



PREPARE BY DR-Majid Albana
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Notes

THE BUILDING SYSTEM WILL BE
 CONSIDER AS SHEAR WALL
 BUILDING WITH COLUMNS AND THE
 SLAB WILL BE AS solid SLAB .THE
 SOFTWARE USED IN DESIGN (CSI
 ETABS 2023, AND CSI SAFE
 2023&PROKON) IS THE GENERAL
 PROGRAM USED IN THIS DESIGN

job title

House 250 m2

Structural
Drawings

DRWG. TITLE:

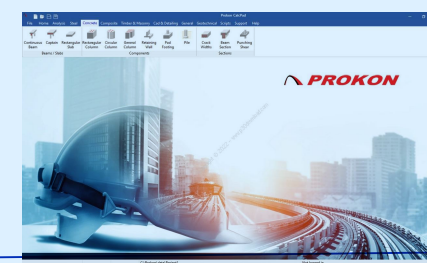
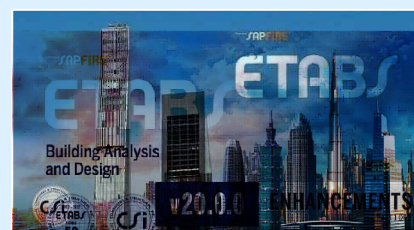
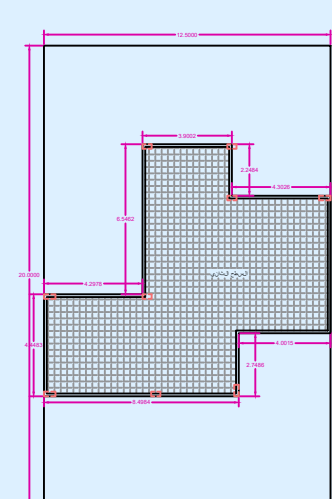
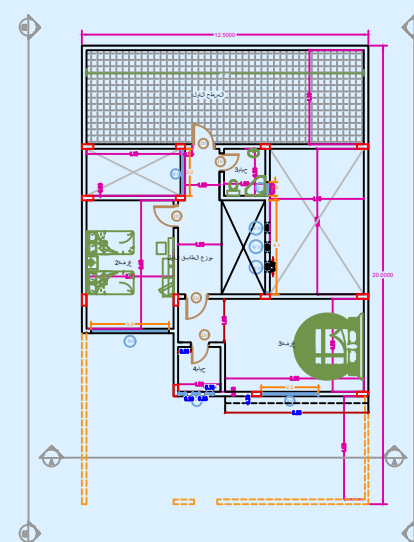
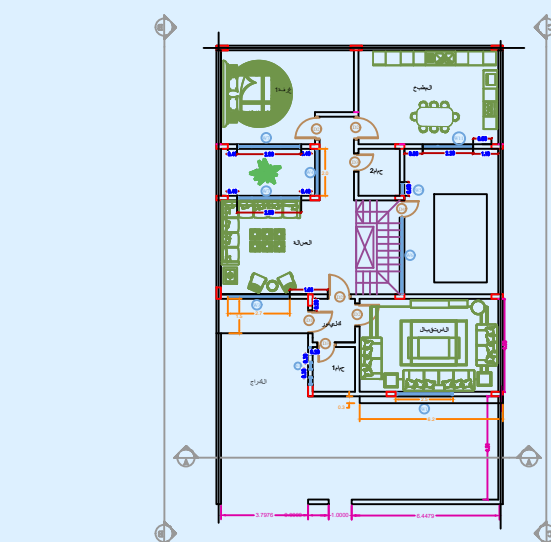
DESIGNED BY **DR-Majid Albana**

