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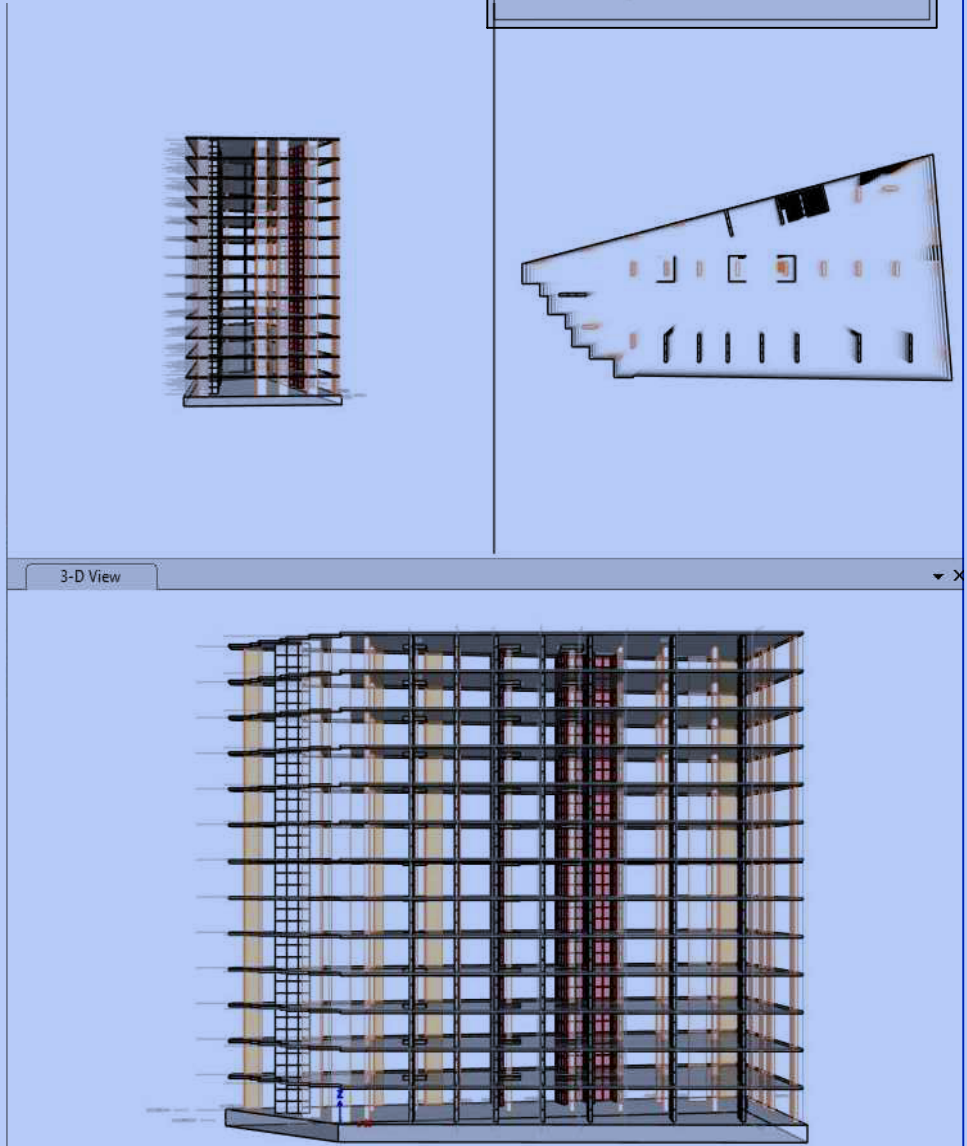
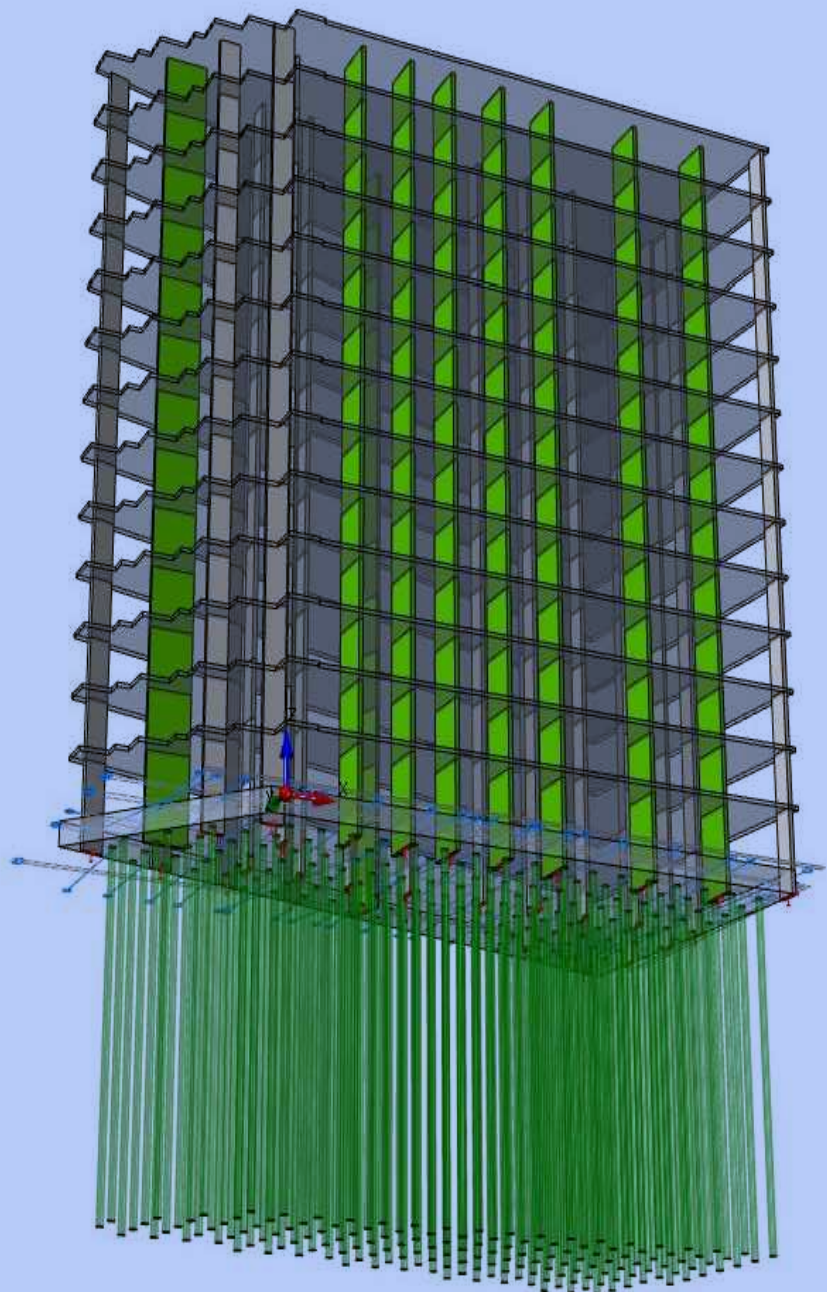
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Notes

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

job title

RESIDENTIAL BUILDING

Structural Drawings

DRWG. TITLE:

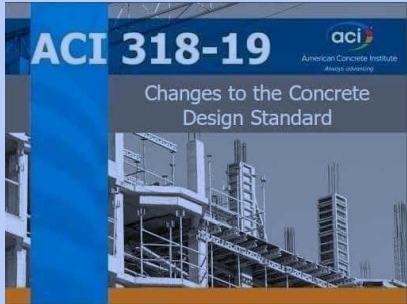
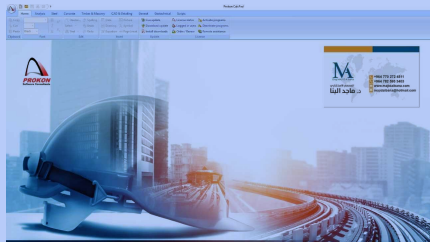
DESIGNED BY **DR-Majid Albana**

