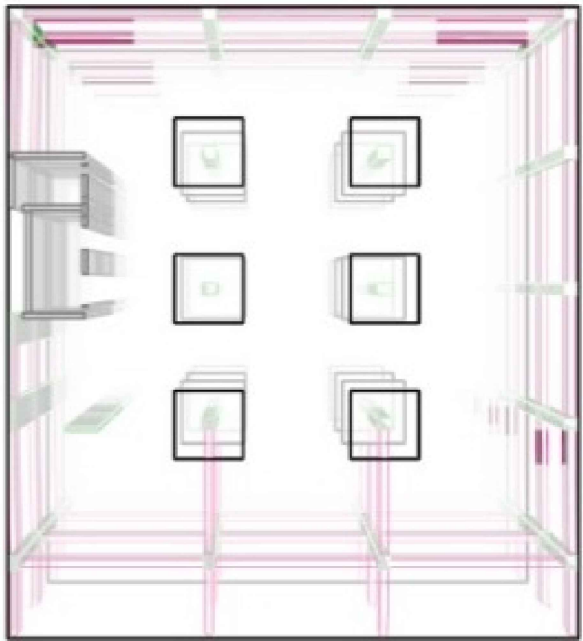
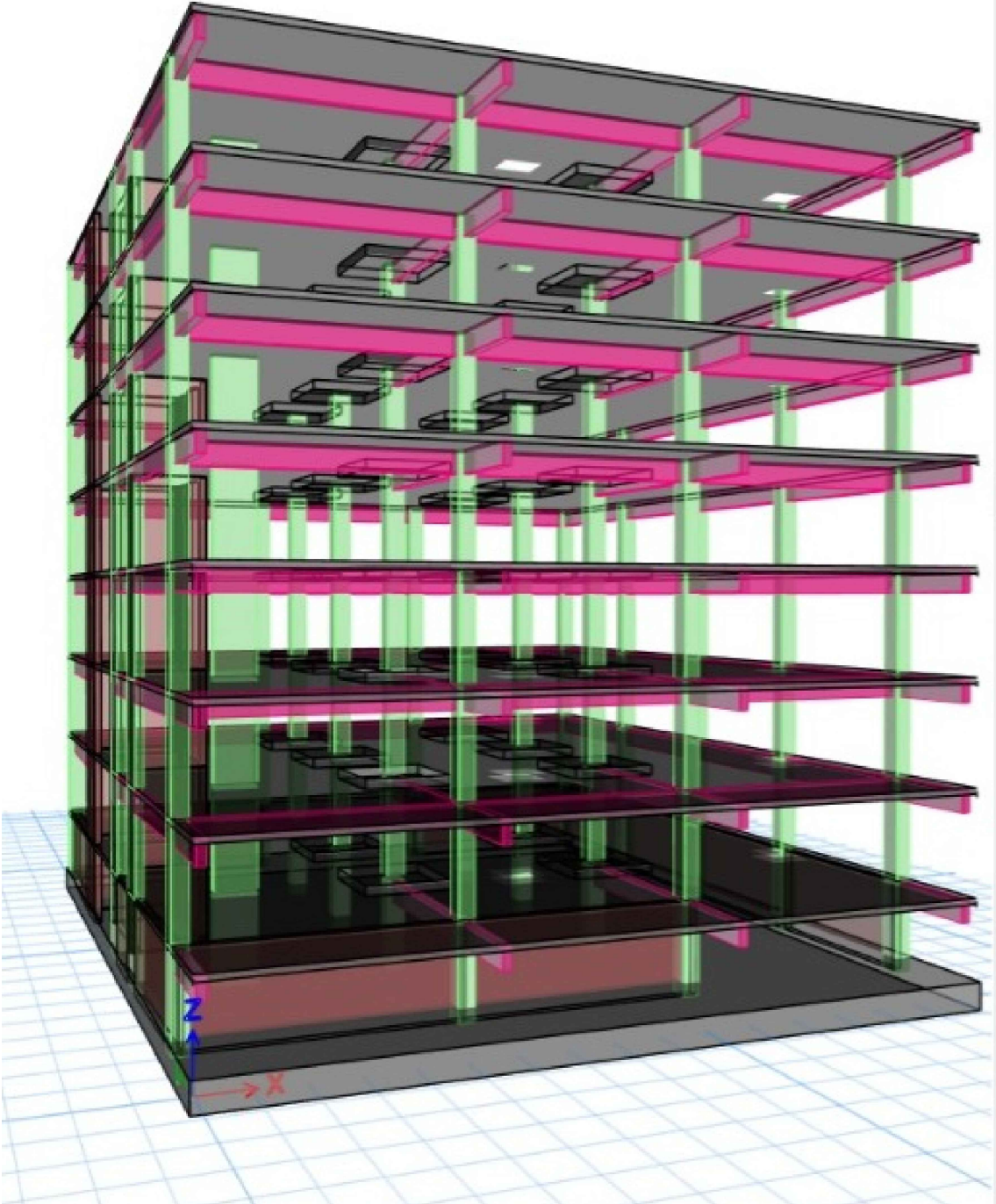
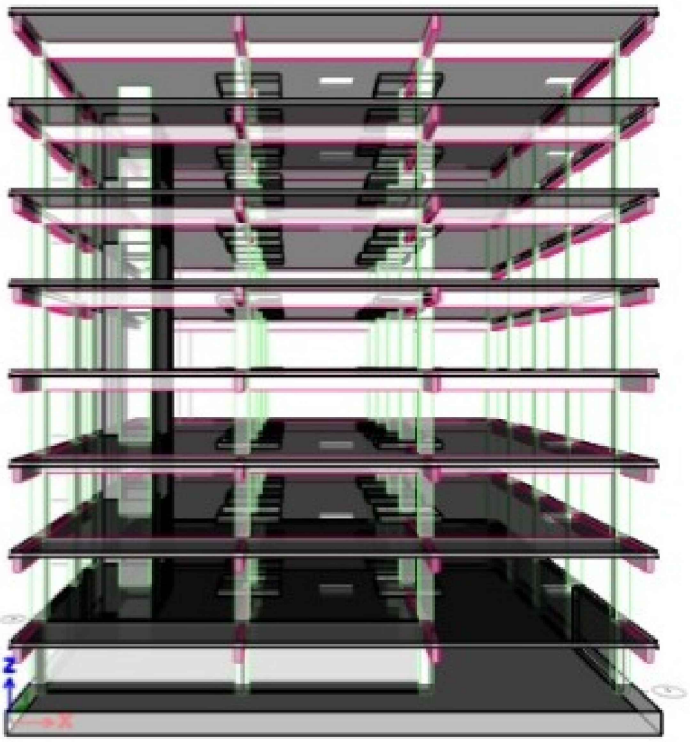