CHECKED BY

SCALE As Shown

DATE 11 /2023

SHEET NO. Str. 1



GENERAL :-

1. ALL DIMENSIONS TO TAKE PRECEDENCE OVER SCALE SHOWN ON PLANS, SECTIONS AND DETAILS, (DO NOT SCALE FROM DRAWINGS).
2. ALL DIMENSIONS ARE IN MILLIMETRES AND ALL LEVELS IN METRES (UNO).
3. THE STRUCTURAL DRAWINGS SHOULD BE USED IN CONJUNCTION WITH THE ARCHITECTURAL, MECHANICAL,CIVIL,PLUMBING AND ELECTRICAL DRAWINGS.
4. ALL OPENINGS SIZE AND LOCATION SHOULD BE VERIFIED AND CHECKED WITH SERVICES DRAWINGS,WHERE OPENINGS SIZES ARE NOT SHOWN ON THE STRUCTURAL DRAWINGS, SITE ENGINEER SHALL INTRODUCE SUCH OPENINGS WITH PROPER FRAMING INCLUDING ANY REVISION TO THE SIZES SHOWN ON THE DRAWINGS.
5. DESIGN STANDARED & LOADS :-

• DESIGN & CONSTRUCTION OF REINFORCED CONCRETE STRUCTURES MEMBERS SHALL IN ACCORDANCE WITH ACI-318-95 (ULTIMATE STRENGTH DESIGN METHOD).

• ALL RETANING WALL STRUCTURE SHOULD BE AS BRITISH 8 97- 110 or ACI- 93 - 318.

• MASONARY BRICK OR CONCRETE BLOCK ACCORDING TO B.S - 5628.
6. LOADING :-

• MINIMUM DESIGN LOAD (LIVE LOAD) ACCORDING TO IBC-09.

• SEISMIC LOAD ACCORDING TO IRAQI SEISMIC CODE 1997.

• WIND LOAD ACCORDING TO ASCE-05.
7. FOR TYP. SECTIONS & DETAILS SEE ST-G2.

FOUNDATION AND EARTH WORK :-

1. FOUNDATION DESIGN BASED ACCORDING TO THE SOIL REPORT PREPARED BY THE & RESEARCH (2023 \ \ \).
2. BEARING CAPACITY ACCORDING TO THE SOIL REPORT IS (7K/ m²) AT DEPTH OF (-2.00m) BELOW THE EXISTING N.G.L.
3. A WELL COMPACTED SUB-BASE LAYERS OF A TOTAL THICK AS INDICATED IN THE DWG SHOULD BE USED UNDER FOOTING WITH FOLLOWING SPECIFICATIONS :-

• THE DIMENSION OF THE SUB-BASE LAYERS SHOULD BE LARGER THAN THE DIMENSIONS OF THE FOUNDATION FROM ALL SIDES BY 0.25m.

• THE VALUE OF CALIFORNIA BEARING RATIO (C.B.R) SHALL NOT BE LESS THAN (35% ASTM D) 1883 AT 95% OF THE MAXIMUM DRY DENSITY ESTABLISHED ACCORDING TO (ASTM D)1557.

• LIQUID LIMTE 25%.

• PLASTICITY INDEX ≤ 6%.

• ORGANIC MATERIAL≤ 2%.

• SO₃ ≤ 5%.

• TOTAL SOLUBLE SALTS ≤ 5%.

• GYPSUM CONTENT ≤ 10.75%.

• RELATIVE COMPACTION 95% (MODIFIED PROCTOR).
4. SULPHATE RESISTANT CEMENT TYPE 5 SHOULD BE USED IN ALL CONCRET WORK IN CONTACT WITH EARTH OR BELOW DP.C. LEVEL.
5. BACKFILL AROUND FOOTINGS AND UTILITY TRENCH WITHIN THE BUILDING AREA SHOULD BE DONE WITH APPROVED SELECTED CLASSIFIED MATERIAL FREE OF CLAY AND SHOULD BE MECHANICALLY COMPACTED IN LAYERS, NOT EXCEEDING 250mm LOOSE THICKNESS TO 90% OF MAXIMUM PROCTOR DENSITY.

CONSTRUCTION JOINT AND WATERPROOFING :-

1. CONSTRUCTION JOINT :-

• CONSTRUCTION JOINT IN FLOORS SHOULD BE LOCATED WITHIN THE MIDDLE THIRD OF SPANS OF SLABS ,BEAMS & GIRDERS ,JOINT IN GIRDER SHOULD BE OFFSET A MINIMUM DISTANCE OF TWO TIMES THE WIDTH OF INTERSECTING BEAMS.

• AT CONSTRUCTION JOINTS SURFACES SHOULD BE ROUGHENED BY BROOMING OUT MORTAR, EXPOSING 12mm OF COARSE AGGREGATE TWO HOURS AFTER PLACING CONCRETE.

