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FOR  
DR-MAJID AL BANA

M

Eng MAJID Al Bana

المصمم الاستشاري

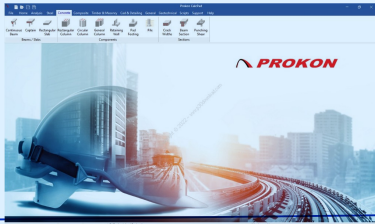
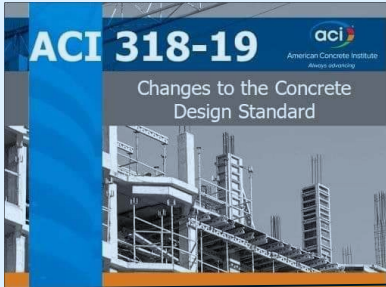
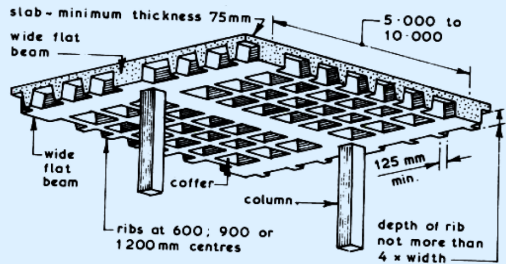
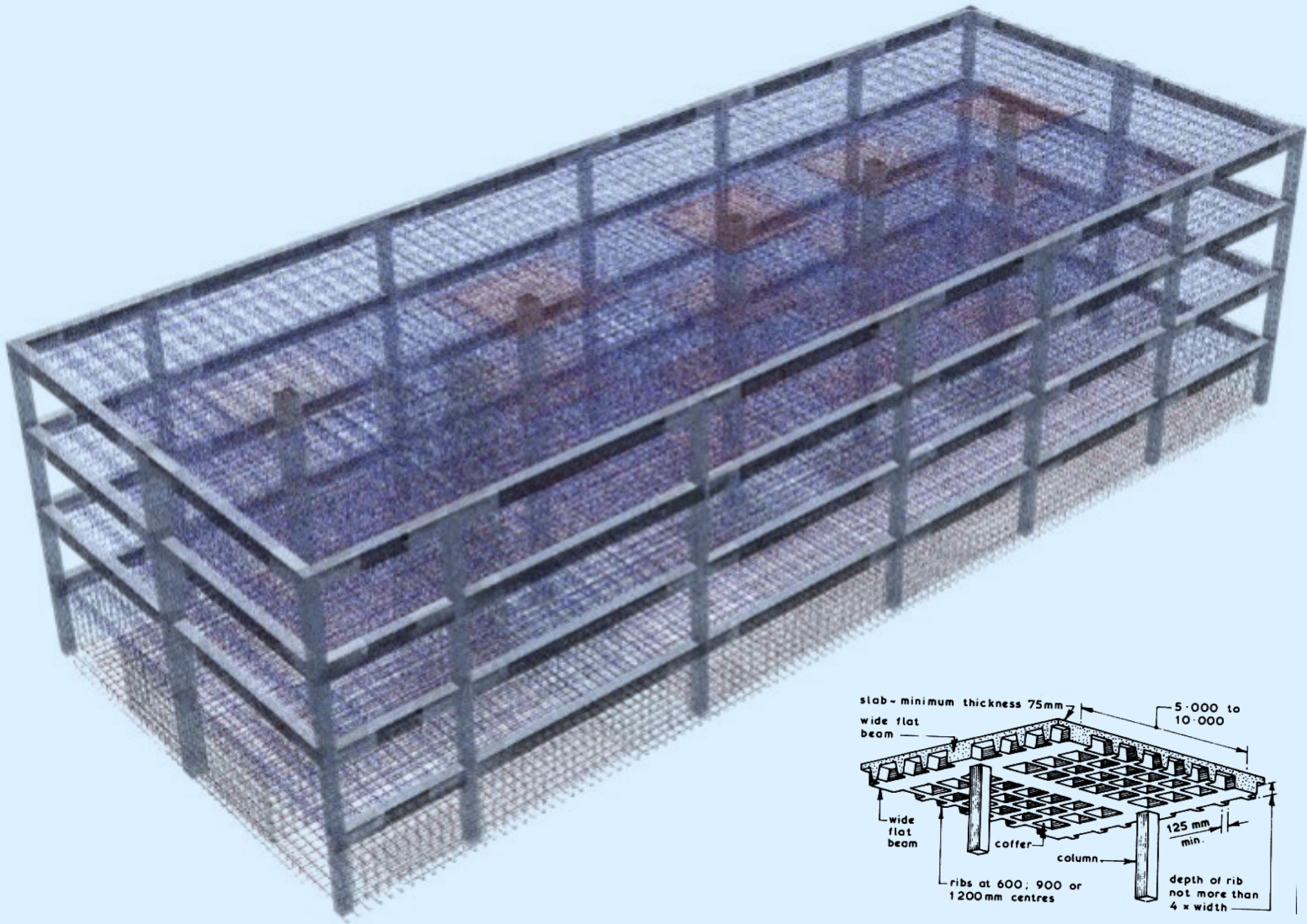
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PREPARE BY DR-Majid Albana  
majidalbana@hotmail.com  
+9647702724811