CHECKED BY

SCALE As Shown

DATE 6 /2023

SHEET NO. Str. 1



A. GENERAL

- A1. ALL STRUCTURAL DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE RELEVANT CIVIL, INFRASTRUCTURE, ARCHITECTURAL, MECHANICAL, ELECTRICAL DESIGN DRAWINGS, BOQ AND SPECIFICATIONS. IF ANY DISCREPANCY IS FOUND, THE CONTRACTOR SHALL CONTACT THE ENGINEER IMMEDIATELY BEFORE PROCEEDING WITH THE PORTION OF WORK INVOLVED.
- A2. FOR MAIN SETTING LINES AND LEVELS, REFER TO THE ARCHITECTURAL DRAWINGS. ALL DIMENSIONS MUST BE VERIFIED ON SITE AND ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER FOR CLARIFICATION.
- A3. ALL DIMENSIONS ARE IN MILLIMETER, UNLESS OTHERWISE NOTED, AND ALL LEVELS ARE IN METERS. DO NOT SCALE DRAWINGS READ WRITTEN DIMENSIONS ONLY.
- A4. ALL SECTIONS SHALL BE COORDINATED WITH ARCHITECTURAL (AND OTHER TRADES) DRAWINGS BEFORE ERECTION OF FORMWORK. ANY DISCREPANCY SHALL BE BROUGHT TO THE NOTICE OF THE ENGINEER FOR CLARIFICATION.
- A5. CONSTRUCTION LOADS SHALL NOT EXCEED THE (SIDL+1) KN PER SQUARE METER, PROVIDE ADEQUATE SHORING AND/OR BRACING WHERE STRUCTURE HAS NOT ATTAINED THE FULL DESIGN STRENGTH.
- A6. REFER TO ARCHITECTURAL (AND OTHER TRADES) DRAWINGS FOR OPENINGS AND SLEEVES IN CONCRETE SLABS NOT SHOWN ON STRUCTURAL DRAWINGS, AND FOR SIZE AND LOCATION OF OPENINGS NOT DIMENSIONED. NO BREAKAGE IS ALLOWED IN CONCRETE AFTER CASTING.
- A7. REFER TO ARCHITECTURAL (AND OTHER TRADE DRAWINGS) FOR POSITIONS AND DIMENSIONS OF OPENINGS IN REINFORCED CONCRETE WALLS AND COORDINATE WITH THOSE SHOWN ON STRUCTURAL DRAWINGS.
- A8. NO OPENINGS OR SLEEVES SHALL BE PLACED IN BEAMS OR COLUMNS EXCEPT AS INDICATED ON STRUCTURAL DRAWINGS AND AS APPROVED.
- A9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER SETTING OUT OF THE WORKS, FOR CORRECTNESS OF LINE AND LEVEL AND FOR QUALITY CONTROL OF THE MATERIALS. THE APPROVALS OF THE ENGINEER SHALL NOT IN ANY WAY RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY AND ANY ERRORS SHALL BE RECTIFIED BY THE CONTRACTOR TO THE APPROVAL OF THE ENGINEER.

B. DESIGN CRITERIA

B1. CODES AND STANDARDS

- REINFORCED CONCRETE: BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, ACI 318M-19
- SEISMIC LOAD DESIGN: INTERNATIONAL BUILDING CODE (IBC 2009) IRAQI SEISMIC CODE
- WIND LOAD DESIGN: AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE 7-16)

B2. DESIGN LOADS

B2.1 LIVE LOADS

STRUCTURAL MEMBERS ARE DESIGNED TO RESIST THE TOTAL DEAD LOADS ACTING ON THEM PLUS THE FOLLOWING LIVE LOADS:

BED ROOMS	2.0 kPa
PARKING	5.0 kPa
RAMPS	5.0 kPa
ASSEMBLY AREAS	5.0 kPa
STORAGE	5.0 kPa
LOBBY	5.0 kPa
STAIRS	5.0 kPa

B2.2 SEISMIC LOADS

MAXIMUM CONSIDERED EARTHQUAKE MOTION OF 0.2 SEC (S _e)	0.30
MAXIMUM CONSIDERED EARTHQUAKE MOTION OF 1.0 SEC (S ₁)	0.10
STRUCTURAL SYSTEM FACTOR	5.00
IMPORTANCE FACTOR	1
SOIL PROFILE	S _D
S _{D5}	0.12
S _{D1}	0.16
SEISMIC DESIGN CATEGORY	C

B2.3 WIND LOADS

BASIC WIND SPEED	100 MPH
EXPOSURE	C

C. REINFORCED CONCRETE CONSTRUCTION

C1. CONCRETE

C1.1 CONCRETE GRADE AND CHARACTERISTICS

COMPRESSIVE STRENGTH OF CONCRETE, F_{cu}, AS DEFINED BY ASTANDARD 150mm CUBE AT 28 DAYS SHALL BE AS FOLLOWS:

CONCRETE IN CONTACT WITH SOIL :	
PILE RAFT AND RETAINING WALLS	45 MPa
PILES	35 MPa
BLINDING	20 MPa

C1.2 CONCRETE FROM BASEMENT FLOOR TO FIFTH FLOOR (EXCEPT THIRD FLOOR) :

COLUMNS AND WALLS	45 MPa
SUSPENDED BEAMS & SLABS	35 MPa

C1.3 CONCRETE FOR THIRD FLOOR ONLY :

COLUMNS AND WALLS	50 MPa
SUSPENDED BEAMS & SLABS	40 MPa

C1.4 CONCRETE FROM SIXTH FLOOR TO ROOF FLOOR :

COLUMNS AND WALLS	40 MPa
SUSPENDED BEAMS & SLABS	40 MPa

GENERAL REQUIREMENTS OF CONCRETE

NO	TESTS	TEST METHOD	SPECIFICATION LIMIT
1.	TEMPERATURE (AT PLACEMENT)	ASTM 1064	32 C° MAX.
2.	SLUMP IN mm (AT PLACEMENT)	BS 1881; pat 102	150 ± 25 mm OR AS ADVISED BY THE SUPPLIER
3.	WATER PERMEABILITY	DIN 1048	8mm MAX.

C1.2 CONCRETE ADDITIVES

- ALL CONCRETE SHALL CONTAIN AN APPROVED WATER REDUCING, PLASTICIZING ADMIXTURE. HIGH-RANGE, WATER REDUCING ADMIXTURES MAY BE UTILIZED. ALL CONCRETE PERMANENTLY EXPOSED TO THE WEATHER SHALL ALSO CONTAIN AN APPROVED AIR-ENTRAINING ADMIXTURE.
- CONCRETE ADDITIVES USED TO IMPROVE CONSISTENCY, WORKABILITY, QUALITY AND STRENGTH OF CONCRETE SHALL BE APPROVED BY THE ENGINEER.

C1.3 CONCRETE PROPERTIES

CONCRETE	CEMENT TYPE	MAX. AGGREGATE SIZE (mm)	MIN. CEMENT CONTENT (kg/m ³)	MAX. W/C RATIO	CURER	28 DAYS STRENGTH (MPa)
SUPER STRUCTURE	OPC*	20	400*	0.45*	---	---
(SUB STRUCTURE)	OPC*	20	400*	0.45*	---	---
BLINDING	OPC*	20	250*	0.6*	---	---

* TO BE CONFIRMED BY SOIL SPECIALIST.

C2. CONCRETE REINFORCEMENT

C2.1 GENERAL

- REINFORCEMENT SHALL BE HIGH YIELD (YIELD STRESS = 460MPa) MARKED 'T'. THE CONTRACTOR SHALL PROVIDE DETAILED DRAWINGS AND SCHEDULES OF THE REINFORCEMENT REINFORCEMENT FOR THE ENGINEER'S APPROVAL, IN ACCORDANCE
- REINFORCEMENT SHALL CONFORM TO ASTM A615 STANDARDS.
- REINFORCEMENT DETAILS SHOWN ON DRAWINGS ARE INDICATIVE FOR THE PREPARATION OF THE CONTRACTORS WORKING DRAWINGS. THE CONTRACTOR SHALL PROVIDE DETAILED SHOP DRAWINGS AND SCHEDULES OF THE REINFORCEMENT FOR THE ENGINEER'S APPROVAL IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
- WHERE BAR LENGTH IS NOT SPECIFIED, LONGEST PRACTICABLE BAR LENGTH SHALL BE EMPLOYED WITH STAGGERED LAP SPICES. LAP LENGTH SHALL BE A MINIMUM OF 60 TIMES THE BAR DIAMETER, UNLESS OTHERWISE NOTED.
- ALL REINFORCING SPLICES SHALL DEVELOP 100% OF THE TENSILE CAPACITY OF THE REINFORCEMENT. ALTERNATIVE MECHANICAL SPLICES MAY BE CONSIDERED, PROVIDED THAT THEY DEVELOP FULL TENSILE STRENGTH.

C2.2 MINIMUM COVER TO REINFORCEMENT

COVER TO ALL REINFORCEMENT SHALL BE AS FOLLOWS UNLESS SHOWN OTHERWISE:

	75mm
	75mm EARTH FACES, 40mm OTHER FACES
	75mm EARTH FACES, 40mm OTHER FACES
	50mm
	30mm
	40mm
	60mm EARTH FACES, 40mm OTHER FACES
	30mm WITH THE SPECIFICATIONS.
	60mm EARTH FACES, 40mm OTHER FACES

EXTERNAL RELATES TO CONCRETE FACES EXPOSED TO EXTERNAL ENVIRONMENT.