• CONSTRUCTION JOINTS FOR STRUCTURAL SLAB / FOUNDATION/ WALLS ETC . AND VOLUME OF CASTING IN A POUR SHOULD BE APPROVED BY THE ENGINEER.

• CONSTRUCTION JOINTS SHOULD BE DOWELED , KEYED AND THOROUGHLY CLEANED, ALL CONSTRUCTION JOINTS SHOULD BE CONSTRUCTED IN ACCORDANCE WITH THE TYPICAL CONSTRUCTION JOINT DETAILS SHOWN ON THE STRUCTURAL DRAWINGS, CONTRACTOR HAVE TO PREPARE ANY MISSING DETAILS NOT COVERED IN THE STRUCTURAL DRAWINGS AND SUBMIT FOR ENGINEER 'S APPROVAL.
2. WATERPROOFING :-

• WATER STOPS SHOULD BE USED AT ALL CONSTRUCTION ,CONTRACTION & EXPANSION JOINTS ,WHERE WATERPROOFING SYSTEM IS APPLIED ALL INTERSECTION PIECES OF WATER STOPS SHOULD BE FACTORY MOLDED.

• ALL CONCRETE WORKS IN CONTACT WITH SOIL FOR NORMAL STRUCTURE SHOULD BE COATED WITH PROTECTIVE LAYER.
- all dim. from ARCH D.W.G.
- REINFORCED CONCRETE :-
1. COMPRESIVE STRENGTH OF CONCRETE SHOULD BE DETERMIND BY THE TABLE BELOW :-

LOCATIONS MEMBER TYPE	MINIMUM 28 DAYS CUBE COMPRESSIVE STRENGTH(Fcu) (MPa)	AGGREGATE MAX. SIZE
SCREED	20	10 mm
BLINDING OR LEAN CONCRETE	20	20 mm
SLABS	40	20 mm
PILES	-	20-38 mm
FOUNDATIONS	35	20 mm
COLUMNS AND SHEAR WALLS	40	20 mm
SUSPENDED SLAB, BEAMS AND WALLS	35	20 mm
WATER RETAINING STRUCTURES	-	20 mm
PLAIN CONCRETE	25	20 mm

2. SULPHATE RESISTANT CEMENT TYPE 5 SHOULD BE USED IN ALL CONCRET WORK IN CONTACT WITH EARTHOR BELOW D.P.C LEVEL.

3. REINFORCMENT STEEL CONFORM TO ASTM A615 & A616 OR A617 BARS SHOULD BE GRADE 400 FY=410N/mm (60000psi).

4. PLACING OF REINFORCEMENT SHOULD BE ACCORDING TO ACI-315 DETAILING MANUAL.

5. MINIMUM BARS COVER :-
- | MEMBER | (mm) |
|-----------------------|------|
| SLABS | 25 |
| BEAMS & GIRDERS | 40 |
| COLUMNS | 40 |
| INTERIOR WALLS | 25 |
| EXTERIOR FACE OF WALL | 40 |
| FORMED FOUNDATION | 50 |
| NON-FORMED FOUNDATION | 75 |
6. MINIMUM BARS SPACING :-

• CLEAR SPACING BETWEEN PARA LLEL BARS SHALL NOT BE LESS THAN BAR DIAMETER OR 4/3 OF MAXIMUM AGGREGATE SIZE BUT NOT LESS THAN 25mm.

• CLEAR SPACING BETWEEN LAYERS OF BARS TO BE NOT LESS THAN 25mm AND THE UPPER BARS SHOULD BE OVER THE LOWER BARS .

• IN COLUMNS CLEAR DISTANCE BETWEEN LONGITUDINAL BARS SHOULD BE NOT LESS THAN 1.5 BAR DIAMETER NOR LESS THAN 40mm.

7. MINIMUM LAP LENGTH (UNLESS NOTED ON DRAWINGS) SHOULD BE AS TABLE BELWO :-
- | BAR DIA.(mm) | 10 | 12 | 16 | 18 | 20 | 22 | 25 |
|-------------------------------|-----|-----|-----|-----|-----|------|------|
| LAP LENGTH (mm) IN COLUMNS | 400 | 500 | 600 | 650 | 700 | 800 | 900 |
| LAP LENGTH (mm) IN ELSE WHERE | 400 | 600 | 700 | 800 | 900 | 1000 | 1250 |
- LAP LOCATION IN SLABS AND BEAMS :-

* AT SUPPORT FOR BOTTOM BARS.