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

job title

قاعةالابتدائية للاولاد

Structural  
Drawings

DRWG. TITLE:

DESIGNED BY  
CHECKED BY  
SCALE  
As Shown  
DR-Majid Albana

DATE  
2/2024

SHEET NO.

5th



GENERAL :-

- ALL DIMENSIONS TO TAKE PRECEDENCE OVER SCALE SHOWN ON PLANS, SECTIONS AND DETAILS, (DO NOT SCALE FROM DRAWINGS).
- ALL DIMENSIONS ARE IN MILLIMETRES AND ALL LEVELS IN METRES (UNO).
- THE STRUCTURAL DRAWINGS SHOULD BE USED IN CONJUNCTION WITH THE ARCHITECTURAL, MECHANICAL,CIVIL,PLUMBING AND ELECTRICAL DRAWINGS.
- 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.
- DESIGN STANDARD & 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.
- LOADING :-
  - MINIMUM DESIGN LOAD (LIVE LOAD) ACCORDING TO IBC-09.
  - SEISMIC LOAD ACCORDING TO IRAQI SEISMIC CODE 1997.
  - WIND LOAD ACCORDING TO ASCE-05.
- FOR TYP. SECTIONS & DETAILS SEE ST-G2.

FOUNDATION AND EARTH WORK :-

- FOUNDATION DESIGN BASED ACCORDING TO THE SOIL REPORT
- BEARING CAPACITY ACCORDING TO THE SOIL IS (70K/m<sup>2</sup>) AT DEPTH OF (-1.00 m) BELOW THE EXISTING N.G.L.
- 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 LIMIT≤ 25%.
  - PLASTICITY INDEX ≤ 6%.
  - ORGANIC MATERIAL ≤ 2%.
  - SO<sub>3</sub> ≤ 5%.
  - TOTAL SOLUBLE SALTS ≤ 5%.
  - GYPSUM CONTENT ≤ 10.75%.
  - RELATIVE COMPACTION 95% (MODIFIED PROCTOR).
- SULPHATE RESISTANT CEMENT TYPE 5 SHOULD BE USED IN ALL CONCRET WORK IN CONTACT WITH EARTH OR BELOW D.P.C. LEVEL.
- 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 :-

- 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.
- 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 :-

- COMPRESIVE STRENGTH OF CONCRETE SHOULD BE DETERMIND BY THE TABLE BELOW :-

LOCATIONS	MINIMUM 28 DAYS CUBE COMPRESSIVE STRENGTH (Fcu) ( MPa )	AGGREGATE MAX. SIZE
MEMBER TYPE		
SCREED	20	10 mm
BLINDING OR LEAN CONCRETE	20	20 mm
SLABS	40	20 mm
PILES	-	20-38 mm
FOUNDATIONS	40	20 mm
COLUMNS AND SHEAR WALLS	45	20 mm
SUSPENDED SLAB, BEAMS AND WALLS	35	20 mm
WATER RETAINING STRUCTURES	-	20 mm
PLAIN CONCRETE	25	20 mm