D. EARTHWORKS, EXCAVATIONS AND DEWATERING

- D1. WHEN EXCAVATING TO FOUNDATION LEVEL CARE SHOULD BE TAKEN NOT TO DISTURB THE UNDERLYING MATERIAL. ALL FOUNDATION EXCAVATIONS SHALL BE INSPECTED AND ANY SOFT SPOTS SHALL BE REMOVED AND REPLACED WITH GRANULAR FILL COMPACTED BEFORE CONSTRUCTION PROCEEDS. EXCAVATION SHALL AT ALL TIMES BE CARRIED OUT IN DRY CONDITIONS.
- D2. THE CONTRACTOR SHALL TAKE FULL ACCOUNT OF THE SOIL INVESTIGATION INFORMATION AND HIS OWN EXPERIENCE TO DESIGN THE NECESSARY TEMPORARY WORKS. THE DESIGN TOGETHER WITH THE SHOP DRAWINGS SHALL BE SUBMITTED FOR ENGINEER'S APPROVAL PRIOR TO DEWATERING. ALL BACKFILLING SHALL BE COMPACTED TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY AND IN ACCORDANCE WITH THE SPECIFICATIONS.
- D3. IT SHALL REMAIN THE CONTRACTOR'S OBLIGATION TO PROVIDE DRY WORKING CONDITIONS BY ANY MEANS HE MIGHT SEE EFFECTIVE. EXCAVATION SHALL BE AT ALL TIMES CARRIED OUT IN DRY CONDITIONS. PILEGROUND WATER SHALL BE MAINTAINED AT LEAST 500mm BELOW THE DEEPEST POINT IN THE EXCAVATION PILE CAPS WHILE IT REMAINS OPEN. THE DEWATERING SYSTEM USED SHALL NOT AFFECT THE EXISTING ADJACENT FOUNDATIONS/BUILDINGS IN ANY WAY.
- D4. DEWATERING SHALL NOT BE DISCONTINUED WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER AND UNTIL AFTER THE CONSTRUCTION OF THE RAFT.
- COLUMNS
PARAPETS
WALLS

E. WATERPROOFING

- E1. GENERALLY ALL CONCRETE IN CONTACT WITH SOIL SHALL REQUIRE WATERPROOFING IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE SOILS INVESTIGATIONS REPORT AND AS SHOWN IN THE TYPICAL

F. FLOOR WALL CONSTRUCTION

- F1. MINIMUM COMPRESSIVE STRENGTH FOR NON-LOAD BEARING HOLLOW BLOCKS SHALL BE 3.5 MPa.
- F2. MINIMUM COMPRESSIVE STRENGTH FOR NON-LOAD BEARING SOLID BLOCKS SHALL BE 7.0 MPa.
- F3. THE CONCRETE HOLLOW BLOCKS SHALL BE FROM AN APPROVED MANUFACTURER WITH APPROPRIATE STRENGTH AND ADEQUATELY CURED AS PER STANDARD SPECIFICATIONS.
- F4. JOINTS BETWEEN CONCRETE BLOCKWORK AND COLUMNS TO BE REINFORCED WITH 200 WIDE GALVANIZED STEEL EXPANDED METAL SECURED BOTH SIDES OF THE JOINT PRIOR TO PLASTERING. CORNER BEADS AND PLASTER STOPS SHALL BE PROVIDED AT ALL CORNERS AND EDGES.
- F5. ALL BLOCK WALLS EXCEEDING 3.0 m IN CLEAR HEIGHT SHALL BE PROVIDED WITH A STIFFENER BEAM AS SHOWN IN THE TYPICAL DETAILS.
- F6. ALL BLOCK WALLS WITH UNBRACED LENGTH EXCEEDING 5.0 m SHALL BE PROVIDED WITH A STIFFENER COLUMN AS SHOWN IN THE TYPICAL DETAILS.

H. CLADDING SYSTEM DESIGN

- H1. THE CLADDING DESIGN SHALL INCORPORATE SUFFICIENT FLEXIBILITY TO ACCOMMODATE ALL ANTICIPATED MOVEMENTS IN THE STRUCTURE INCLUDING THOSE DUE TO THERMAL EFFECTS, LATERAL MOVEMENTS DUE TO WIND OR SEISMIC LOAD AND AXIAL SHORTENING OF COLUMNS.
- H2. THE CURTAIN WALL DESIGN SHALL CONFORM TO THE SEISMIC DESIGN REQUIREMENTS OF IBC 2009.
- H3. NOT WITHSTANDING THE ABOVE, THE CONTRACTOR SHALL CARRY OUT ANY ADDITIONAL TESTING HE DEEMS NECESSARY TO ENSURE SATISFACTORY PERFORMANCE OF THE CLADDING SYSTEM.

I. DATUM LEVEL

- I1. ALL LEVELS ARE REFERENCED TO ARCHITECTURAL DATUM LEVEL.

J. GENERAL FOUNDATIONS NOTES

- J1. ALL FOUNDATIONS SHALL BE CONSTRUCTED UPON WATERPROOFING SYSTEM AND A 100mm CONCRETE BLINDING SLAB WHICH HAS BEEN PLACED OVER AGGREGATE LAYER ACCORDING TO SOIL TEST RECOMMENDATIONS, OVER THE STABILIZED NATURAL SOIL.
- J2. DO NOT BACKFILL AGAINST PIT OR RETAINING WALLS UNTIL THE CONCRETE HAS ATTAINED FULL DESIGN STRENGTH.
- J3. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY MEASURES TO PREVENT ANY WATER, FROM PENETRATING ANY PILED FOUNDATIONS OR STRUCTURAL (HYDROSTATIC) SLABS BEFORE AND AFTER PLACING CONCRETE, AND UNTIL SUCH SUBGRADES ARE FULLY PROTECTED BY THE PERMANENT BUILDING STRUCTURE.
- J4. THE STRUCTURAL CONCRETE FOR EACH PILED FOOTING SHALL BE PLACED IN ONE (1) CONTINUOUS POUR WITH THE STRUCTURAL RAFT. VERTICAL POUR JOINTS SHALL TYPICALLY BE LOCATED IN THE MIDDLE THIRD OF THE SPAN BETWEEN COLUMNS OR WALLS.
- J5. ALL REINFORCING FOR THE FOUNDATIONS, INCLUDING WALL AND COLUMN STARTER BARS SHALL BE PROPERLY SECURED IN PLACE PRIOR TO CONCRETING.
- J6. THE CONTRACTOR SHALL INSTALL THERMOCOUPLE SETS TO MONITOR AND RECORD HEAT GAIN IN THE PILED FOUNDATIONS CONCRETE DURING THE CEMENT HYDRATION PROCESS. ALL THERMOCOUPLE LOCATIONS SHALL BE COORDINATED TO INSURE THAT THE DEVICES ARE NOT DISRUPTED DURING REINFORCING AND CONCRETE PLACEMENT. EACH THERMOCOUPLE SET CONSISTS OF 5 THERMOCOUPLES AND SHALL BE LOCATED IN INDICATED AREAS OF EACH PILED FOUNDATION POUR (IN PLAN) AND POSITIONED AS FOLLOWS:
ONE (1) THERMOCOUPLE AT THE MID-HEIGHT
ONE (1) THERMOCOUPLE MIDWAY BETWEEN THE MID-HEIGHT AND THE TOP
ONE (1) THERMOCOUPLE MIDWAY BETWEEN THE MID-HEIGHT AND THE BOTTOM
ONE (1) THERMOCOUPLE AT 300MM FROM TOP
ONE (1) THERMOCOUPLE AT 300MM FROM BOTTOM

TEMPERATURE READINGS FROM EACH THERMOCOUPLE SHALL BE ELECTRONICALLY RECORDED OVER A 90-DAY PERIOD

THE CONCRETE MIX DESIGN AND THE CONSTRUCTION TECHNIQUES SHALL BE PREPARED TO LIMIT THE MAXIMUM TEMPERATURE DIFFERENTIAL BETWEEN ANY TWO POINTS WITHIN THE FOUNDATION TO 20 DEGREES CELSIUS, AND A MAXIMUM CONCRETE TEMPERATURE OF 70 DEGREES CELSIUS. THE ADDITION OF ICE AS A REPLACEMENT FOR A PORTION OF MIX WATER, THE REFRIGERATION OF MIX WATER, AND THE COOLING OF AGGREGATES AND CEMENT MAY BE NECESSARY TO REDUCE CONCRETE MIX TEMPERATURE AND HEAT GAIN. THE TEMPERATURE OF THE CONCRETE AT TIME OF PLACEMENT SHALL BE TESTED AND SHALL BE NOT GREATER THAN 32 DEGREES CELSIUS. ANY CONCRETE WITH TEMPERATURE GREATER THAN 32 DEGREES CELSIUS SHALL BE REJECTED.

- J8. CONSISTENCY (SLUMP) TESTS SHALL BE PERFORMED FOR EACH OF THE FIRST 5 TRUCKS SUPPLYING CONCRETE FOR THE FOUNDATIONS POURS.

- J9. CONCRETE CUBE SAMPLES SHALL BE TAKEN FOR THE FOUNDATIONS. THE REQUIREMENTS ARE AS INDICATED IN THE TECHNICAL SPECIFICATION - "CAST-IN-PLACE CONCRETE".

- J10. REFER TO THE SOIL INVESTIGATION REPORT No. SR 57/2019 DATED ON OCTOBER 2019 FOR ANY ADDITIONAL REQUIREMENTS.