* AT MID SPAN FOR TOP BARS.

• LAP LOCATION IN FOUNDATION :-

* AT SUPPORT FOR TOP BARS.

* AT MID SPAN FOR BOTTOM BARS.

8. VERTICAL REINFORCEMENT IN COLUMN :-

• WHERE COLUMN FACE ARE OFFSET 75mm OR MORE SPLICE OF VERTICAL BARS TO THE OFFSET FACE SHOULD BE MADE BY SEPARAT E DOWELS OVER LAP AS SPECIFIED ABOVE.

• WHERE A LONGITUDINAL BARS ARE OFFSET AT SPLICE THE SLOPE OF INCLINED ADJACENT PORTION SHALL NOT EXCEED 1:6 (HORIZONTAL:VERTICAL).

• CHANGING OF REINFORCEMENT BETWEEN FLOORS WHERE SUCH SITUATION OCCURS THE REINFORCEMENT OFF SHOULD BE CUT OFF AT DISTANCE 75mm BELOW FLOOR LEVEL SPACED 100mm AND PLACED BEFORE THE POINT OF BEND.

• WHERE LONGITUDINAL BARS OFFSET,PROVIDE 4TIES.

9. HOT & COLD WETHERING SHOULD BE ACCORDING TO ACI-305R-99.

10. ALL REINFORCING BAR BENDS TO BE MADE COLD.

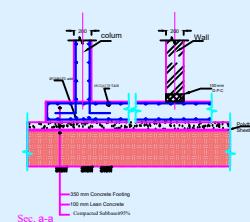
11. IN ONE-WAY SLAB, SHRINKAGE & TEMPERATURE REINF. STEEL EXTENDING IN THE LONG DIRECTION SHALL BE PLACED IN THE PLACE OF, AND TIED TO THE MAIN REINF. EXTENDING IN THE SHORT DIRECTION.

12. MIXING & PLACING CONCRETE SHOULD BE DONE ACCORDING TO ACI - 318M - 95 (CHAPTER 5) CONDUIT OR PIPE SIZE SHALL NOT EXCEED 30% OF SLAB THICKNESS UNLESS SPECIFICALLY DETAILED,OTHERWISE CONCENTRATIONS OF CONDUITS OR PIPES SHOULD BE AVOIDED EXCEPT WHERE DETAILED OPENINGS ARE PROVIDED, ALL SUBJECTED TO ENGINEER'S APPROVAL.
-
- Typical Detail Of Out Door Yard
-
- CONSTRUCTION OF PARTITION ON GROUND SLAB
provid construction joint for max.(5mx5m)
-
- TYPICAL REINF. AROUND OPENNINGS UP TO 600
-
- CONECTION BETWEEN BRICK WALL AND R.C. COLUMN
proposal 1
-
- Typical Sec. For Stair On Earth
-
- Typical Sec. Of Ramp
-
- TYPICAL UP STAND DETAIL ROOF OPENNINGS
-
- CONECTION BETWEEN BRICK WALL AND R.C. COLUMN
proposal 2
-
- LINTEL REINFORCEMENT
- ABBREVIATIONS :-
- | | |
|-------|--------------------|
| ADD | ADDITIONAL |
| ARCH | ARCHITECTURAL |
| B | BEAM |
| BOTT | BOTTOM |
| C1 | COLUMN TYP C1 |
| CANT | CANTILEVER |
| CJ | CONSTRUCTION JOIN |
| CL | CENTRE |
| C | COULMN |
| CONC | CONCRETE |
| DET | DETAIL |
| DIM | DIMENSION |
| DWG | DRAWING |
| D | DEPTH |
| E.A | EACH |
| E.F | EACH FACE |
| E.J | EXPANSION JOINT |
| ELEV | ELEVATION |
| E.W | EACH WAY |
| EXP | EXPANSION |
| F | FOOTING |
| F1 | FOOTING TYPE-1 |
| FDN | FOUNDATION |
| F.F.L | FINISH FLOOR LEVEL |
| GEN | GENERAL |
| GL | GRID LINE |
| LL | LIVE LOAD |
| MAX | MAXIMIM |
| MECH | MECHANICAL |
| MIN | MINIMUM |
| mm | MILLIMETRES |
| SEC | SECTION |
- | | | |
|---------------|-----------------|-------------------|
| | | |
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| | | |
| | | |
| no | date | initials revision |
| | | |
| job title | | |
| (A) | | |
| drawing title | | |
| GENERAL NOTES | | |
| designed | project manager | |
| checked | scale | date |
| drawn | job no. | sheet no. |
| approved | | 2 |



