STRUCTURAL DESIGN
2. Concrete grades are to be as follows with figures in bracket denoting maximum size aggregate:
   - Foundation: 30(25)
   - Beams & Slabs: 30(20)
   - Columns: 30(20)

3.  Unless otherwise indicated, reinforcement shall be high yield steel (type 2), denoted by 'Y', having characteristic strength not less than 410 N/mm².

4. Cover to reinforcement shall be the following:
   - 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 150 KN/m².

8. This design engineer will not take responsibility for any job not supervised by him.
3. Unless otherwise indicated, reinforcement shall be high yield steel (type 2), denoted by ‘Y’, having characteristic strength not less than 410 N/mm².

6. Dimensions are in millimeters (mm) and must not be scaled at any time.

8. This design engineer will not take responsibility for any job not supervised by him.

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.

2. Concrete grades are to be as follows with figures in bracket denoting maximum size aggregate:
   - Foundation: 30 (25)
   - Beams & Slabs: 30 (20)
   - Columns: 30 (20)

1. Design is to BS 8110.

4. Cover to reinforcement shall be the following:
   - Foundation: 50 mm (bottom) 75 mm (sides)
   - Columns: 25 mm
   - Beams: 25 mm
   - Slabs: 20 mm

NOTES

Item

Foundation layout

Foundation was designed for an assumed allowable soil bearing pressure of 150 KN/m².

Material Properties (Default)

- Material: Rebar Grade

Columns: C20/25, Grade 410 (Type 2)

Walls: C20/25, Grade 410 (Type 2)

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)

Codes

BS 110 = BS 8089

Soil Parameters

- Soil Bearing Capacity (kN/m²): 200.00
- Subgrade Reaction (kN/m³): 50,000.00

500

1000

1.50

SWD/01

Project: PROPOSED RESIDENTIAL DEVELOPMENT

Client: UNITED NATIONS DEVELOPMENT PROGRAMME, UNDP.

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

MARCH, 2021

SCHOOL V.I.P TOILET
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)
   - Beams & Slabs: 30(20)
   - Columns: 30(20)

3. 5Y12-2-250(T1)

4. Cover to reinforcement shall be the following:
   - Foundation: 50mm (bottom) 75mm (sides)
   - Columns: 25mm
   - Beams: 25mm
   - Slabs: 20mm

5. Dimensions are in millimetre (mm) and must not be scaled at any time.

6. Soil Parameters
   - Soil Bearing Capacity (kN/m²): 200.00
   - Subgrade Reaction (kN/m³): 50000.00

7. Foundation was designed for an assumed allowable soil bearing pressure of 150KN/m²

8. Drawings must be read in conjunction with the relevant architectural drawings and in case of any discrepancy refer to the design engineer for clarification.

2.6a. Unless otherwise indicated, reinforcement shall be high yield steel (type 2), denoted by 'Y', having characteristic strength not less than 410N/mm².

6. This design engineer will not take responsibility for any job not supervised by him.

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.
2. Concrete grades are to be as follows with figures in bracket denoting maximum size aggregate:

- Foundation           30(25)
- Beams & Slabs     30(20)
- Columns               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.

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.

4. Cover to reinforcement shall be the following:

- Fondation:    50mm (bottom) 75mm (sides)
- Columns:      25mm
- Beams:         25mm
- Slabs:       20mm

1. Design is to BS 8110.

8. This design engineer will not take responsibility for any job not supervised by him.
3. Unless otherwise indicated, reinforcement shall be high yield steel (type 2), denoted by 'Y', having characteristic strength not less than 410 N/mm².

6. Dimensions are in millimetre (mm) and must not be scaled at any time.

8. This design engineer will not take responsibility for any job not supervised by him.

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.

2. Concrete grades are to be as follows with figures in bracket denoting maximum size aggregate:
   - Foundation: 30(25)
   - Beams & Slabs: 30(20)
   - Columns: 30(20)

1. Design is to BS 8110.

7. Foundation was designed for an assumed allowable soil bearing pressure of 150 KN/m².

4. Cover to reinforcement shall be the following:
   - Foundation: 50mm (bottom) 75mm (sides)
   - Columns: 25mm
   - Beams: 25mm
   - Slabs: 20mm

NOTES:
**COLUMN TYPES AND DETAILS**

3. Unless otherwise indicated, reinforcement shall be high yield steel (type 2), denoted by 'Y', having characteristic strength not less than 410N/mm².

6. Dimensions are in millimetre (mm) and must not be scaled at any time.

8. This design engineer will not take responsibility for any job not supervised by him.

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.

2. Concrete grades are to be as follows with figures in bracket denoting maximum size aggregate:

- Foundation: 30(25)
- Beams & Slabs: 30(20)
- Columns: 30(20)

1. Design is to BS 8110.

4. Cover to reinforcement shall be the following:

- Foundation: 50mm (bottom) 75mm (sides)
- Columns: 25mm
- Beams: 25mm
- Slabs: 20mm

**NOTES:**

- No. 4/8 in mm, 2/6 in mm.