K. REINFORCED CONCRETE BORED PILES

K1. GENERAL

- K1. THE SOIL INVESTIGATION REPORT No. SR 57/2023 DATED ON OCTOBER 2023 HAS BEEN PREPARED AND SHALL BE CONSIDERED PART OF THE CONSTRUCTION DOCUMENTATION. THE INFORMATION GIVEN IN THE SOIL REPORT IS SOLELY A GUIDE. RESPONSIBILITY IS ACCEPTED BY THE OWNER OR THE ENGINEER FOR ITS CORRECTNESS.
- K2. ALL PILES SHALL BE BORED CAST IN SITU USING TEMPORARY STEEL CASING.
- K3. ALL REINFORCING BAR SPLICES SHALL DEVELOP 100% OF THE TENSILE CAPACITY OF THE REBAR. ALTERNATIVE MECHANICAL SPLICES MAY BE CONSIDERED, PROVIDED THAT THEY DEVELOP FULL TENSILE STRENGTH.
- K4. ALL PERMANENT PILING CONCRETE SHALL BE DESIGNED FOR A PUMPED TREMIE CONCRETE MIX AND AT LEAST INCLUDE WATER REDUCING PLASTIZERS AND MICROSILICA ADMIXTURES. PILE CONCRETE MIX SHALL BE DESIGNED FOR ENHANCED LONG-TERM DURABILITY.
- K5. ALL PILES SHALL UTILIZE SELF-COMPACTING CONCRETE (SCC) AND SHALL BE PLACED IN ONE CONTINUOUS CONCRETE POUR USING THE TREMIE METHOD.
- K6. REINFORCED CONCRETE BORED PILING OF CIRCULAR CONFIGURATION SHALL DEVELOP THE SCHEDULED MINIMUM ALLOWABLE LOAD CAPACITIES WITH A MINIMUM SAFETY FACTOR OF 2.0.
- K7. PILES SHALL BE PLACED A MINIMUM OF 2.5 TIMES THE PILE DIAMETER, CENTER-TO-CENTER OF THE PILES, UNLESS NOTED OTHERWISE.
- K8. THE PILE DETAILS SHOWN ARE INDICATIVE ONLY. THE PILING CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING PILES THAT SATISFY THE REQUIREMENTS OF THE SPECIFICATION AND CAPABLE OF SUPPORTING THE LOADS SPECIFIED.
- K9. THE BOTTOM OF EACH PILE SHALL BE CLEANED OF EXCESS LOOSE MATERIALS BY AIR LIFT PROCEDURES PRIOR TO FINAL CONCRETING.
- K10. ALL CONCRETE SHALL BE PLACED UTILIZING AN APPROVED PUMPED TREMIE CONCRETE SEQUENCE. ALL CONCRETE SHALL BE PLACED TO THE TOP OF THE BORE HOLE, AND THE EXCESS CONCRETE AND LATANCE MATERIALS TRIMMED BACK AT A LATER DATE.
- K11. THE PILING CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ADDITIONAL LOAD TESTS, MATERIAL TESTING, OR NEW PILES AS THE RESULT OF ANY DEFECTIVE PILES THAT HAVE BEEN INSTALLED OR DEVIATIONS IN PILE LOCATION, VERTICALITY IN EXCESS OF THE ALLOWED TOLERANCES.
- K12. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY LOAD CARRYING CAPACITY OF REINFORCED CONCRETE PILES, PILES ANALYSIS, DESIGN AND FINAL DRAWINGS SHALL BE PREPARED BY PILING. SUB CONTRACTOR AND SHALL BE SUBMITTED FOR ENGINEER'S APPROVAL BEFORE CONSTRUCTION.

K2. PILING MATERIAL

CONCRETE STRENGTH (28 DAY CUBIC STRENGTH)	35 MPa
REINFORCING BARS	EPOXY COATED HIGH TENSILE STEEL (YIELD STRESS = 460MPa)
PILE HEAD GROUT	85 MPa CEMENT GROUT WITH MICROSILICA OR APPROVED EQUIVALENT
CEMENT TYPE	ASTM TYPE-V
MAX. WATER CEMENT RATIO	0.42
MIN CEMENT CONTENT	400 kg/m3

K3. PILE TESTING

- K3. PILES TESTING SHALL CONFORM TO ACI 543 STANDARDS AND PROJECT SPECIFICATION.

- K14. THE CONTRACTOR SHALL ALLOW FOR 2 PRELIMINARY PILES AS LISTED IN THE TABLE BELOW, THE LOCATION OF WHICH SHALL BE AGREED WITH THE ENGINEER. THE PRELIMINARY TEST PILES SHALL BE LOADED UNDER STATIC COMPRESSIVE LOADS TO 1.5 TIMES THE PILE CAPACITY.

PRELIMINARY PILE LOAD TESTS		
PILE DIAMETER (mm)	TEST TYPE	TEST LOAD (kN)
520	COMPRESSION	2200

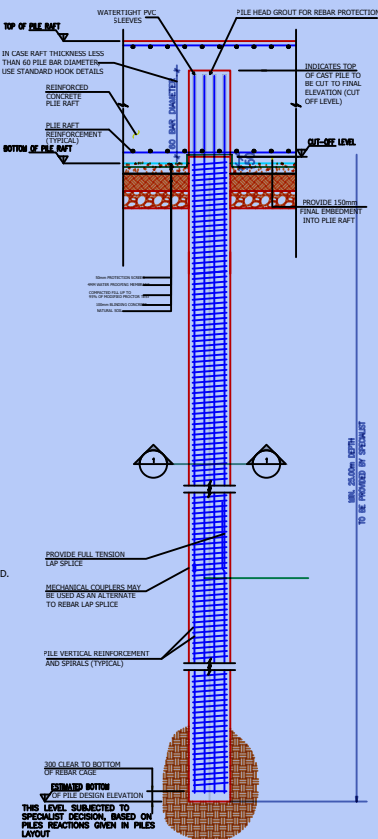
- K15. THE CONTRACTOR SHALL PERFORM COMPRESSIVE LOAD TESTS ON WORKING PILES AS LISTED IN THE TABLE BELOW. PILES SHALL BE LOADED UNDER STATIC COMPRESSIVE LOADS TO 1.25 TIMES THE PILE CAPACITY.

WORKING PILE LOAD TESTS			
MARK	PILE DIAMETER (mm)	TEST TYPE	TEST LOAD (kN)
P6	520	COMPRESSION	2000
P54	520	COMPRESSION	2000
P62	520	COMPRESSION	2000

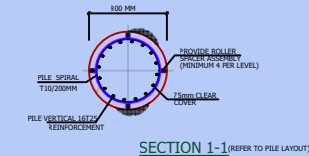
- K17. A COMPREHENSIVE INSTRUMENTATION, MONITORING, AND REPORTING PROGRAM FOR THE INSTALLATION OF THE

- K16. STANDARD SONIC INTEGRITY TESTING AT PILE HEAD SHALL BE PERFORMED FOR 100% OF THE NON LOAD TESTED PILES.

TEST PILES, AND THE LOAD TESTING THEREOF SHALL BE ESTABLISHED AND REVIEWED PRIOR TO THE START OF PILING INSTALLATION.



TYPICAL CAST-IN-SITU PILE ELEVATION



M. JOINTS

- M.1 THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING PROPOSED CONSTRUCTION / CONTRACTION JOINTS LAYOUT & DETAIL FOR APPROVAL BY THE ENGINEER BEFORE CONSTRUCTION.

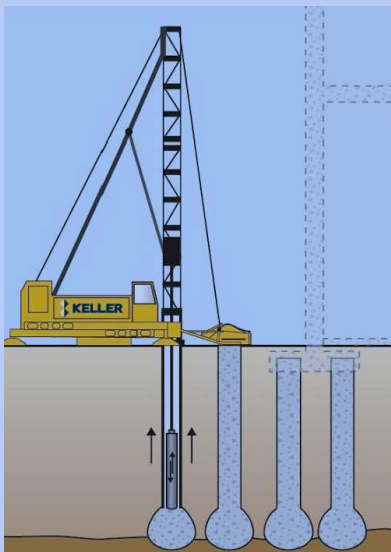
- M.2 CONTRACTION JOINTS SHALL BE IMPLEMENTED AND PERFORMED BY MAX. 10.0m AS PER TYPICAL STRUCTURAL DETAIL.

N. ABBREVIATIONS

B	BOTTOM BARS
C1	COLUMN NUMBER 1
cm	CENTIMETER
Dia	DIAMETER
E	EXPANSION JOINT
ES	EACH STEP
EW	EACH WAY
FFL	FINISH FLOOR LEVEL
HOR	HORIZONTAL BARS
L	L SHAPED TOP BARS
Ls	HORIZONTAL LINKS AT CONCRETE WALL
Lt	HORIZONTAL LINKS AT SPECIAL BOUNDARY ELEMENT
M	MIDDLE BARS
m	METER
MAX	MAXIMUM
mm	MILLIMETER
No.	NUMBER
N.T.S	NOT TO SCALE
PC	PLANTED COLUMN
PW	PLANTED WALL
R	MILD STEEL BARS
S	STIRRUPS
SJ	SETTLEMENT JOINT
T	TOP BARS
TOP	TOP LEVEL OF FOUNDATION
TOC	TOP LEVEL OF SLAB
TYP.	TYPICAL
T&B	TOP AND BOTTOM
U	U SHAPED BARS
VER	VERTICAL BARS
VAR.	VARIABLE
W1	SHEAR WALL NUMBER 1
T	HIGH YIELD BARS

O. ABBREVIATIONS

STRUCTURAL WALL BELOW SLAB LEVEL
STRUCTURAL WALL PLANTED ABOVE SLAB LEVEL
DROP BEAM
INVERTED BEAM OR PARAPET ABOVE SLAB LEVEL
COLUMN BELOW SLAB LEVEL
COLUMN PLANTED ABOVE SLAB LEVEL
PLAIN CONCRETE
SOLID BLOCK WALL
HOLLOW BLOCK WALL
SAND FILL
NATURAL SOIL
COMPACTED FILL
WATER PROOFING
BACKCOURSE
LIGHT WEIGHT FILL
LIGHT WEIGHT CONCRETE
PRECAST CONCRETE
THICKNESS OF SOLID SLABS
THICKNESS OF RAFT FOUNDATION
PUNCHING SHEAR REINFORCEMENT DETAIL NO. 1
LEVEL ON PLAN
LEVEL ON SECTION
4T20/200x6000(T)
PLACE (T/B/U/L/W/H/V)
BAR LENGTH IN mm
SPACING IN mm
BAR DIAMETER IN mm
GRADE OF STEEL (W/T)
NUMBER OF BARS



no	date	initials	revision
job title			
(A)			
drawing title			
GENERAL STRUCTURAL NOTES			
designed	project manager		
checked	ENG : DR.Majid Abana	scale	date
drawn	job no.	sheet no.	
approved			