CONCRETE COVERS

-THE BUILDING IS DESIGNED FOR BASEMENT + GROUND FLOOR + 6 FLOORS + PENT-HOUSE

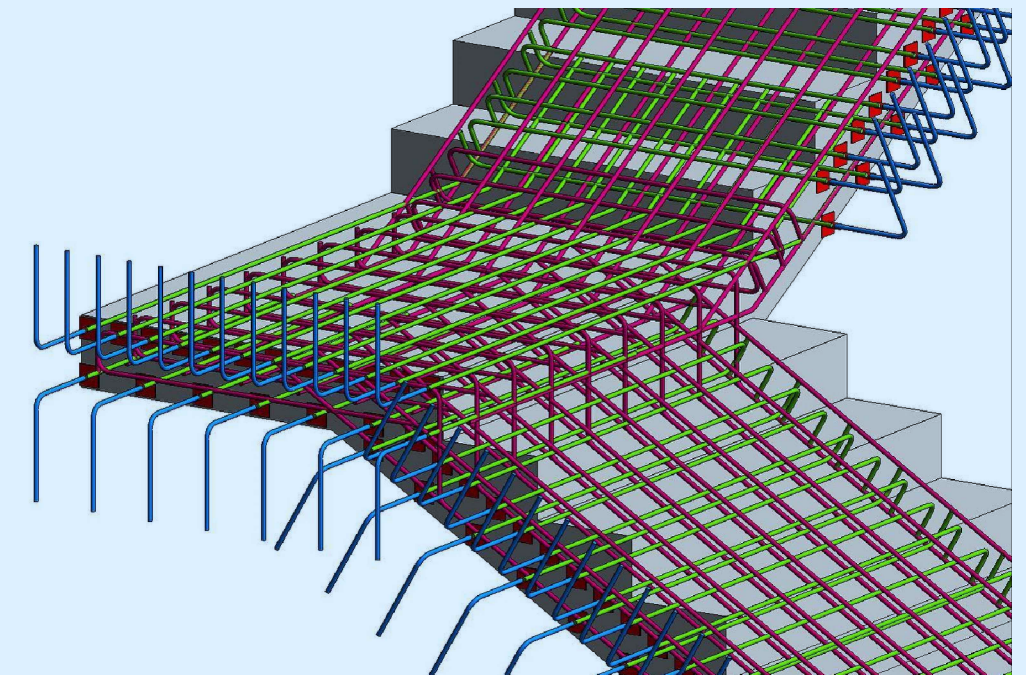


BAR DIA.(mm)	10	12	16	18	20	22	25
LAP LENGTH (mm) IN COLUMNS	400	500	600	650	700	800	900
LAP LENGTH (mm) IN F.I.S.F WHERE	400	600	700	800	900	1000	1250

THICK. = 350 mm



no.	date	initials	revision
job title			
(A)			
drawing title			
PLAN OF FOUNDATION REINFORCEMENT&SEC.			
designed ENG : DR-Majid Albana		project manager	
checked		scale 1-100	date 11 /20
drawn		job no.	sheet no.
approved		3	ST/D/



The diagram illustrates the reinforcement layout for a staircase slab. It shows a horizontal section on the left and an inclined section on the right. The horizontal section has a width of 200 units and is reinforced with $\varnothing 12@200$ bars. The inclined section has a width of 150 units and is reinforced with $\varnothing 16@150$ bars. The reinforcement is shown as blue dots within the slab boundaries. Labels include "Slab Reinf." in red, "Ø12@200", "Ø16@150", and "200".

Slab Reinf.