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3-D View



+964 770 272 4811
 +964 782 595 3403
 www.majidalbana.com
 majidalbana@hotmail.com

Notes

THE BUILDING SYSTEM WILL BE CONSIDER AS SHEAR WALL BUILDING WITH COLUMNS AND THE SLAB WILL BE AS FLAT SLAB WITH DROP PANEL & M. BEAMS. THE SOFTWARE USED IN DESIGN (CSI ETABS 2022, AND CSI SAFE 2022&PROKON) IS THE GENERAL PROGRAM USED IN THIS DESIGN

job title

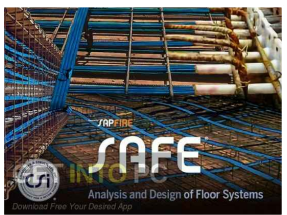
COMMERCIAL BUILDING

Structural Drawings

DRWG. TITLE:

DESIGNED BY **DR-Majid Albana**
 CHECKED BY _____
 SCALE As Shown

DATE **6/2025**
 SHEET NO. Str. **1**



EXCAVATION, BACK FILLING & FOUNDATION

- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO INVESTIGATE OR TO CHECK THE SOIL GEOTECHNICAL PROPERTIES BY HAVING SPECIALIST AND AFTER COMMENCING OF THE UNDERGROUND WORK.
- FOOTINGS FOR BUILDING SHALL BE FOUNDED ON UNDISTURBED SOIL.
RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE ELEVATION OF FOOTING TO OBTAIN SUCH BEARING PRESSURE. UNDER NO CONDITION FOOTINGS SHOULD BE PLACED ON LOOSE, SOFT OR UNDESIRABLE MATERIAL. IF SUCH MATERIALS ARE ENCOUNTERED, THEY SHOULD BE REMOVED UNTIL FIRM LAYERS ARE ENCOUNTERED AND REQUIRED BEARING PRESSURE IS OBTAINED.
- THE SITE SHOULD BE CLEARED OF ALL BOULDERS, DEBRIS, DECOMPOSABLE MATERIAL SUCH AS WOOD, GRASS, PLANTS, ...ETC. ALL EXISTING MISCELLANEOUS FILL SHOULD BE REMOVED FROM AREAS WHERE STRUCTURAL SUPPORT IS REQUIRED. ANY SOIL AT STRIPED LEVEL THAT SOFTENS DUE TO RAINFALL, GROUND WATER, DISTURBANCE OR ANY OTHER CAUSE SHOULD BE EXCAVATED AND REPLACED WITH CONTROLLED FIBOTOM OF EXCAVATIONS SHOULD BE SMOOTH AND FREE OF LOOSE EARTH OR SAND. ANY LOOSE OR SOFT AREAS SHOULD BE COMPACTED TO THE REQUIRED DENSITY.
- IF DURING CONSTRUCTION ANY SIGNIFICANT VARIATIONS FROM WHAT IS REPORTED IN THE GEOTECHNICAL SOIL REPORT, THE ENGINEERS SHOULD BE NOTIFIED TO VISIT THE SITE AND ASSESS THE SITUATION.
- PRIOR TO PLACEMENT OF BLINDING CONCRETE FOR FOUNDATIONS, WHEREVER POSSIBLE, BOTTOM OF EXCAVATIONS SHALL BE COMPACTED BY HEAVY VIBRATORY ROLLER TO 95% MIN. OF MODIFIED PROCTER DENSITY FOR COHESIVE AND WELL GRADED SOILS. 100 MM BLINDING CONCRETE THICK E. BE POURED UNDER THE RAFT FOOTINGS.
- PROVIDE A POLYETHYLENE FILM (0.2MM) BELOW ALL GROUND LEVEL SLABS. FILM TO BE FIRMLY ANCHORED TO GROUND AND ADEQUATELY LAPPED.
- BEFORE ANY BACKFILLING, ALL FORMS SHOULD BE REMOVED BUT IN NO CASE LESS THAN 24HOURS AFTER PLACING CONCRETE. ALL DEBRIS SHOULD BE CLEANED OUT.
- USE WELL GRADED, NON COHESIVE SOILS FOR BACKFILLING. BACKFILL MATERIALS SHOULD NOT CONTAIN ANY ROOTS, CONSTRUCTION DEBRIS, DELETERIOUS MATERIALS, ORGANIC MATTERS, COBBLES OR BOULDERS(SIZE>80MM). THE FINES PERCENTAGE SHOULD NOT EXCEED 15% AND THE SOIL SHOULD BE NON PLASTIC.
- IT IS EXPECTED THAT THE LAND WILL BE GRADED AND LEVELED TO THE FINAL FINISHED GRADE.
- CLEAN SAND, FREE OF SALTS AND ORGANIC MATERIALS, AND WITH LESS THAN 10% PASSING THE NO. 200 SIEVE, IS CONSIDERED SUITABLE MATERIAL. BACKFILL MATERIALS SHOULD BE PLACED IN LOOSE LIFTS HAVING THICKNESS OF NOT MORE THAN 25 cm COMPACTED TO THE REQUIRED DENSITY, USE VIBRATORY ROLLER FOR COMPACTING GRANULAR SOILS.
TO AVOID STRESSING THE DUCT.
ALL STRUCTURAL FILL MATERIAL SHALL BE COMPACTED TO A DRY DENSITY OF AT LEAST 95% OF THE MAXIMUM DRY DENSITY OBTAINED BY THE MODIFIED PROCTOR TEST, USE NUCLEAR DENSITY GAUGES AS PER ASTM D-2922 TO MONITOR COMPACTION WORKS. NO BACKFILLING SHALL BE PERFORMED BEFORE CASTING OF THE SLABS THAT SUPPORT THE RETAINING WALLS.
- FOR WALLS HAVING FILL ON BOTH SIDES, BACK FILLING OPERATION SHALL PROCEED SIMULTANEOUSLY IN EQUAL LIFTS. DIFFERENTIAL ELEVATION OF TOP OF LIFTS BETWEEN EACH SIDE SHALL NOT EXCEED 50 cm.
- ALL CONNECTIONS OF PIPING BETWEEN THE STRUCTURES AND THE EXTERIOR BE DELAYED TO A LATER STAGE OF CONSTRUCTION AFTER WHICH MOST OF THE SETTLEMENT WOULD HAVE TAKEN PLACE, UNLESS FLEXIBLE SLEEVES ARE USED.
- ALL SERVICE LINES SHALL BE LAID OUT IN A CLEAN SAND BED COMPACTED TO THE REQUIRED DENSITY.
- UTILITY TRENCHING SHALL BE SUCH THAT DUCT RUNS CAN BE MADE AS STRAIGHT AS POSSIBLE, BOTH HORIZONTALLY AND VERTICALLY, AND IF A DEFLECTION MUST BE MADE IN A DUCT LINE, THE DEFLECTIONS SHOULD BE ALONG A SMOOTH AND GRADUAL CURVE