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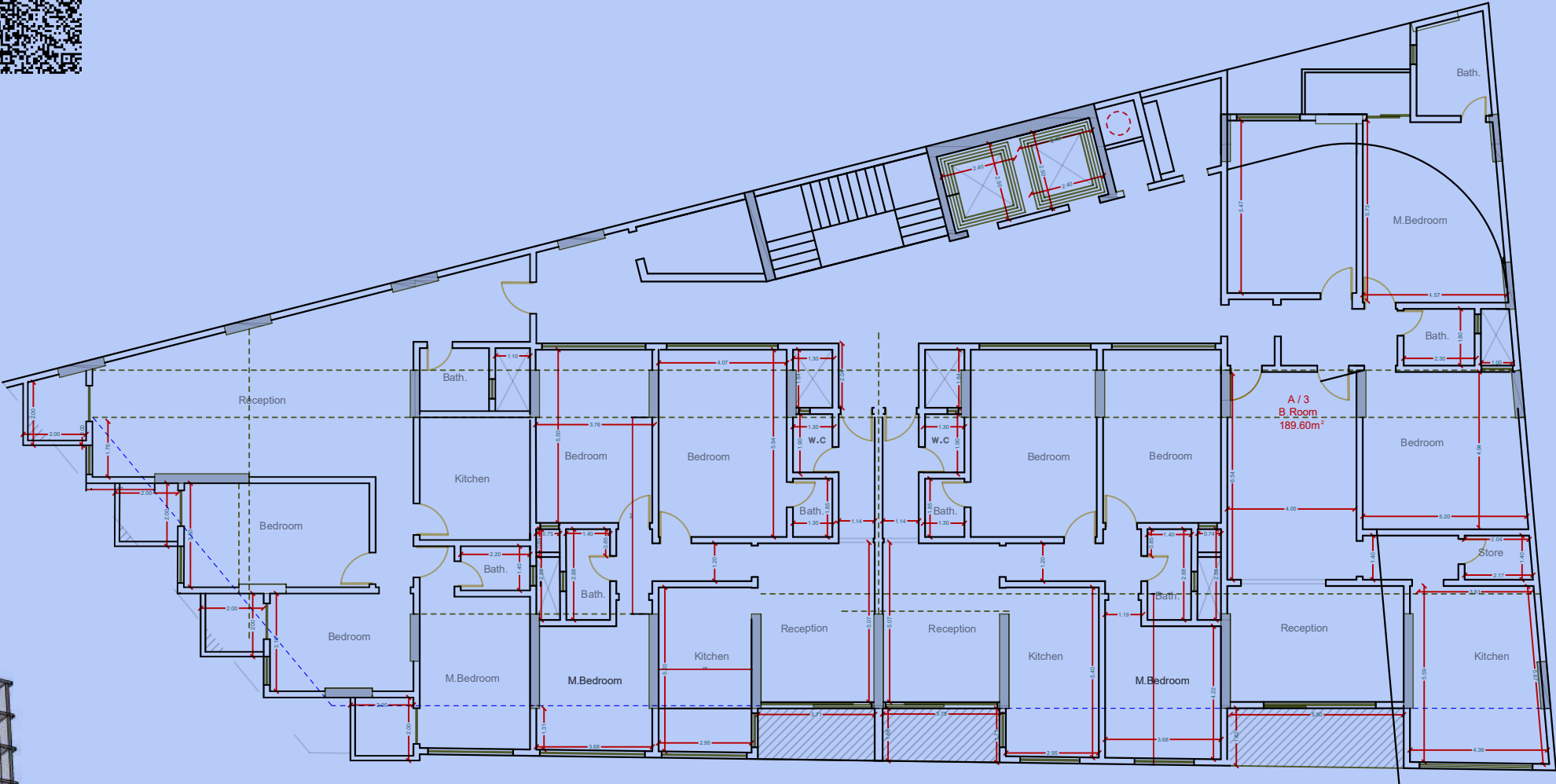
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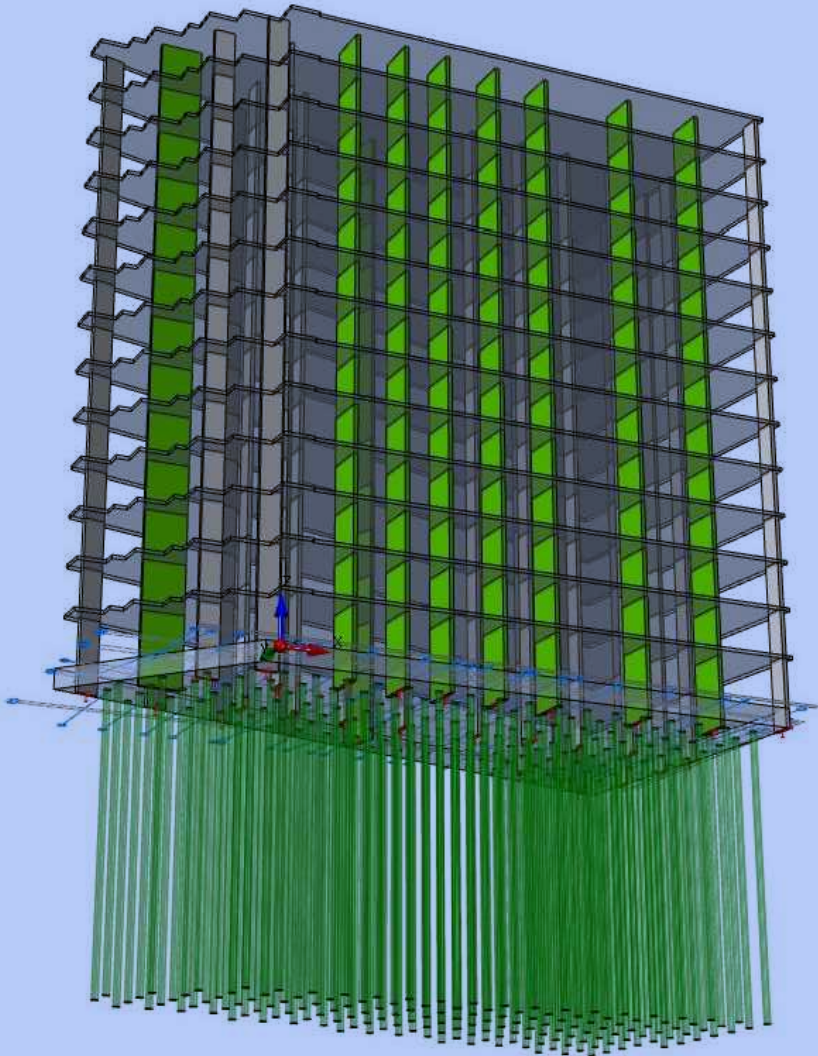
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FIRST FLOOR



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job title			
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drawing title			
PILES KEY PLAN			
designed	project manager		
ENG : DR-Majid Albana	scale	date	
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drawn	job no.	sheet no.	
approved	2	ST/D/06	