200mm

2Ø16

Ø12@200

Ø12@150

-F_{cu} = 35 N/mm²
-F_y = 420 N/mm².

CONCRETE COVERS

CONCRETE COVERS

-SLABS	= 25 mm
-BEAMS	= 40 mm
-COLUMNS	= 40 mm
-WALLS	= 25 mm
-SLAB ON GRADE	= 50 mm
-RAFT FOUNDATION	= 75 mm

. all dim. from ARCH D.W.G.

no.	date	initials	revision
job title			
(A)			
drawing title			
Stairs detail			
designed ENG : DR-Majid Albana		project manager	
checked	scale 1-100	date 11 /2023	
drawn	job no.	sheet no.	
approved		4	ST/D/07

M

Eng MAJ D A bana

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SCHEDULE OF COLUMNS AND WALLS

COLUMNS OR WALLS ID	SIZE		REMARK
	LENGTH (mm)	WIDTH (mm)	
C1	200	500	
C2	200	400	

Notes

-Feu = 40 N/mm2
-Fy = 420 N/mm2.

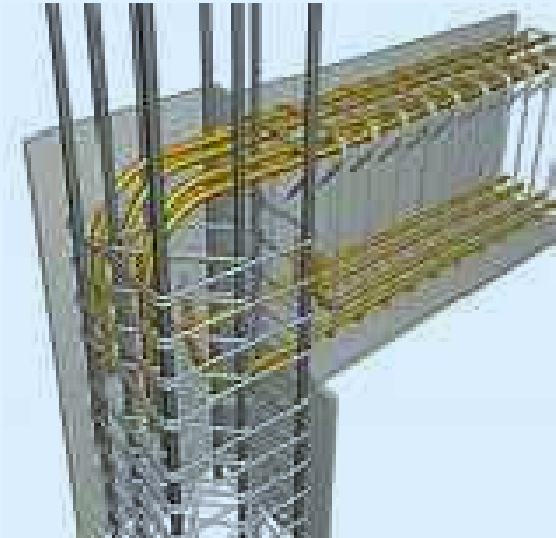
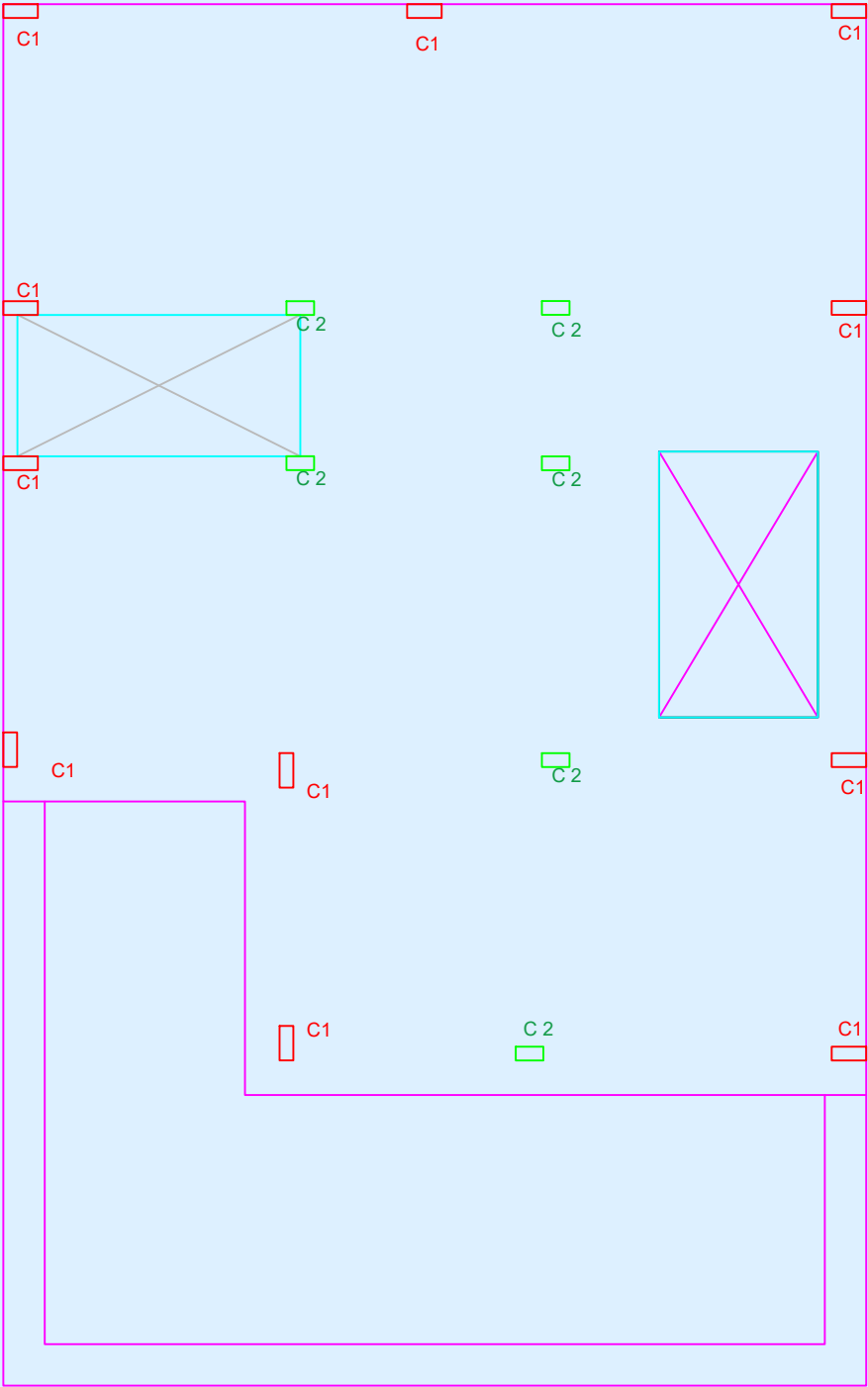
CONCRETE COVERS