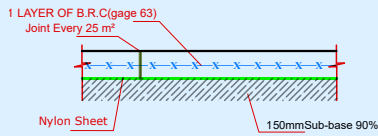
- SULPHATE RESISTANT CEMENT TYPE 5 SHOULD BE USED IN ALL CONCRET WORK IN CONTACT WITH EARTH OR BELOW D.P.C LEVEL.
- REINFORCEMENT STEEL CONFORM TO ASTM A615 & A616 OR A617 BARS SHOULD BE GRADE 400 FY=410N/mm (60000psi).
- PLACING OF REINFORCEMENT SHOULD BE ACCORDING TO ACI-315 DETAILING MANUAL.
- MINIMUM BARS COVER :-

MEMBER	(mm)
SLABS	25
BEAMS & GIRDERS	40
COLUMNS	45
INTERIOR WALLS	25
EXTERIOR FACE OF WALL	40
FORMED FOUNDATION	50
NON-FORMED FOUNDATION	75

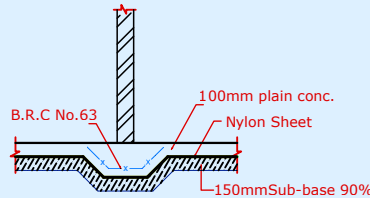
- MINIMUM BARS SPACING :-
  - CLEAR SPACING BETWEEN PARA LLEL BARS SHALL NOT BE LESS THAN BAR DIAMETER OR 4/3 OF MAXIMUM AGGREGATE SIZE BUT NOT LESS THAN 25mm.
  - CLEAR SPACING BETWEEN LAYERS OF BARS TO BE NOT LESS THAN 25mm AND THE UPPER BARS SHOULD BE OVER THE LOWER BARS .
  - IN COLUMNS CLEAR DISTANCE BETWEEN LONGITUDINAL BARS SHOULD BE NOT LESS THAN 1.5 BAR DIAMETER NOR LESS THAN 40mm.
- 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

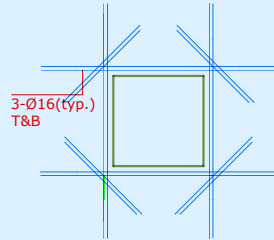
- LAP LOCATION IN SLABS AND BEAMS :-
  - AT SUPPORT FOR BOTTOM BARS.
  - AT MID SPAN FOR TOP BARS.
- LAP LOCATION IN FOUNDATION :-
  - AT SUPPORT FOR TOP BARS.
  - AT MID SPAN FOR BOTTOM BARS.
- VERTICAL REINFORCEMENT IN COLUMN :-
  - WHERE COLUMN FACE ARE OFFSET 75mm OR MORE SPLICE OF VERTICAL BARS 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 (HORIZANTAL-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.
- HOT & COLD WETHERING SHOULD BE ACCORDING TO ACI-305R-99.
- ALL REINFORCING BAR BENDS TO BE MADE COLD.
- 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.
- 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.



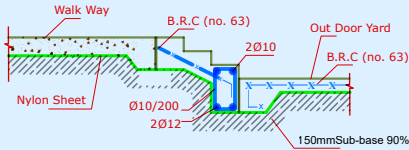
Typical Detail Of Out Door Yard



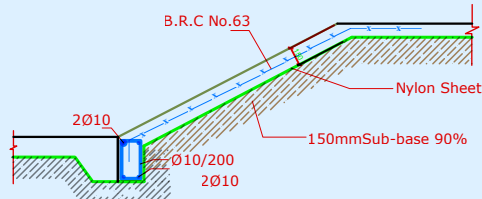
CONSTRUCTION OF PARTITION ON GROUND SLAB provid construction joint for max.(5mx5m)