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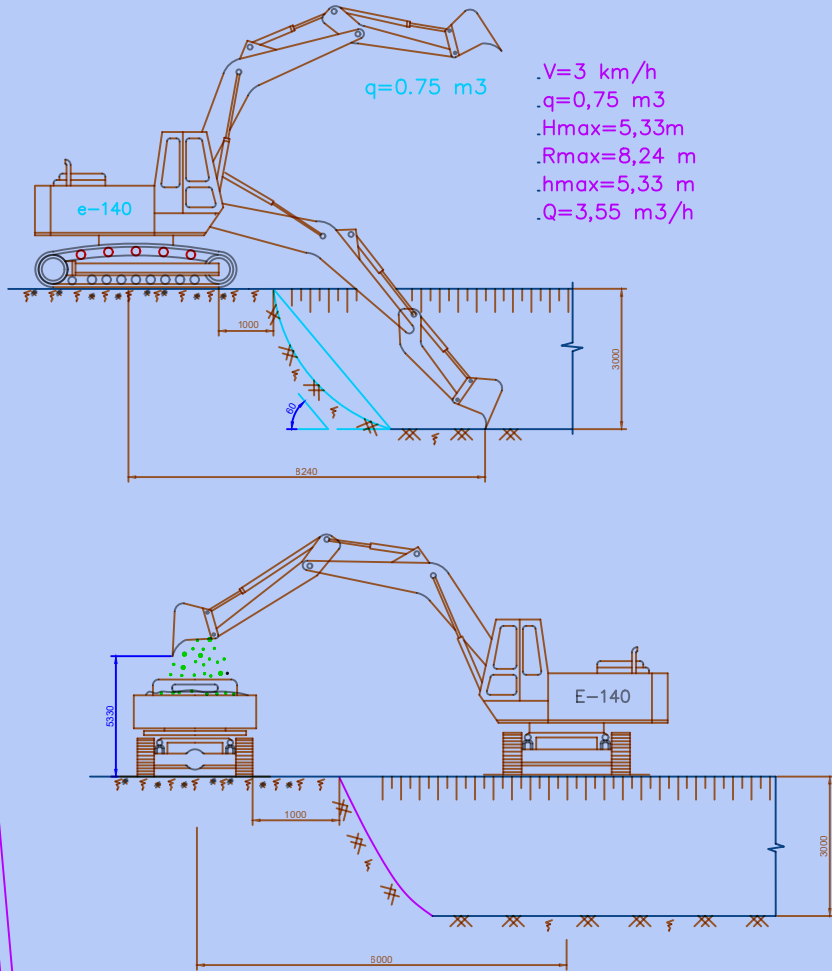
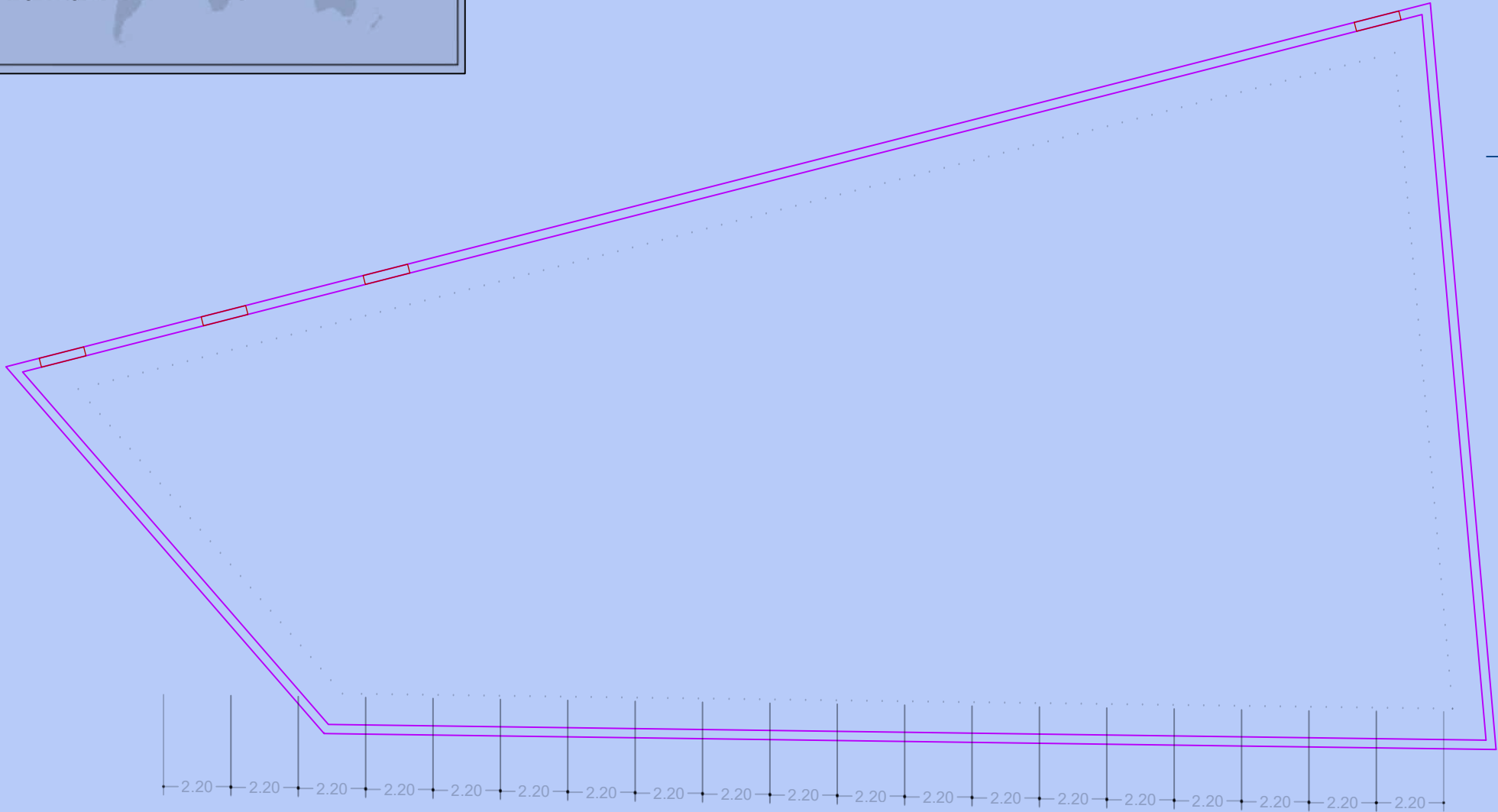
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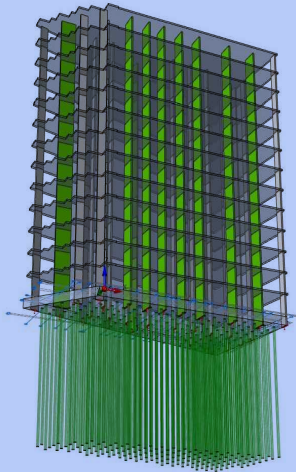
+964 782 595 3403

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majidalbana@hotmail.com



digging works



no	date	initials	revision
job title			
(A)			
drawing title			
digging works			
designed	project manager		
checked	scale	1-100	date
drawn	job no	3	6 /2023
approved	sheet no.		
	ST/D/06		

M

Eng MAJ D A bana

المصمم الاستشاري

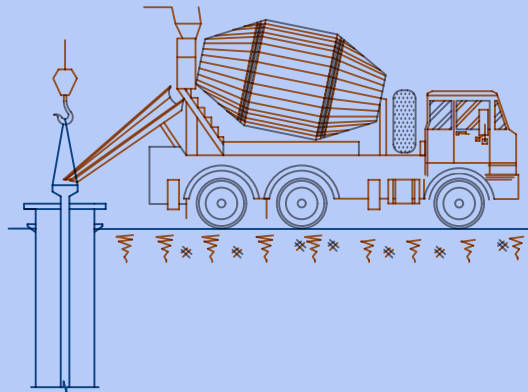
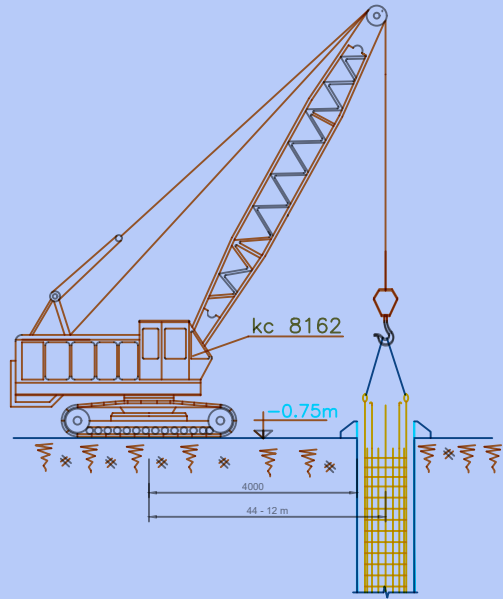
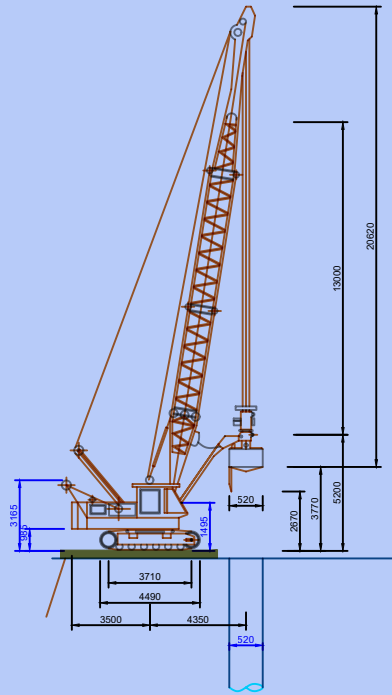
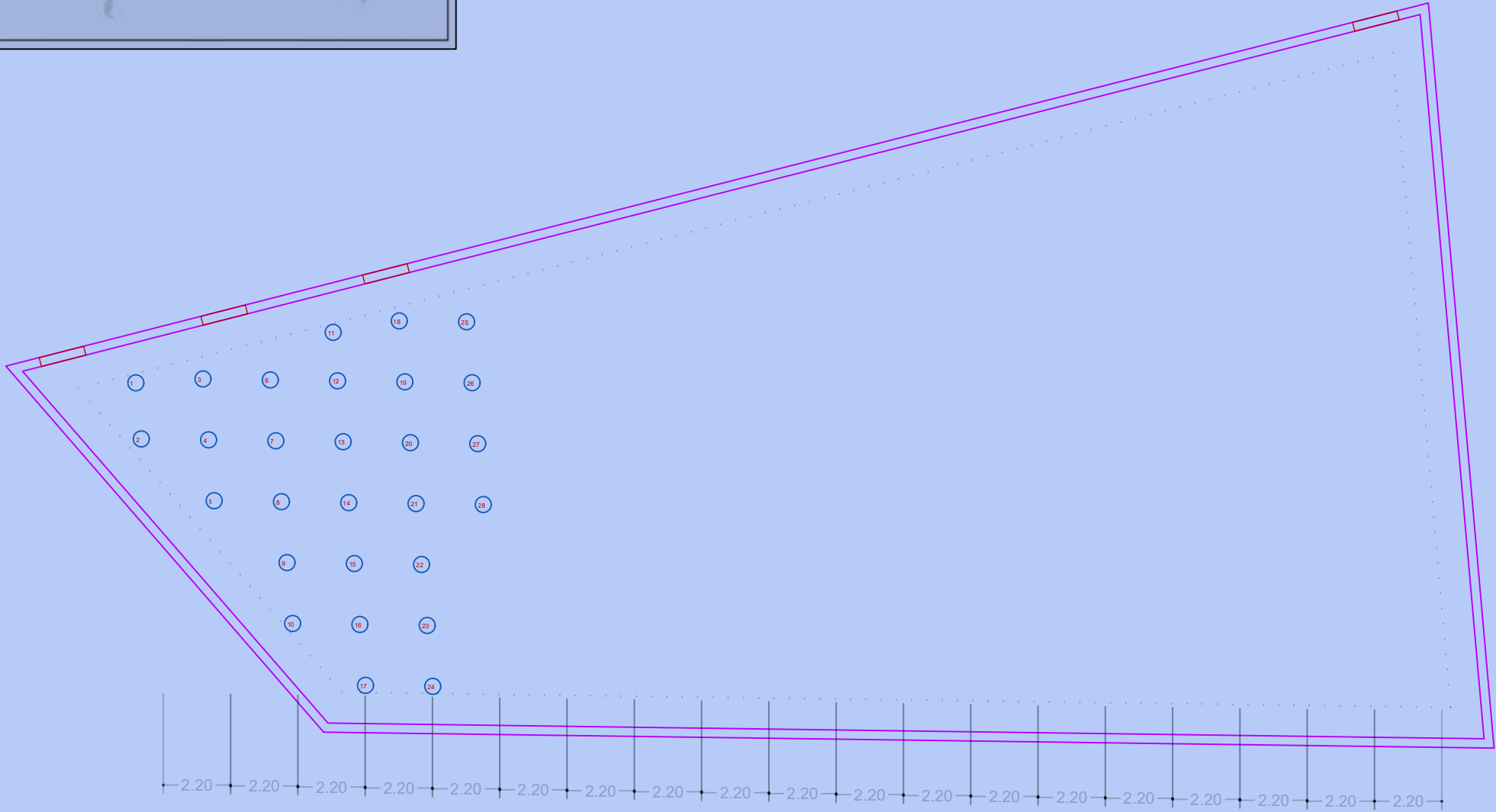
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PILES works