6) CONSTRUCTION JOINTS AND CONTROL JOINTS:

- CONSTRUCTION JOINTS IN FLOOR SHALL BE LOCATED WITHIN THE MIDDLE THIRD OF SPANS OF SLABS, BEAMS AND GIRDERS, U.N.O. ON DWGS.
- BEAMS, GIRDERS AND HAUNCHES SHALL BE PLACED MONOLITHICALLY AS PART OF A SLAB SYSTEM, UNLESS OTHERWISE SHOWN IN DESIGN DRAWINGS OR SPECIFICATIONS.
- CONTROL JOINTS IN SLAB ON GRADE SHALL BE SPACED AT 6.00 METERS (MAX.) INTERVAL ON BOTH DIRECTIONS. THE RESULTING PANEL SHOULD BE APPROXIMATELY SQUARE. A CHECKERED BOARD PATTERN.
- IN WALLS HAVING FREQUENT OPENINGS, SPACING OF CONTROL JOINTS 6.00 METERS APART IS CONSIDERED MAXIMUM. THE SPACING IN WALLS WITHOUT WINDOWS SHOULD NOT BE MORE THAN 7.50 METERS AND A JOINT WITHIN 3.00 METERS OF EACH CORNER IS DESIRABLE.
- VERTICAL CONSTRUCTION JOINT SPACING IN WALLS SHALL NOT BE MORE THAN 12.00 METERS AND LOCATED WITHIN THE MIDDLE THIRD OF THE SPAN BETWEEN COLUMNS.

THE DESIGN LOADS

1) SUPER IMPOSED DEAD LOAD (SDL) :

FLOOR SCREED	0.80	KN/m ²
TILES	0.20	KN/m ²
False Ceiling & MECHANICAL DIVISIONS	0.50	KN/m ²
EXTERNAL & INTERNAL PARTITION WALL Bricks	2.5	KN/m ²
TOTAL -----	4.00	KN/m ²

2) LIVE LOADS:

RESIDENTIAL AREAS	3.0	KN/m ²
STAIRCASE	4.0	KN/m ²

3) WIND LOADS:

The main wind force resisting system (MWFRS) and all components and cladding (C&C) are determined in accordance to the ASCE (2016).

All other parameters related to wind load are estimated according to (UnifiedFacilities Criteria (UFC) 2013).

Based on aforementioned codes and standards, wind parameters for Baghdad city

Table 1.1: Wind Parameters for Baghdad that are Adopted in the Analysis.

Table 1.1

Wind Parameter	NOTATION	NOTATION	Reference
Basic Wind Speed	V	161 km/h	ASCE (2016), (Unified Facilities Criteria (UFC) 2013)
Exposure Category	B		ASCE (2016)
Topographic Factor	Kzt	1	ASCE (2016)
Gust-Effect Factor	G	0.85	ASCE (2016)
Directionality Factor	Kd	0.85	ASCE (2016)

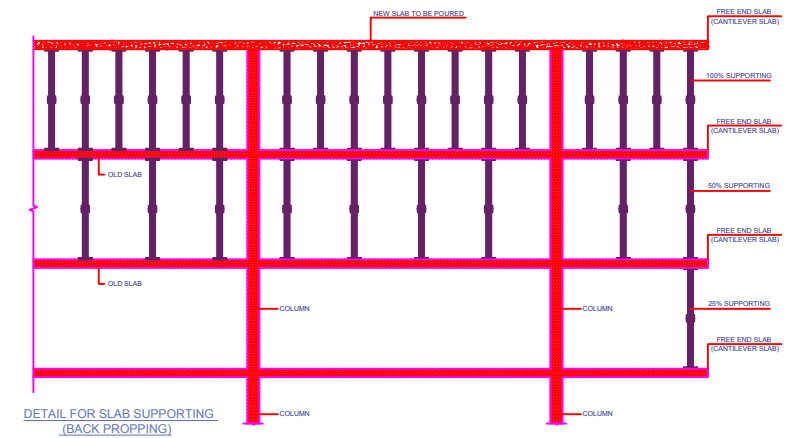
4) SEISMIC LOADS:

Seismic Design Categories (SDCs) are adopted from ASCE (2016). All other parameters related to seismic zone are estimated according to (Iraqi seismic code (2017)).