- Design is to BS 8110.

- Embedded depth of columns according to drawing SWD/04.

- Foundation was designed for an assumed allowable soil bearing pressure of 150KN/m².

- Footing was designed for an assumed allowable soil bearing pressure of 150KN/m².

- Cover to reinforcement shall be the following:

- Foundation: 50mm (bottom) 75mm (sides)
- Columns: 25mm
- Beams: 25mm
- Slabs: 20mm

- Reinforcement details according to drawing SWD/04.

- Column & base details.

- Concrete grades are as follows with figures in bracket denoting maximum size aggregate:

- Foundation: 30(25)
- Beams & Slabs: 30(20)
- Columns: 30(20)

- Design is to BS 8110.

- Foundation was designed for an assumed allowable soil bearing pressure of 150KN/m².

- Footing was designed for an assumed allowable soil bearing pressure of 150KN/m².

- Cover to reinforcement shall be the following:

- Foundation: 50mm (bottom) 75mm (sides)
- Columns: 25mm
- Beams: 25mm
- Slabs: 20mm

- Reinforcement details according to drawing SWD/04.

- Concrete grades are as follows with figures in bracket denoting maximum size aggregate:

- Foundation: 30(25)
- Beams & Slabs: 30(20)
- Columns: 30(20)
3. Unless otherwise indicated, reinforcement shall be high yield steel (type 2), denoted by 'Y', having characteristic strength not less than 410 N/mm².

6. Dimensions are in millimetre (mm) and must not be scaled at any time.

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.

1. Design is to BS 8110.

7. Foundation was designed for an assumed allowable soil bearing pressure of 150 kN/m².

4. Cover to reinforcement shall be the following:
   - Foundation: 50 mm (bottom), 75 mm (sides)
   - Columns: 25 mm
   - Beams: 25 mm
   - Slabs: 20 mm

2. Concrete grades are to be as follows with figures in bracket denoting maximum size aggregate:
   - Foundation: 30 (25)
   - Beams & Slabs: 30 (20)
   - Columns: 30 (20)

1:50

Drawing No.  SWD/05

Date: March, 2021

Scale: 1:50

NOTES:

Client: UNITED NATIONS DEVELOPMENT PROGRAMME, UNDP.

ROOF BEAM DETAILS

SCHOOL V.I.P TOILET
UNITED NATIONS DEVELOPMENT PROGRAMME, UNDP.

Client: NGARANNAM, MAFA LGA, BORNO STATE.

Proposed Residential Development,

8. This design engineer will not take responsibility for any job not supervised by him.

6. Dimensions are in millimetre (mm) and must not be scaled at any time.

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.

4. Cover to reinforcement shall be the characteristic strength not less than 410N/mm² steel (type 2), denoted by 'Y', having similar properties.

3. Unless otherwise indicated, soil bearing pressure of 150KN/m² was assumed.

2. Concrete grades are to be as follows:

1. Design is to BS 8110-1997, BS 6399 Codes.

Soil Parameters

Soil Bearing Capacity (kN/m²) 200.00

Material Properties (Default)

Material Rebar Grade

2510 300 225

Ribs

Slabs

Beams

Columns

Footings

Ribs

Slabs

Beams

Columns

Footings

BS8110-1997, BS6399 Codes

BEAM ELEVATIONS QUANTITY TAKE OFF - STOREYS: [0] [1]

ABBEY, LAGOS STATE.

NOTES:

- Beams & Slabs: 30(20)
- Columns: 30(20)
- Foundation: 30(25)

Material Rebar Grade

2510 300 225

Ribs

Slabs

Beams

Columns

Footings

BS8110-1997, BS6399 Codes

BEAM ELEVATIONS QUANTITY TAKE OFF - STOREYS: [0] [1]

ABBEY, LAGOS STATE.

NOTES:

- Beams & Slabs: 30(20)
- Columns: 30(20)
- Foundation: 30(25)

Material Rebar Grade

2510 300 225

Ribs

Slabs

Beams

Columns

Footings

BS8110-1997, BS6399 Codes

BEAM ELEVATIONS QUANTITY TAKE OFF - STOREYS: [0] [1]

ABBEY, LAGOS STATE.

NOTES:

- Beams & Slabs: 30(20)
- Columns: 30(20)
- Foundation: 30(25)

Material Rebar Grade

2510 300 225

Ribs

Slabs

Beams

Columns

Footings

BS8110-1997, BS6399 Codes

BEAM ELEVATIONS QUANTITY TAKE OFF - STOREYS: [0] [1]

ABBEY, LAGOS STATE.

NOTES:

- Beams & Slabs: 30(20)
- Columns: 30(20)
- Foundation: 30(25)

Material Rebar Grade

2510 300 225

Ribs

Slabs

Beams

Columns

Footings

BS8110-1997, BS6399 Codes

BEAM ELEVATIONS QUANTITY TAKE OFF - STOREYS: [0] [1]

ABBEY, LAGOS STATE.