no	date	initials	revision
job title			
(A)			
drawing title			
PILES KEY PLAN			
designed	project manager		
ENG : DR-Majid Albana	scale	1-100	date
checked	job no	3	6 / 2023
drawn	sheet no.		
approved	ST/D/06		

M

Eng MAJ D A bana

المصمم الاستشاري

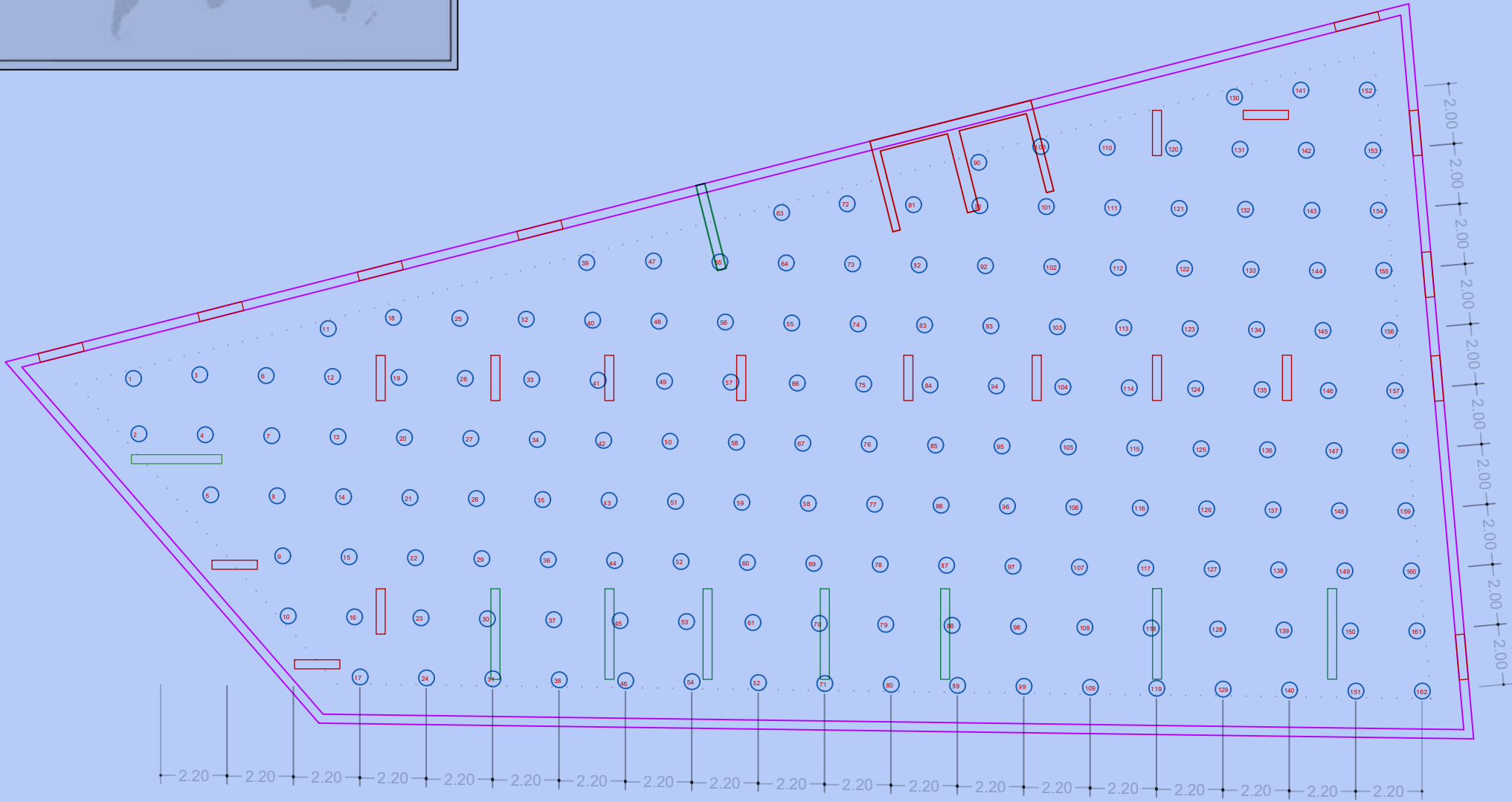
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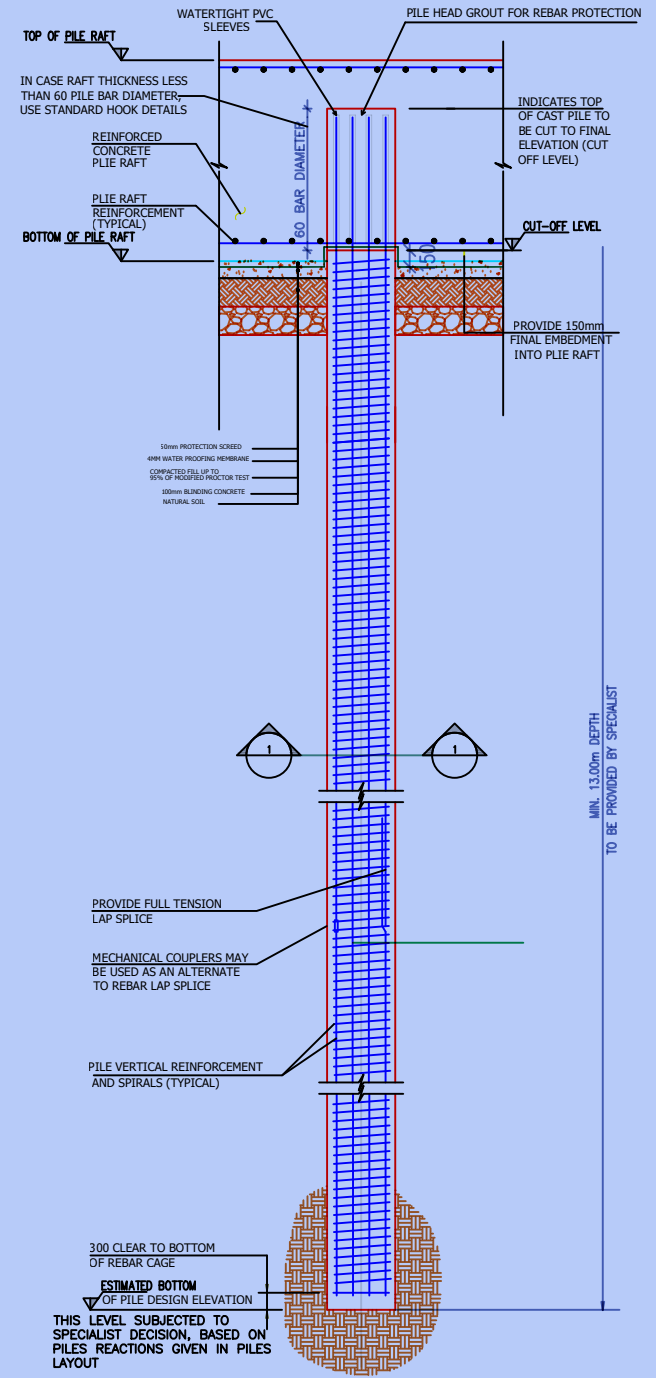
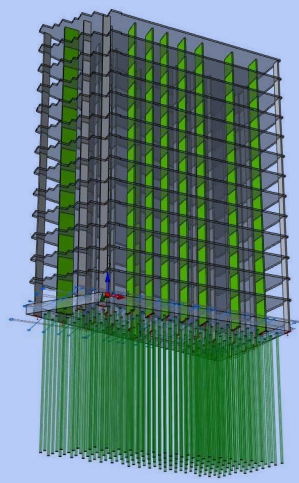
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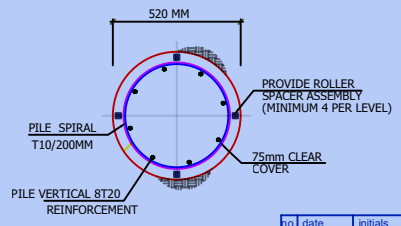
majidalbana@hotmail.com