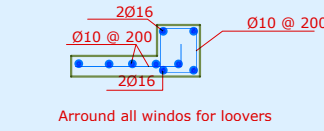
TYPICAL REINF. AROUND OPENNINGS UP TO 600



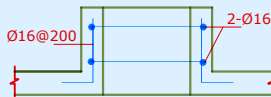
Typical Sec. For Stair On Earth



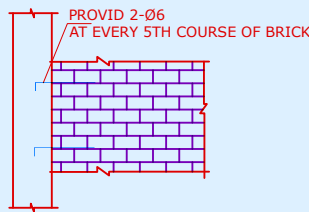
Typical Sec. Of Ramp



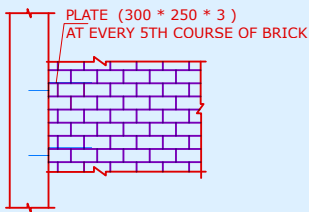
Around all windos for loovers



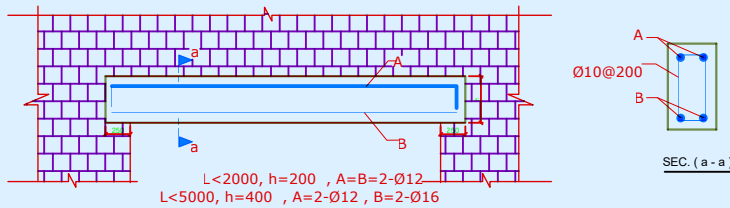
TYPICAL UP STAND DETAIL ROOF OPENNINGS



CONECTION BETWEEN BRICK WALL AND R.C. COLUMN proposal 1



CONECTION BETWEEN BRICK WALL AND R.C. COLUMN proposal 2



LINTEL REINFORCEMENT

ABBREVIATIONS :-

ADD	ADDITIONAL
ARCH	ARCHITECTURAL
B	BEAM
BOTT	BOTTOM
C1	COLUMN TYP C 1
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

no	date	initials	revision
job title		الاعدادية للبنات	
		(A)	
drawing title		GENERAL NOTES	
designed	ENG : DR.Ahmed Alharne	project manager	
checked		scale	date
drawn		job no.	sheet no.
approved			2



*TOB REIN.*

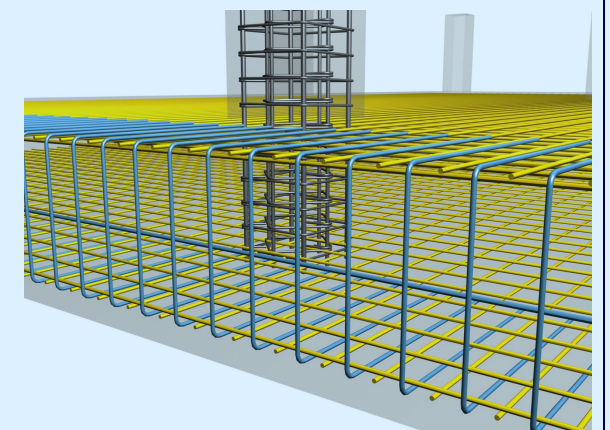


BAR DIA.(mm)	10	12	16	18	20	22	25
LAP LENGTH (mm) IN COLUMNS	400	500	600	650	700	800	900
LAP LENGTH (mm) IN EXPOSED	400	600	700	800	900	1000	1250