-SLABS = 25 mm
-BEAMS = 40 mm
-COLUMNS = 40 mm
-WALLS = 25 mm
-SLAB ON GRADE = 50 mm
-RAFT FOUNDATION = 75 mm

-THE GEOTECHNICAL
INVESTIGATION REPORT THE
BEARING CAPACITY OF THE SOIL
70 kN/m2
-THE BUILDING IS DESIGNED FOR
GROUND FLOOR + 1st FLOORS

. all dim. from ARCH D.W.G.

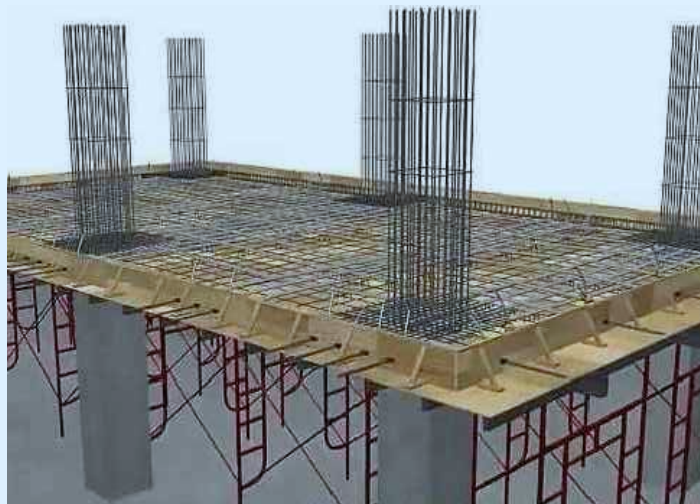
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job title					
(A)					
drawing title					
COLUMNS & WALL KEY PLAN					
designed ENG : DR-Majid Albana		project manager			
checked		scale 1-100	date 11 /2023		
drawn		job no. 5	sheet no.		
approved			ST/D/08		