Table 1.2: Seismic Parameters for Baghdad that are Adopted in the Analysis.

Table 1.2

seismic Parameter	NOTATION	NOTATION	Reference
Seismic Design Category	D		ASCE (2016), the soil type has been Assumed
Response Modification Coefficient	R	5	ASCE (2016)
Topographic Factor	Kzt	1	ASCE (2016)
Overstrength Factor	Ω_o	2.5	ASCE (2016)
Importance Factor	I	1	ASCE (2016)
Mapped Maximum Considered Earthquake (MCER), 5% damped, spectral response acceleration parameter at short periods	Ss	0.30	Iraqi seismic code 2017
Maximum Considered Earthquake (MCER), 5% damped, spectral response acceleration parameter at a period of 1 s	S1	0.10	Iraqi seismic code 2017
Seismic coefficient	Ca	0.12	Soil investigation report
Seismic coefficient	Cv	0.18	Soil investigation report
Undrained shear strength kN/m2	Vs	53.70	Soil investigation report
Soil type"stiff soil"	SD		Soil investigation report



GENERAL NOTES:

Frameworks removal time :

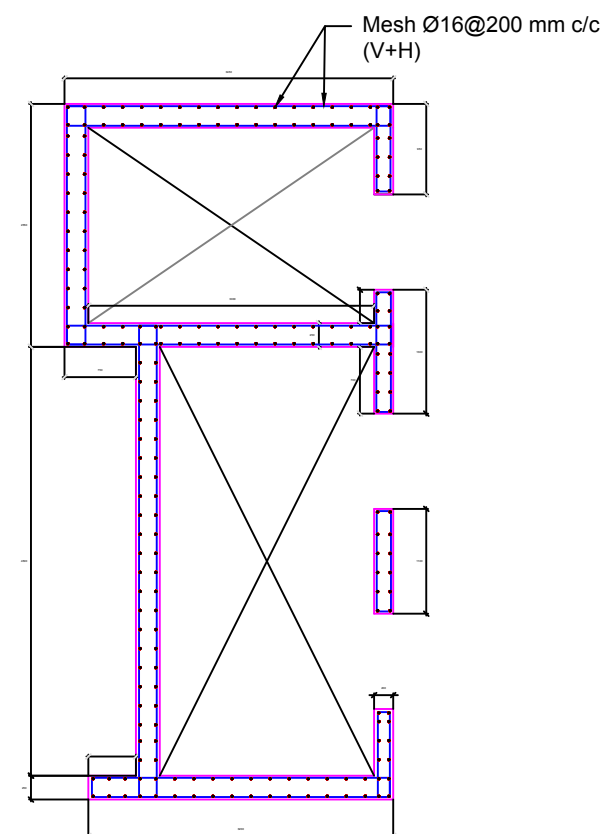
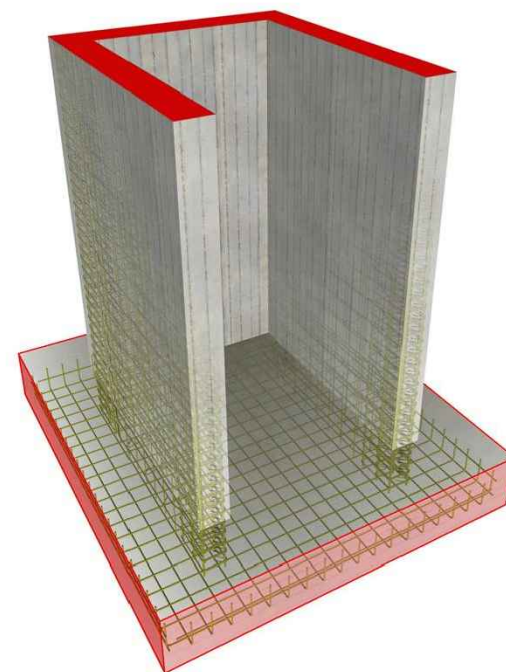
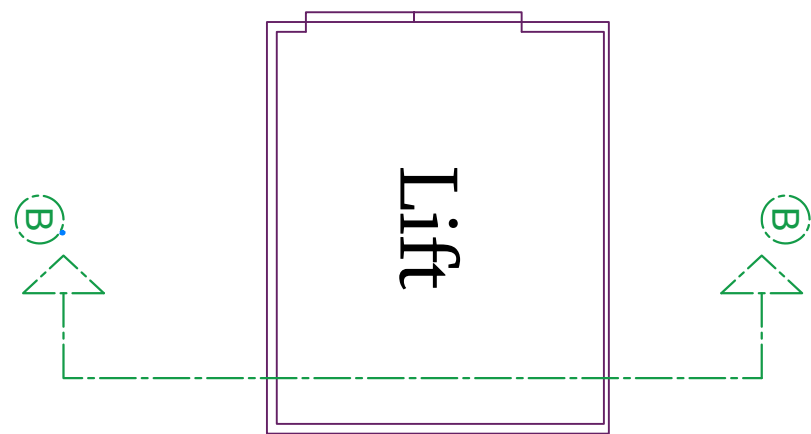
Type of framework	Min. period before striking formworks
Vertical framework of the column	24 hrs
Vertical framework of the shear walls	2-3 days
framework of the slab and beam a. span up to 6 m a. span from 6-8 m	14 days 20 days

- * Seismic Load assumed also According to the Iraqi Code 2016.
- * Load Pattern assumed for Seismic (EX,-EX,+EX,EY,-EY,+EY)
- * SS=0.30
- * S1=0.1
- * Soil Profile Type =E
- * Occupancy Importance =1
- * Response Modification R =5.00
- * System Overstrength Omega =2.50
- * Deflection Amplification Cd=4.5
- * Soil Profile Type =E