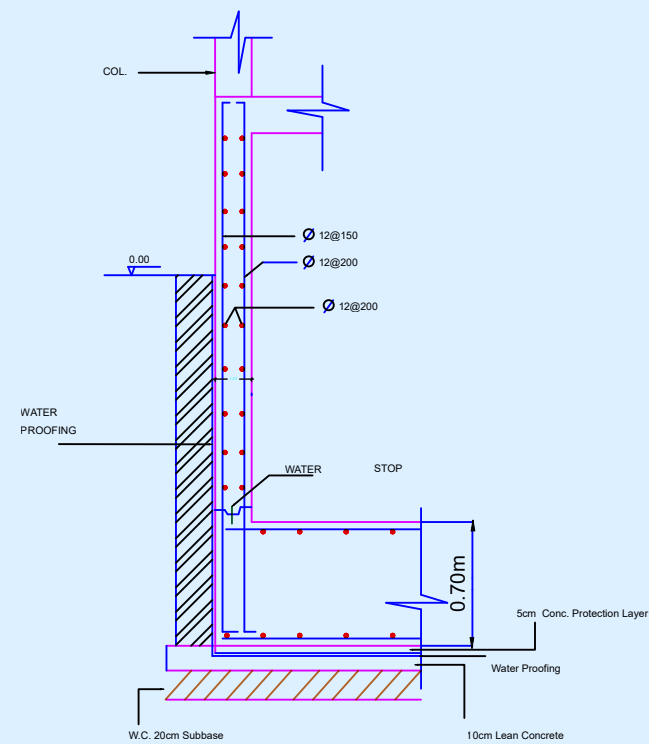
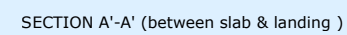
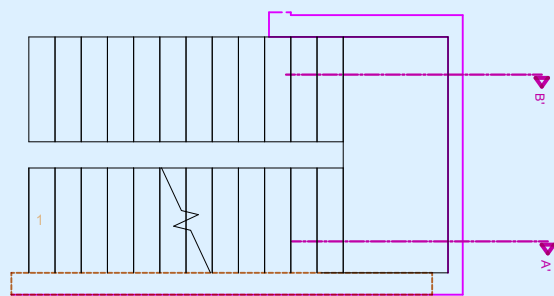
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job title			
قاعة ءال ابتدائية لل لاولاد			
drawing title			
PLAN OF FOUNDATION REINFORCEMENT&SEC.			
designed ENG : DR-Majid Albana	project manager		
checked	scale 1-100	date 2 /2024	
drawn	job no. 3	sheet no. ST/D/04	
approved			

## CONCRETE COVERS

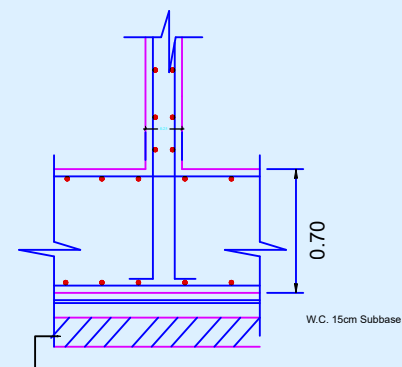
-SLABS	= 25 mm
-BEAMS	= 40 mm
-COLUMNS	= 40 mm
-WALLS	= 25 mm
-SLAB ON GRADE	= 50 mm
-RAFT FOUNDATION	= 75 mm



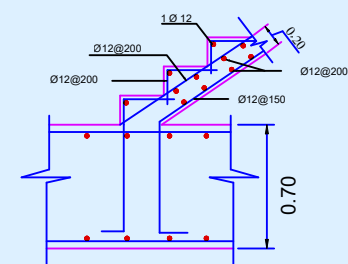
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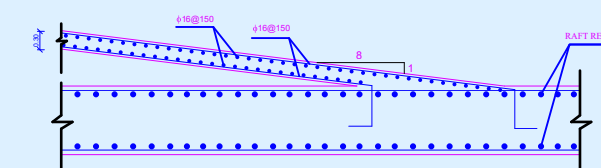
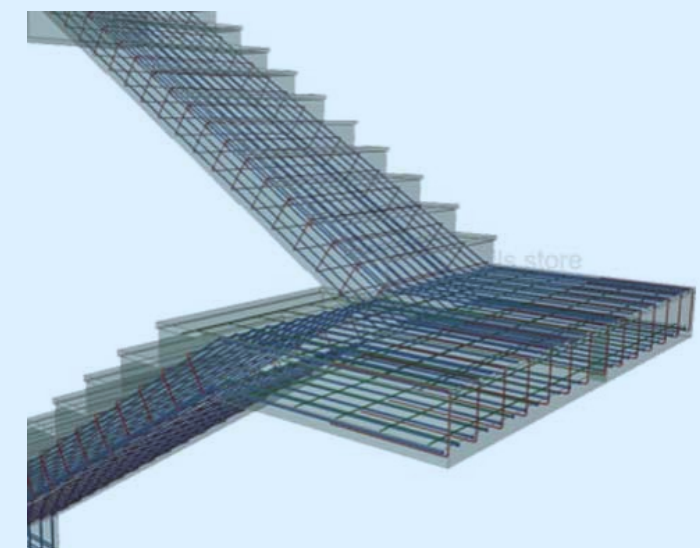
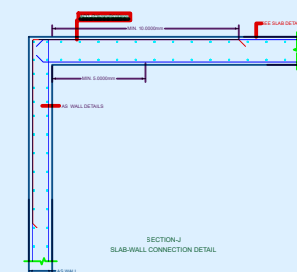
Section (A-A) W3



