNDATION WAS DESIGNED FOR AN ASSUMED ALLOWABLE SOIL BEARING PRESSURE OF 150KN/M² AND MUX NOT BE SCALDED AT ANY TIME.
10. ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWORK WITH DUE CONSULTATION WITH STRUCTURAL ENGINEER. FITTING SERVICE PIPES INSIDE LOAD Bearing BLOCKWORK - CORNERS MUST BE AVOIDED.

ROOF BEAM DETAILS
REINFORCED CONCRETE

1. DESIGN IS TO BS 8110
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)
3. UNLESS OTHERWISE INDICATED, REINFORCEMENT SHALL BE HIGH YIELD STEEL (TYPE 2), DENOTED BY 'Y', HAVING CHARACTERISTIC STRENGTH NOT LESS THAN 410N/MM².
4. COVER TO REINFORCEMENT SHALL BE:
   - FOUNDATION: 50MM (BOTTOM) 75MM (SIDES)
   - COLUMNS: 25MM
   - BEAMS: 25MM
   - SLABS: 20MM
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.
6. DIMENSIONS ARE IN MILLIMETRES (MM) AND MUST NOT BE SCALLED AT ANY TIME.
7. FOUNDATION WAS DESIGNED FOR AN ASSUMED ALLOWABLE SOIL BEARING PRESSURE OF 150KN/M².
8. THIS DESIGN ENGINEER WILL NOT TAKE RESPONSIBILITY FOR ANY DESIGN ERRORS OR OMISSIONS.

BLOCKWORK

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

ROOF BEAM DETAILS CONT.
GENERAL NOTES.

1. DESIGN IS TO BS 8110

2. CONCRETE GRADES ARE TO BE AS

3. UNLESS OTHERWISE INDICATED, REINFORCEMENT SHALL BE HIGH YIELD STEEL, Y(O) TYPE.

4. COVER TO REINFORCEMENT SHALL BE THE

5. MAXIMUM POUR HEIGHT FOR ALL

6. ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE - BLOCKMASON WITH THE CONSENT OF THE ENGINEER. FITTING SERVICE PIPES INSIDE "GOLD BEARING BLOCKMASON" CORNERS MUST BE AVOIDED.

7. FOUNDATION WAS DESIGNED FOR AN

8. THIS DESIGN ENGINEER WILL NOT TAKE

9. DETAILS FOR ARCHITECTURAL SHEETS.

10. DETAILS FOR MECHANICAL AND ELECTRICAL SHEETS.

11. DETAILS FOR SDP SHEETS.

12. DETAILS FOR SURVEY SHEETS.

GENERAL NOTES CONT.

ROOF BEAM DETAILS CONT.
GENERAL NOTES.

1. DESIGN IS TO BS 8110. CONCRETE GRADES ARE TO BE AS FOLLOWING IN BRACKET DENOTING MAXIMUM SIZE OF GROSS AREA OF BLOCK AT 28 DAYS.

2. MAXIMUM CRUSHING STRENGTH OF THE HOLLOW BLOCK IS TO BE 20N/MM². THE WALL THICKNESS OF THE BLOCKS SHOULD NOT BE MORE THAN 250MM.

3. UNLESS OTHERWISE INDICATED, REINFORCEMENT SHALL BE HIGH YIELD STEEL. COVER TO REINFORCEMENT SHALL BE 40MM. ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWORK WALL AND MUST NOT BE SCALED AT ANY TIME.

4. BLOCKWORK TIES BETWEEN BLOCKWORK WALL AND CORNERS MUST BE AVOIDED. TIES TO BE PROVIDED AT EVERY COURSE. TIES TO BE 50MM(BOTTOM)75MM(SIDES) STEEL(TYPE 2), DENOTED BY 'Y'.

5. FOUNDATION WAS DESIGNED FOR AN ASSUMED ALLOWABLE SOIL BEARING PRESSURE OF 150KN/M². ENGINREERS PUTTING SERVICE PIPES INSIDE BLOCKWORK WALL AND CORNERS MUST BE ADVISED.

6. ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWORK WALL AND CORNERS. FITTING SERVICE PIPES INSIDE BLOCKWORK WALL AND CORNERS MUST BE ADVISED.

7. FOUNDATION WAS DESIGNED FOR AN ASSUMED ALLOWABLE SOIL BEARING PRESSURE OF 150KN/M². ENGINREERS PUTTING SERVICE PIPES INSIDE BLOCKWORK WALL AND CORNERS MUST BE ADVISED.