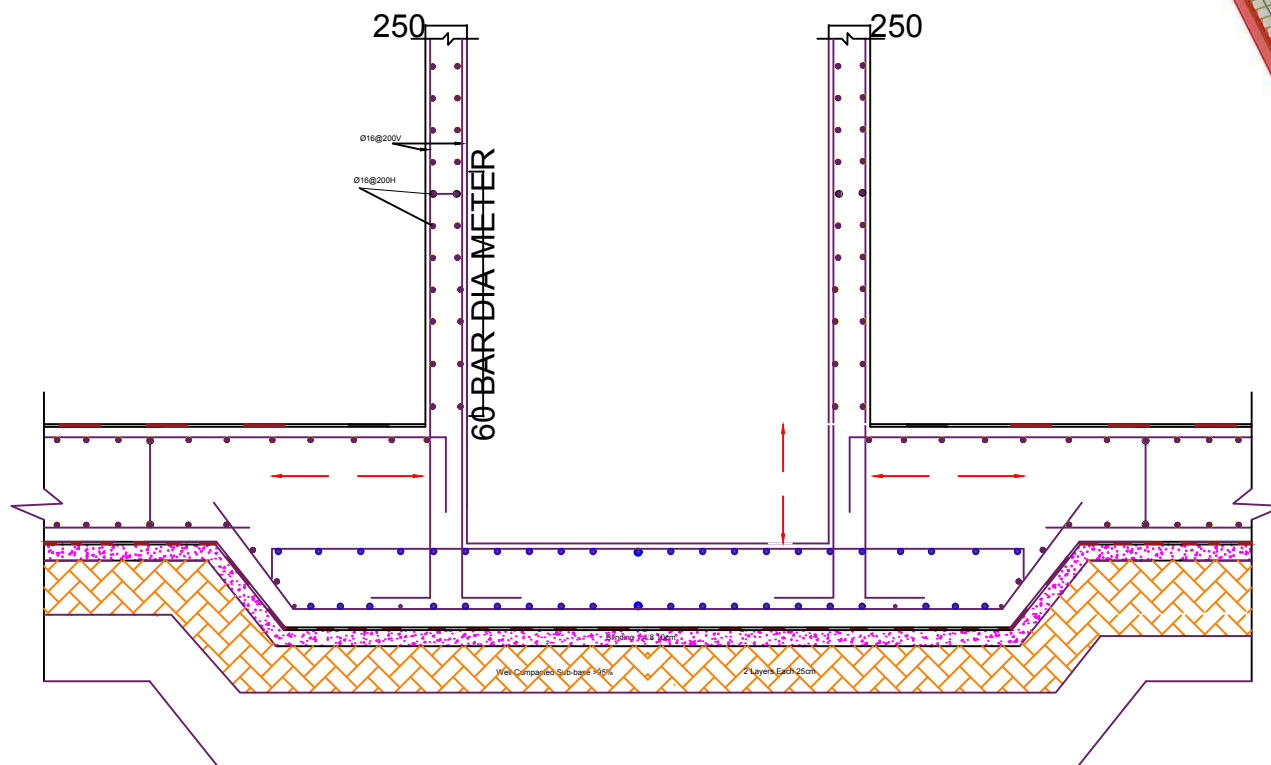
drawing title

THE DESIGN LOADS

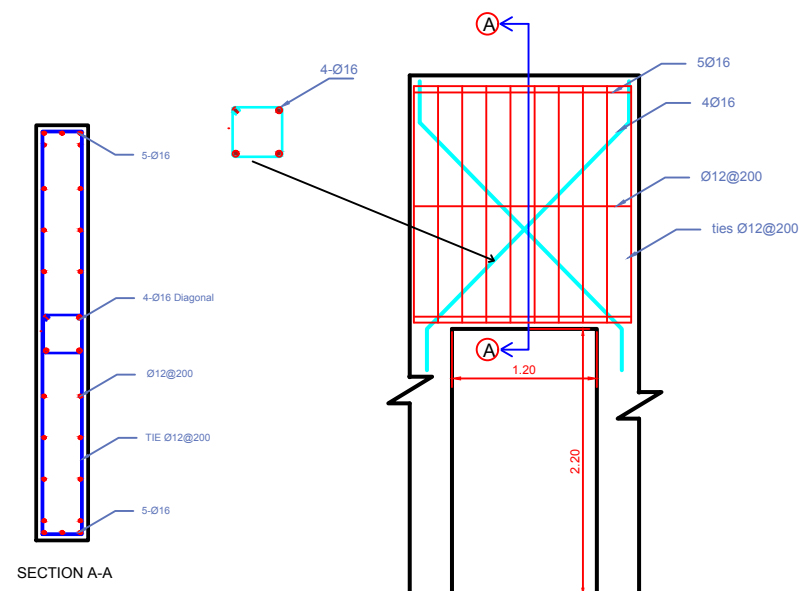
designed ENG :DR- Majid Albana	project manager	
checked	scale 1-100	date 6/2025
drawn	job no. 3	sheet no. ST/D/03
approved		



Shear wall details



Section B'-B'