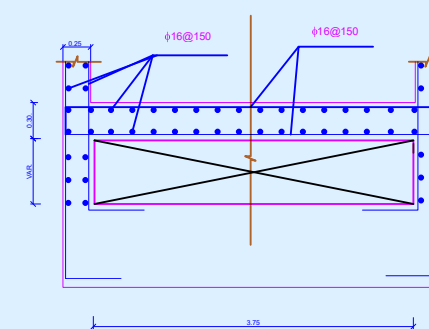
Section (B-B)



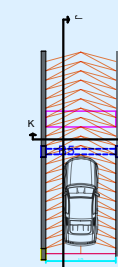
Section (D-D)



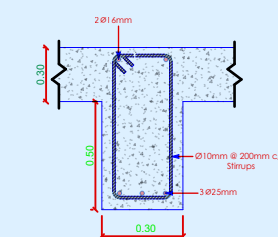
SEC. J-J



SEC. K-K



RAMP



## B5 Detail

## CONCRETE COVERS

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

no.	date	initials	revision
job title			
قاعة لابتدايية ل الاولاد			
drawing title			
Stairs detail			
designed ENG : DR-Majid Albana		project manager	
checked	scale 1-100	date 2/2024	
drawing	job no. 4	sheet no. ST/D/07	
approved			

## FOUNDATION DETAILS

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





## Notes

$$\begin{aligned}-F_{cu} &= 45 \text{ N/mm}^2 \\ -F_y &= 420 \text{ N/mm}^2.\end{aligned}$$

## 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			
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drawing title			
<div style="text-align: center;"> <p>COLUMNS &amp; WALL KEY PLAN</p> </div>			
designed	project manager		
ENGINEER - DR-Majid Albana			
checked	scale	date	
	1-100	2/20	
drawn	job no.	sheet no.	
	5		
approved			ST/