8. COVER TO REINFORCEMENT SHALL BE 40MM.

LOAD BEARING BLOCKWORK TO BE 2 COURSES PROVIDED AT EVERY COURSE. TIES TO BE PROVIDED AT EVERY COURSE. TIES TO BE THE CHARACTERISTIC STRENGTH NOT LESS THAN STRENGTH.

MUST BE AVOIDED.

ADEN TO BE FILLED WITH MASS CONCRETE. BACK FILLING IS TO BE CARRIED OUT SIMULTANEOUSLY ON BOTH SIDES.

1. Issued for Tender

Date.No. Revision/Notes.

REV 2007-12-31

MARCH, 2021

SHEET No.

PROJECT NO:

 ref: 4567890

DRAWING No.

SHEET No.

BEAM BAR DETAILS

ROOF BEAM DETAILS CONT.

DESIGN IS TO BS 8110. CONCRETE GRADES ARE TO BE AS FOLLOWING IN BRACKET DENOTING MAXIMUM SIZE OF GROSS AREA OF BLOCK AT 28 DAYS.

MAXIMUM POUR HEIGHT FOR ALL COLUMNS/STANDS ARE TO BE 200MM. COLUMNS: 25MM, SLABS: 20MM, BEAMS: 25MM.

REINFORCEMENT SHALL NOT BE MORE THAN 25MM. THE MAXIMUM CRUSHING STRENGTH OF THE HOLLOW BLOCK IS TO BE 20N/MM². THE WALL THICKNESS OF THE BLOCKS SHOULD NOT BE MORE THAN 250MM.

MAXIMUM POUR HEIGHT FOR ALL COLUMNS/STANDS ARE TO BE 200MM. COLUMNS: 25MM, SLABS: 20MM, BEAMS: 25MM.

COVER TO REINFORCEMENT SHALL BE 40MM. ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWORK WALL AND CORNERS. FITTING SERVICE PIPES INSIDE BLOCKWORK WALL AND CORNERS MUST BE ADVISED.
GENERAL NOTES.

1. DESIGN IS TO BS 8110
2. CONCRETE GRADES ARE TO BE AS SHOWN ON THE DRAWING. BLOCKWORK IS TO BE 20N/MM² STEEL TYPE 2, DENOTED BY ‘Y’, HAVING CHARACTERISTIC STRENGTH NOT LESS THAN 850KN/M².
3. UNLESS OTHERWISE INDICATED, REINFORCEMENT SHALL BE HIGH YIELD STEEL TYPE 3, DENOTED BY ‘F’, HAVING CHARACTERISTIC STRENGTH NOT LESS THAN 150KN/M².
4. DRAWINGS MUST BE READ IN CONJUNCTION WITH THE RELEVANT ARCHITECTURAL DRAWINGS AND PLANS. CONSTRUCTION OF ALL WORKS TO BE PERFORMED IN ACCORDANCE WITH THE SPECIFICATIONS AND DRAWINGS.
5. DRAWINGS MUST BE READ IN CONJUNCTION WITH THE RELEVANT ARCHITECTURAL DRAWINGS AND PLANS.
6. DIMENSIONS ARE IN MILLIMETERS (MM).
7. FOUNDATION WAS DESIGNED FOR AN ASSUMED ALLOWABLE SOIL BEARING PRESSURE OF 50MM(BOTTOM)75MM(SIDES) HOMOGENEOUS CONCRETE. BACK FILLING IS TO BE CARRIED OUT SIMULTANEOUSLY ON BOTH SIDES.
8. THE WALL THICKNESS OF THE BLOCKS SHOULD NOT BE MORE THAN 25MM.
9. THE MAXIMUM CRUSHING STRENGTH OF THE HOLLOW BLOCK IS TO BE 20N/MM².
10. MAXIMUM POUR HEIGHT FOR ALL COMPRESSION TYPE CONCRETE. BACK FILLING IS TO BE CARRIED OUT SIMULTANEOUSLY ON BOTH SIDES.
11. THE WALL THICKNESS OF THE BLOCKS SHOULD NOT BE MORE THAN 25MM.
12. THE HEIGHT OF ALL SERVICE PIPES OR SHEET METAL PIPE进场 HOMOGENEOUS CONCRETE. BACK FILLING IS TO BE CARRIED OUT SIMULTANEOUSLY ON BOTH SIDES.
13. ALL SERVICE PIPES OR SHEET METAL PIPE SHOULD NOT BE PLACED INSIDE BLOCKWORK. PROVIDE AT LEAST 2 COURSES AT A TIME.
14. COVER TO REINFORCEMENT SHALL BE 50MM.
15. THE WALL THICKNESS OF THE BLOCKS SHOULD NOT BE MORE THAN 25MM.
16. ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWORK WITHOUT SIMULTANEOUS CONSTRUCTION WITH STRUCTURAL ENGINEERING.
17. ROOF BEAM DETAILS CONT.
GENERAL NOTES:

1. DESIGNED TO BS 8110
2. CONCRETE IS GRaded AND FLOWABLE.
3. AGGREGATE IS TO BE WELDED TO MANUFACTURER'S SAFETY.
4. COLUMN, BEAM, AND WALLS ARE TO BE CONCRETE GRADE 25.
5. UNLESS OTHERWISE INDICATED, REINFORCEMENT SHELLS SHOULD BE 1000MM HIGH.
6. COVER TO REINFORCEMENT SHALL NOT BE LESS THAN 50MM.
7. FARADAY AND GROUND PLUGS ARE TO BE INSTALLED.

BLOCKWORK:
- HOLLOW BLOCKS BELOW GROUND SHOULD BE 200MM THICK WITH PLANE CONCRETE BACKFILLING.
- 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.

CONCRETE GRADES ARE TO BE AS FOLLOW:
- BEAMS & SLABS: 30(20)
- COLUMNS: 30(20)
- WALLS: 30

REINFORCEMENT:
- REINFORCEMENT SHELLS ARE TO BE INSTALLED.
- COLUMN, BEAM, AND WALLS ARE TO BE CONCRETE GRADE 25.
- BEAMS MUST BE HIGH YIELD OR MILD STEEL.

DESIGN ENGINEER FOR CLARIFICATION.

HOMES FOR NGBANAMBI, MAFIA, USA, BORIO.

ROOF BEAM DETAILS CONT.
GENERAL NOTES.

1. DESIGN IS TO BS 8110.
2. COLUMN TO BE PROVIDED AT MAXIMUM 3M SPACING (1M AT CORNERS). COLUMNS TO BE PROVIDED AT EVERY 4TH BLOCKWORK WALL AND SLAB  LEVEL ARE TO BE FILLED WITH MASS AGGREGATE: FOUNDATION: 30(25) - BEAMS & SLABS: 20MM - COLUMNS: 25MM

3. UNLESS OTHERWISE INDICATED, REINFORCEMENT SHALL BE HIGH YIELD TYPICAL 8/16MM SDS (2/5D) WITH A STRENGTH NOT LESS THAN 250N/MM². COVER TO REINFORCEMENT SHALL BE 200MM.

4. COVER TO REINFORCEMENT SHALL BE 5MM.

5. DRAWINGS MUST BE READ IN CONJUNCTION WITH THE APPLICABLE CONTRACTS AND A CANDIDATE OF ANY DISCREPANCY REFER TO THE DESIGN ENGINEER FOR CLARIFICATION.

6. DIMENSIONS ARE IN MILLIMETRE(MM) ONLY. POUR HEIGHT FOR ALL CONCRETE. BACK FILLING IS TO BE CARRIED OUT SIMULTANEOUSLY ON BOTH SIDES.

7. UNLESS OTHERWISE INDICATED, ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWALL WITH SERVICE PIPES INSIDE MASS AGGREGATE.

8. ALL SERVICE PIPES SHALL ONLY BE PUT INSIDE BLOCKWALL WITH SERVICE PIPES INSIDE MASS AGGREGATE. COVER TO REINFORCEMENT MUST BE AVOIDED.

- Hollow blockwalls below ground level shall not be filled with mass concrete. Backfilling is to be carried out simultaneously on both sides.
- The wall thickness of the blocks should not be more than 250 mm.
- The maximum crushing strength of the hollow block is to be 20N/MM².
- Cover to reinforcement shall be 200 mm.
- Hollow blockwalls shall not be filled with mass concrete. Backfilling is to be carried out simultaneously on both sides.
- All service pipes shall only be put inside blockwall with service pipes inside mass aggregate.