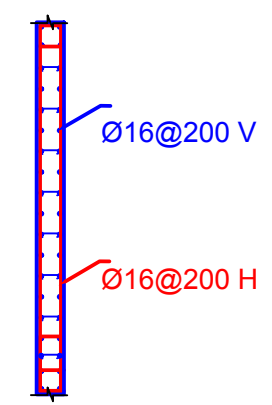


SECTION A-A

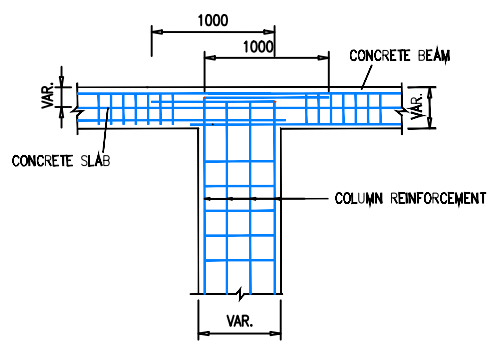
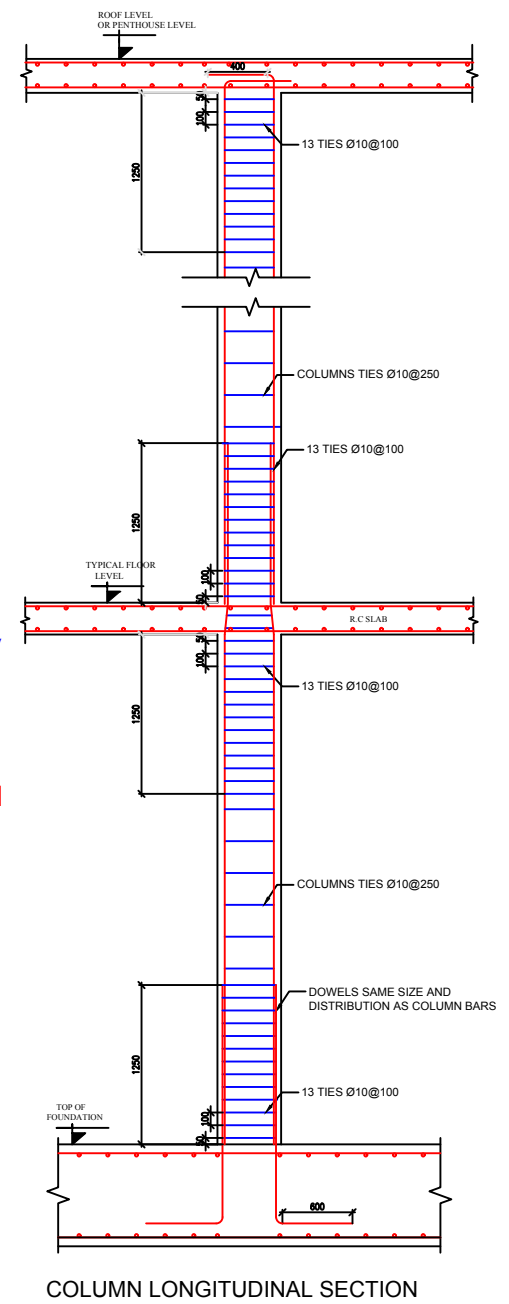
1 F4/ SPANDREL BEAM DETAILS

no.	date	initials	revision
job title			
(A)			
drawing title			
Section A'-A' lift detail			
designed	ENG : Majid Albana	project manager	
checked	ENG : Majid Albana	scale	1-100
drawn	ENG : Majid Albana	date	8 / 2025
approved		job no.	
		sheet no.	5
			ST/D/06

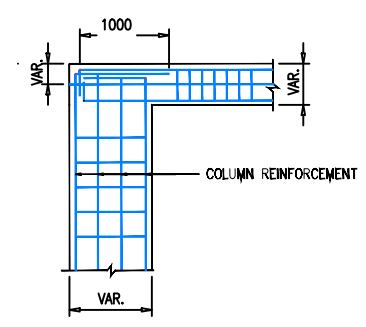
Main Bar			22- Ø20	20- Ø20	12- Ø20	18- Ø20
Ties			Ø10@250 3Ties/Set	Ø10@250 3Ties/Set	Ø10@250 3Ties/Set	Ø10@250 3Ties/Set
Section	Roof Floor	C 40				
	4rth Floor					
Main Bar	3 rd Floor		22- Ø20	20- Ø25	12- Ø25	18- Ø20
Ties			Ø10@250 3Ties/Set	Ø10@250 3Ties/Set	Ø10@250 3Ties/Set	Ø10@250 3Ties/Set
Section	Ground Level foundation level	C 40				
Dowels			22 - Ø20 C 1	20- Ø25 C 2	12- Ø25 C 3	18- Ø20 C 3



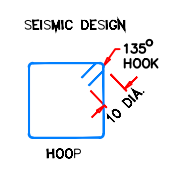
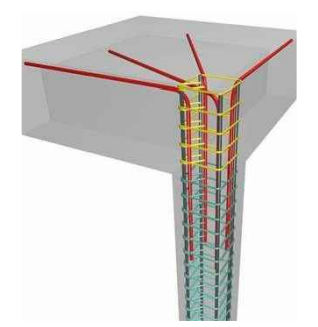
W2