M

Eng MAJ D.A Albana

المصمم الاستشاري

د. ماجد البنا

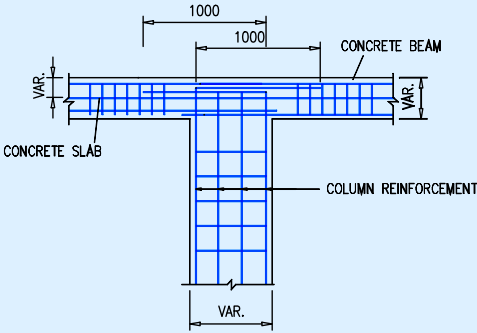
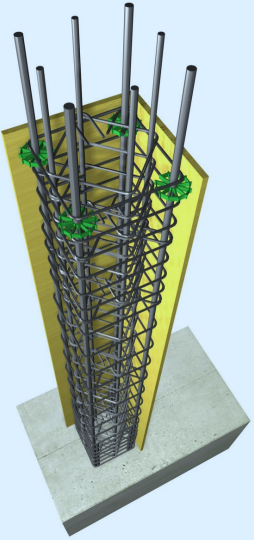
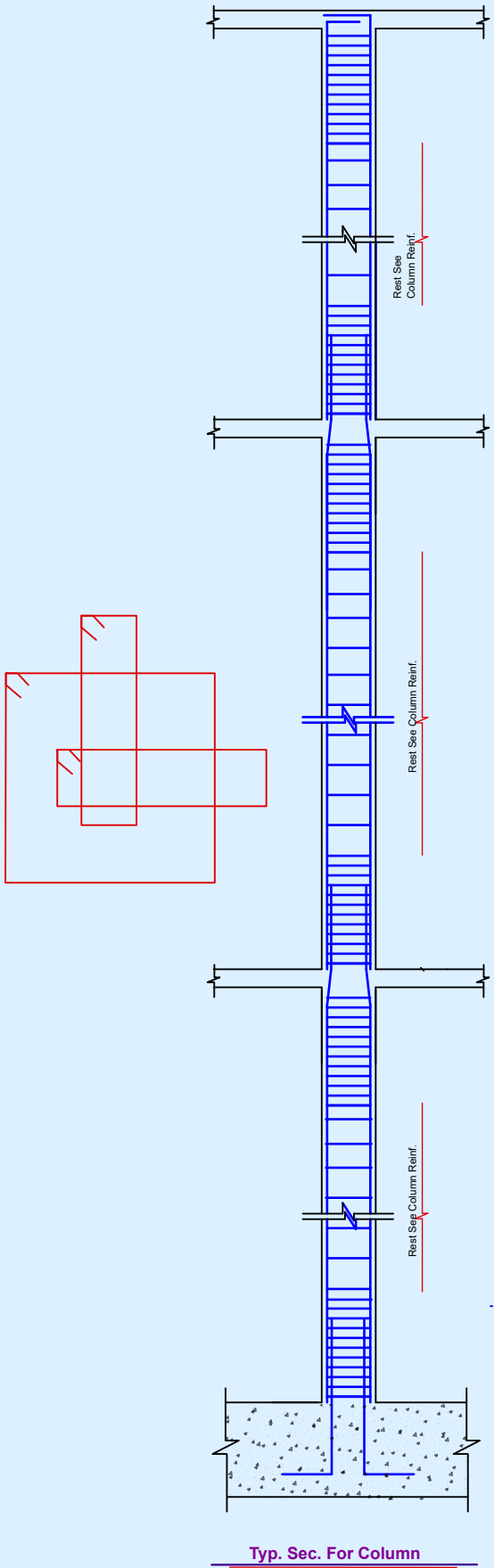
+964 770 272 4811

+964 782 595 3403

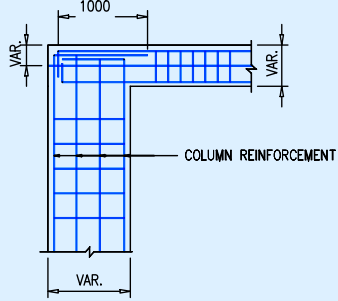
www.majdalbana.com

majdalbana@hotmail.com

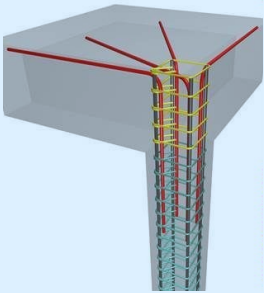
Main Bar			10 Ø20	12 Ø20	20 Ø25
Ties		fcu	Ø10@200 2Ties/Set	Ø10@300 3Ties/Set	Ø10@150 3Ties/Set
Section	Roof Floor	C 45			
Main Bar	1st Floor		10 Ø20	12 Ø20	20 Ø32
Ties			Ø10@200 2Ties/Set	Ø10@300 3Ties/Set	Ø10@150 3Ties/Set
Section	Ground Level foundation level	C 45			
Dowels			10 Ø20 C 2	12 Ø20 C 1	20 Ø32 C 3