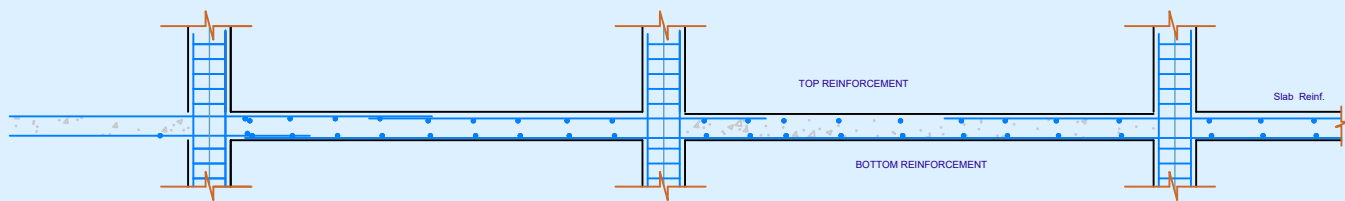
COLUMNS & WALL KEY PLAN

no.	date	initials	revision
job title			
(A)			
drawing title			
BEAM KEY PLAN			
designed ENG : DR-Majid Albana		project manager	
checked	scale 1-100	date 11 / 2023	
drawn	job no. 7	sheet no.	
approved		ST/D/12	

slab camber 25 mm



SLAB THICKNESS = 170 mm



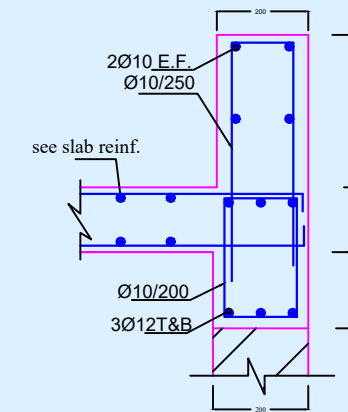
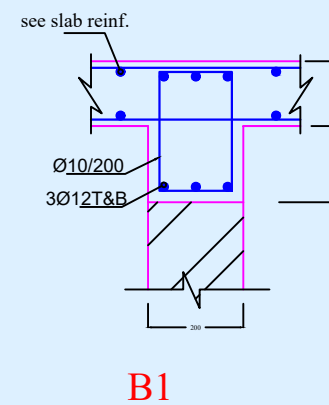
Typical SLAB reinforcement

MINIMUM LAP LENGTH (UNLESS NOTED ON DRAWINGS) SHOULD BE AS TABLE BELWO :-

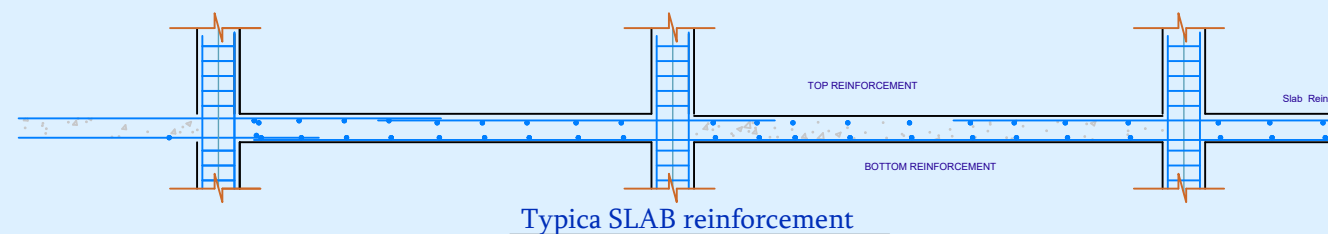
BAR DIA.(mm)	10	12	16	18	20	22	25
LAP LENGTH (mm) IN COLUMNS	400	500	600	650	700	800	900
LAP LENGTH (mm) IN SLAB & BEAMS	400	600	700	800	900	1000	1250

. all dim. from ARCH D.W.G.

no.	date	initials	revision		
job title					
(A)					
drawing title					
PLAN OF SLAB					
REINFORCEMENT&SEC.					
designed ENG : DR-Majid Albana		project manager			
checked	scale 1-100		date 11 / 2023		
drawn	job no. 8		sheet no.		
approved			ST/D/12		



SLAB THICKNESS = 170 mm



BAR DIA. (mm)	10	12	16	18	20	22	25
LAP LENGTH (mm) IN COLUMNS	400	500	600	650	700	800	900
LAP LENGTH (mm) IN SLAB & BEAMS	400	600	700	800	900	1000	1250

. all dim. from ARCH D.W.G.

no.	date	initials	revision
job title			
(A)			
drawing title			
PLAN OF SLAB			
REINFORCEMENT&SEC.			
designed ENG : DR-Majid Albana		project manager	
checked		scale 1-100	date 11 / 2023
drawn		job no. 9	sheet no.
approved			ST/D/12