TYPICAL INTERNAL COLUMN TO BEAM DETAIL

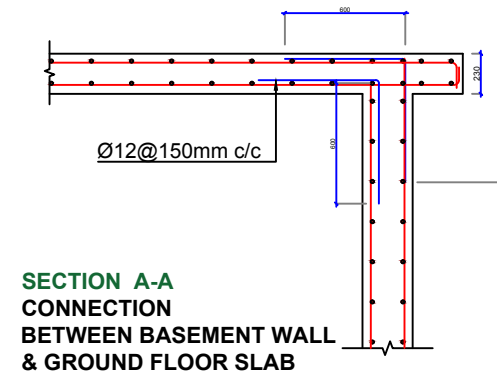
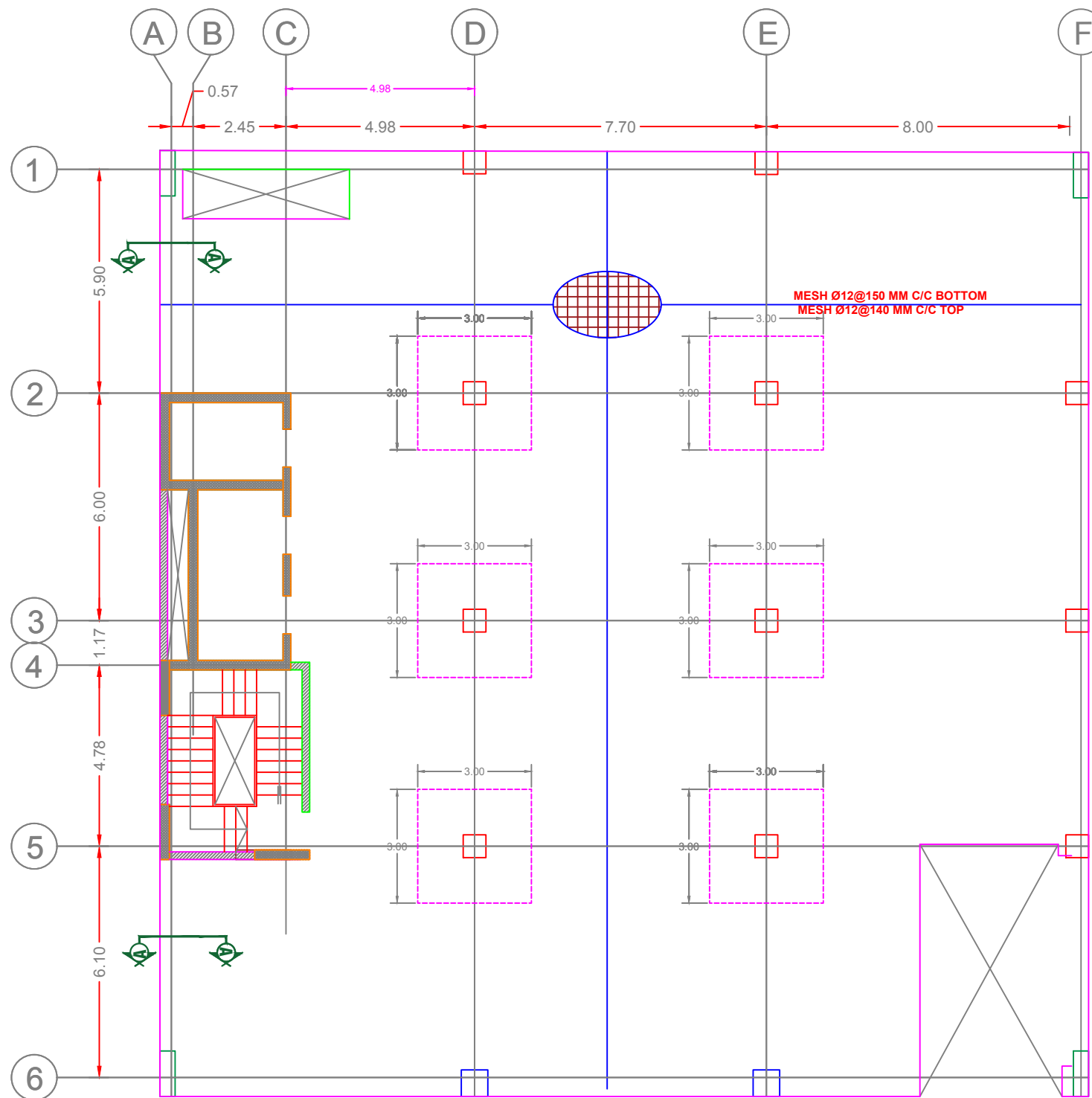


TYPICAL EDGE COLUMN TO BEAM DETAIL

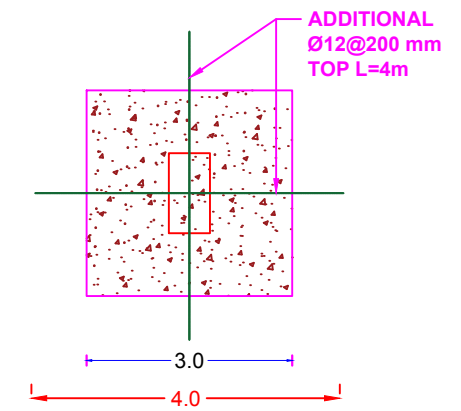


SCHEDULE OF COLUMN			
ENG : DR-Majid Albana	project manager	scale:	date:
drawn	1-100	job no.:	8 / 2025
approved	9	sheet no.:	

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

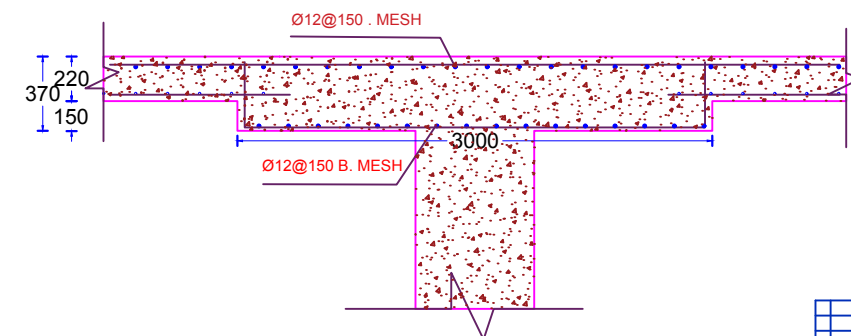


SECTION A-A
CONNECTION
BETWEEN BASEMENT WALL
& GROUND FLOOR SLAB



FOR ALL DROP PANLE

25 mm
Camber
slab camber 25 mm



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

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

SLAB REINFORCEMENT (BASEMENT FLOOR)