TYPICAL INTERNAL COLUMN TO BEAM DETAIL



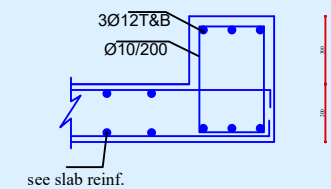
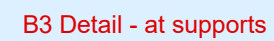
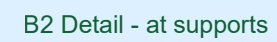
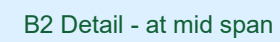
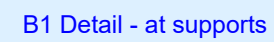
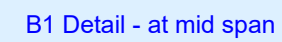
TYPICAL EDGE COLUMN TO BEAM DETAIL



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

no.	date	initials	revision
job title			
قاعة ابعدائىة للاولاد (A)			
drawing title			
SCHEDULE OF COLUMN			
designed	ENG : DR-Majid Albana	project manager	
checked		scale	1-100
drawn		date	3/2024
approved		job no.	6
		sheet no.	





sec. b-b



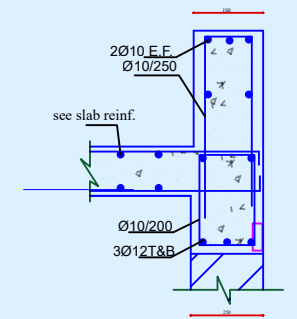
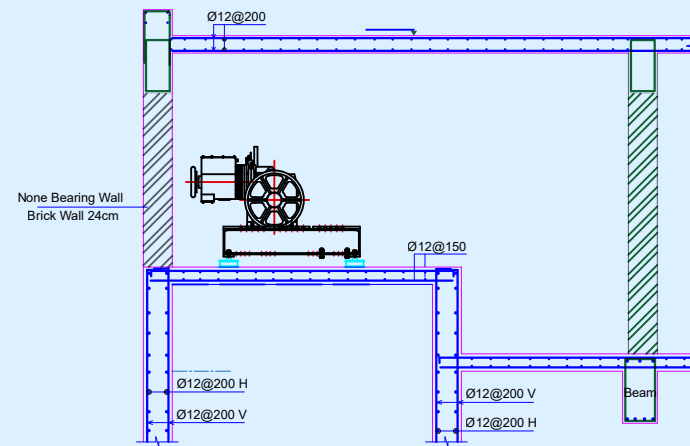
BAR DIA.(mm)	10	12	16	18	20	22	25
LAP LENGTH (mm) COLUMNS	400	500	600	650	700	800	900
LAP LENGTH (mm) SLAB & BEAMS	400	500	600	700	800	900	1000

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

no	date	initials	revision
job title			
قاعة لابتدايية للاولاد			
drawing title			
BEAM KEY PLAN			
designed ENG : DR-Majid Albana		project manager	
checked	scale 1-100	date	2/2024
drawn	job no. 7	sheet no.	
approved		ST/D/12	

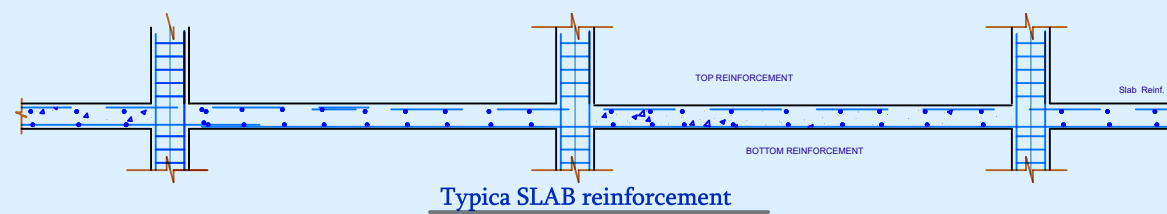






## PENT HOUSE

SLAB THICKNESS = 200 mm



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

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

25 mm  
Camber

slab camber 25 mm

no.	date	initials	revision
job title			
قاعةالابتدائىة للاولاد			
drawn title			
PLAN OF SLAB REINFORCEMENT&SEC.			
designed ENG - DR.Majid Albana		project manager	
checked	scale 1-100	date 2/2024	
drawn	job no. <b>9</b>	sheet no.	
approved		ST/D/12	