NOTES:

- Beams & Slabs: 30(20)
- Columns: 30(20)
- Foundation: 30(25)

Material Rebar Grade

2510 300 225

Ribs

Slabs

Beams

Columns

Footings

BS8110-1997, BS6399 Codes

BEAM ELEVATIONS QUANTITY TAKE OFF - STOREYS: [0] [1]

ABBEY, LAGOS STATE.

NOTES:

- Beams & Slabs: 30(20)
- Columns: 30(20)
- Foundation: 30(25)

Material Rebar Grade

2510 300 225

Ribs

Slabs

Beams

Columns

Footings

BS8110-1997, BS6399 Codes

BEAM ELEVATIONS QUANTITY TAKE OFF - STOREYS: [0] [1]

ABBEY, LAGOS STATE.

NOTES:

- Beams & Slabs: 30(20)
- Columns: 30(20)
- Foundation: 30(25)

Material Rebar Grade

2510 300 225

Ribs

Slabs

Beams

Columns

Footings

BS8110-1997, BS6399 Codes

BEAM ELEVATIONS QUANTITY TAKE OFF - STOREYS: [0] [1]

ABBEY, LAGOS STATE.

NOTES:

- Beams & Slabs: 30(20)
- Columns: 30(20)
- Foundation: 30(25)

Material Rebar Grade

2510 300 225

Ribs

Slabs

Beams

Columns

Footings

BS8110-1997, BS6399 Codes

BEAM ELEVATIONS QUANTITY TAKE OFF - STOREYS: [0] [1]

ABBEY, LAGOS STATE.

NOTES:

- Beams & Slabs: 30(20)
- Columns: 30(20)
- Foundation: 30(25)

Material Rebar Grade

2510 300 225

Ribs

Slabs

Beams

Columns

Footings

BS8110-1997, BS6399 Codes

BEAM ELEVATIONS QUANTITY TAKE OFF - STOREYS: [0] [1]

ABBEY, LAGOS STATE.

NOTES:

- Beams & Slabs: 30(20)
- Columns: 30(20)
- Foundation: 30(25)

Material Rebar Grade

2510 300 225

Ribs

Slabs

Beams

Columns

Footings

BS8110-1997, BS6399 Codes

BEAM ELEVATIONS QUANTITY TAKE OFF - STOREYS: [0] [1]

ABBEY, LAGOS STATE.

NOTES:

- Beams & Slabs: 30(20)
- Columns: 30(20)
- Foundation: 30(25)

Material Rebar Grade

2510 300 225

Ribs

Slabs

Beams

Columns

Footings

BS8110-1997, BS6399 Codes

BEAM ELEVATIONS QUANTITY TAKE OFF - STOREYS: [0] [1]

ABBEY, LAGOS STATE.

NOTES:

- Beams & Slabs: 30(20)
- Columns: 30(20)
- Foundation: 30(25)

Material Rebar Grade

2510 300 225

Ribs

Slabs

Beams

Columns

Footings

BS8110-1997, BS6399 Codes

BEAM ELEVATIONS QUANTITY TAKE OFF - STOREYS: [0] [1]

ABBEY, LAGOS STATE.

NOTES:

- Beams & Slabs: 30(20)
- Columns: 30(20)
- Foundation: 30(25)

Material Rebar Grade

2510 300 225

Ribs

Slabs

Beams

Columns

Footings

BS8110-1997, BS6399 Codes

BEAM ELEVATIONS QUANTITY TAKE OFF - STOREYS: [0] [1]

ABBEY, LAGOS STATE.

NOTES:

- Beams & Slabs: 30(20)
- Columns: 30(20)
- Foundation: 30(25)

Material Rebar Grade

2510 300 225

Ribs

Slabs

Beams

Columns

Footings

BS8110-1997, BS6399 Codes

BEAM ELEVATIONS QUANTITY TAKE OFF - STOREYS: [0] [1]

ABBEY, LAGOS STATE.

NOTES:

- Beams & Slabs: 30(20)
- Columns: 30(20)
- Foundation: 30(25)

Material Rebar Grade

2510 300 225

Ribs

Slabs

Beams

Columns

Footings

BS8110-1997, BS6399 Codes

BEAM ELEVATIONS QUANTITY TAKE OFF - STOREYS: [0] [1]

ABBEY, LAGOS STATE.

NOTES:

- Beams & Slabs: 30(20)
- Columns: 30(20)
- Foundation: 30(25)

Material Rebar Grade

2510 300 225

Ribs

Slabs

Beams

Columns

Footings

BS8110-1997, BS6399 Codes

BEAM ELEVATIONS QUANTITY TAKE OFF - STOREYS: [0] [1]

ABBEY, LAGOS STATE.

NOTES:

- Beams & Slabs: 30(20)
- Columns: 30(20)
- Foundation: 30(25)

Material Rebar Grade

2510 300 225

Ribs

Slabs

Beams

Columns

Footings

BS8110-1997, BS6399 Codes

BEAM ELEVATIONS QUANTITY TAKE OFF - STOREYS: [0] [1]