SLAB THICKNESS = 220 mm

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

No.	Date	Initials	Revision

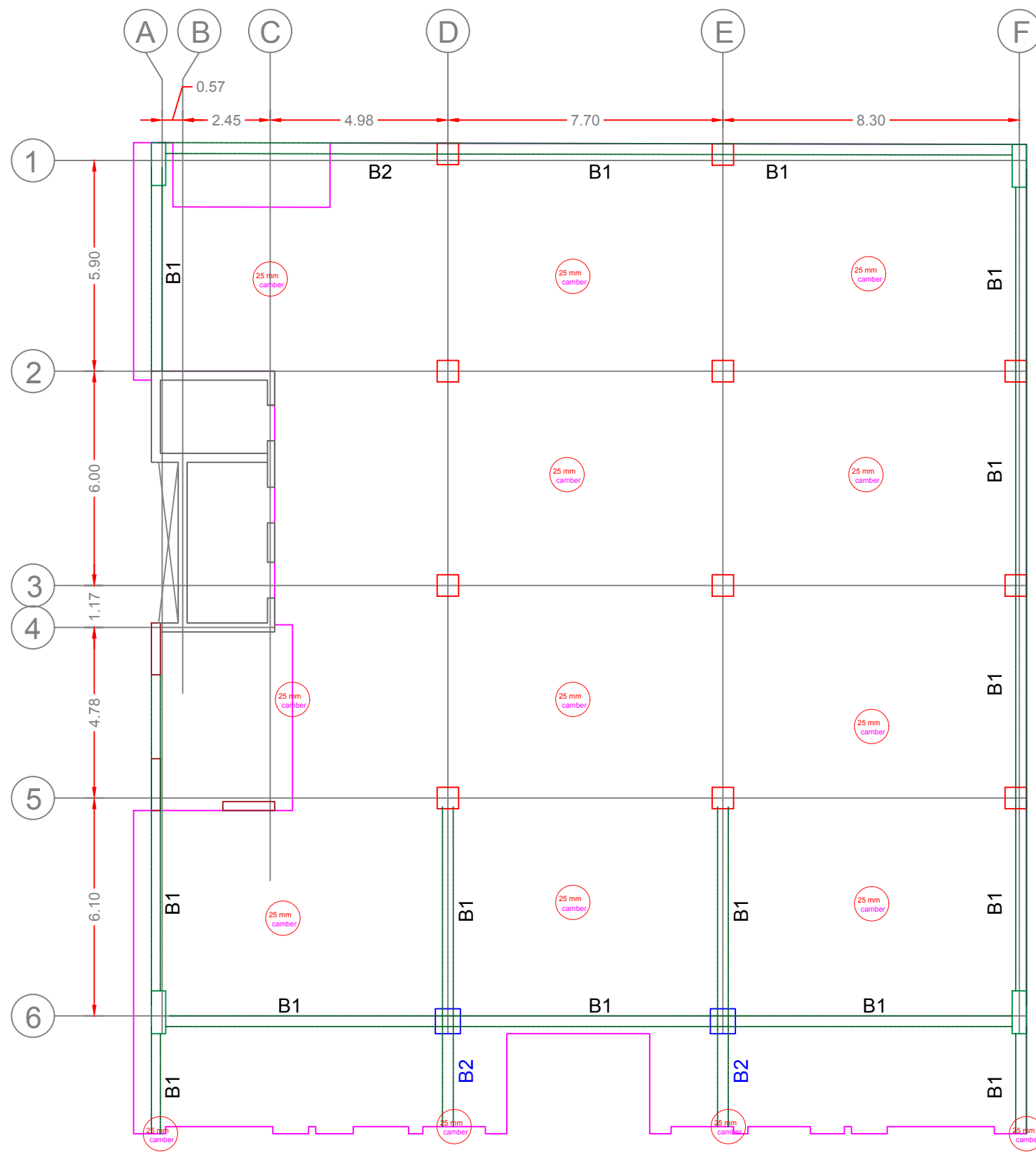
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(A)

drawing title
PLAN OF SLAB
REINFORCEMENT&SEC.

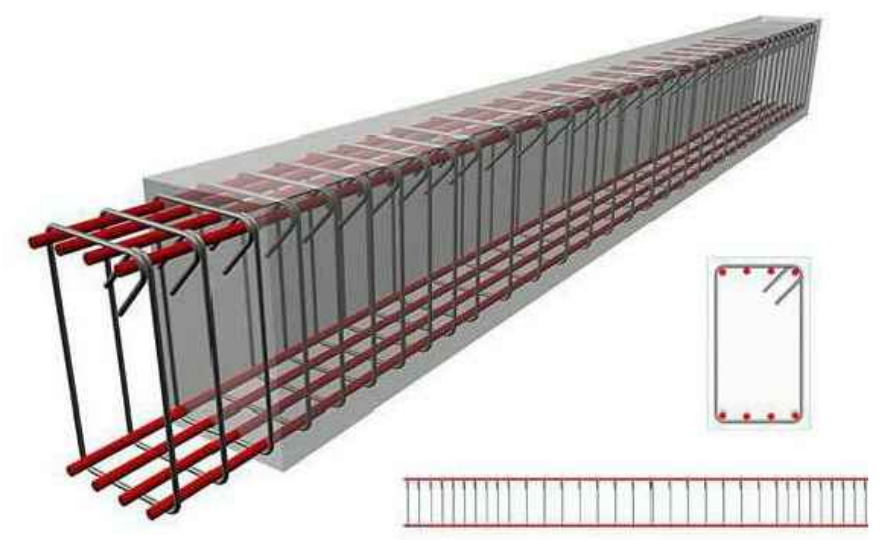
designed ENG - DR-Majid Albana	project manager
checked	scale: 1-100 date: 8/2025
drawn	job no. 11 sheet no.
approved	ST/D/08

Eng MAJ D A bana
 المصمم الاستشاري
 د. ماجد البنا

+964 770 272 4811
 +964 782 595 3403
 www.majdalbana.com
 majdalbana@hotmail.com



BEAM KEY PLAN



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

job title	
(A)	
drawing title	
BEAM KEY PLAN	
designed	project manager
ENG - DR-Majid Albana	
checked	scale: 1-100 date: 6/2025
drawn	job no. 11
approved	sheet no. ST/D/08