PILES KEY PLAN

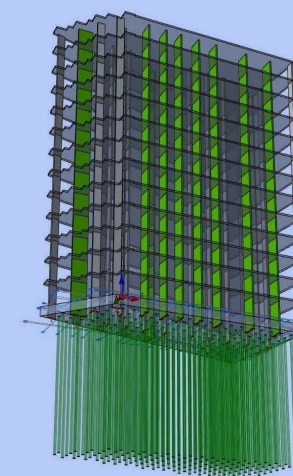
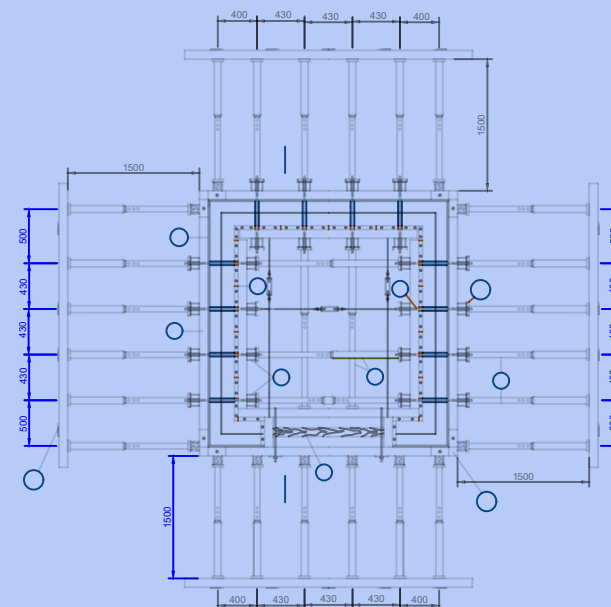
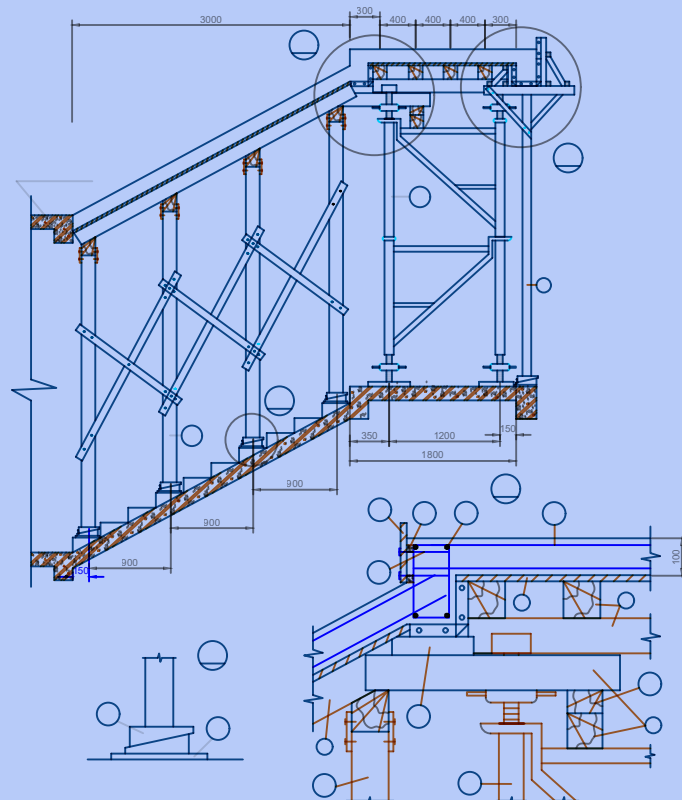
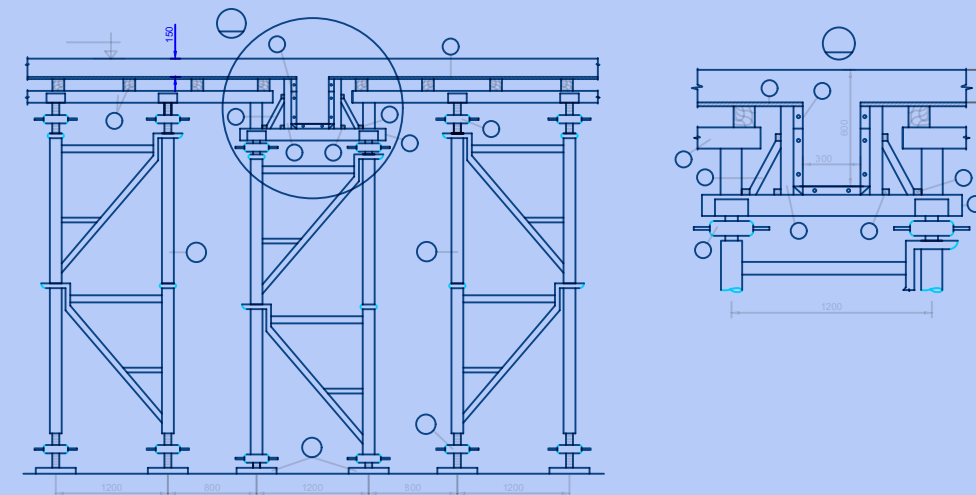
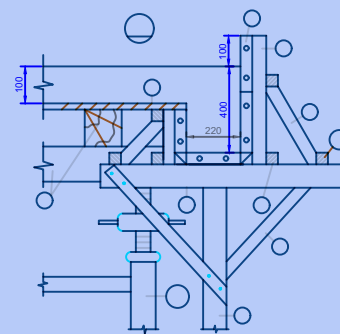
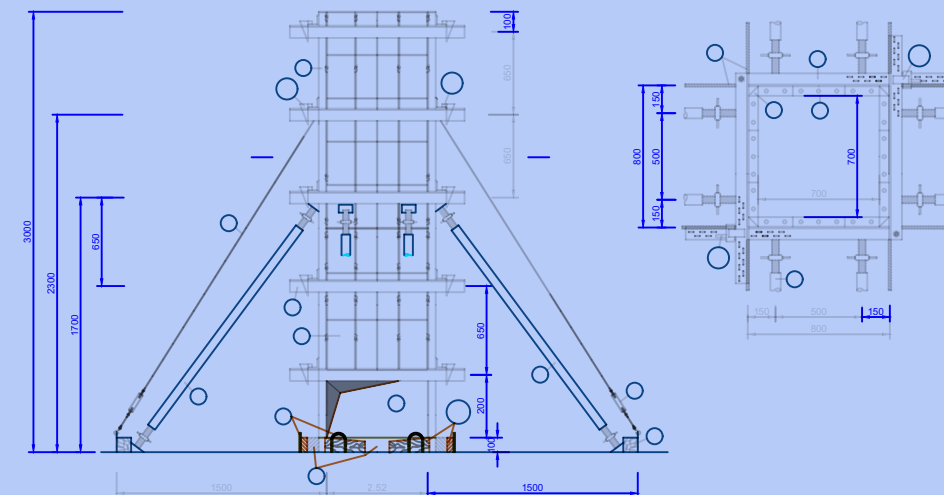
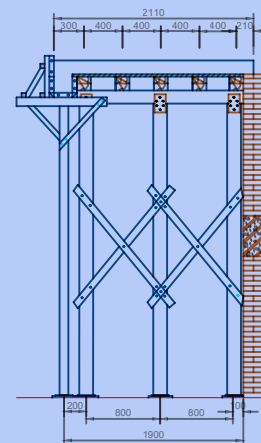
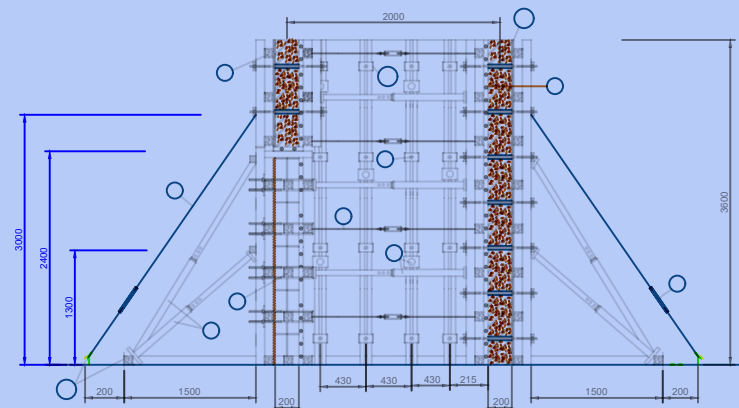


TYPICAL FRANKI PILE ELEVATION

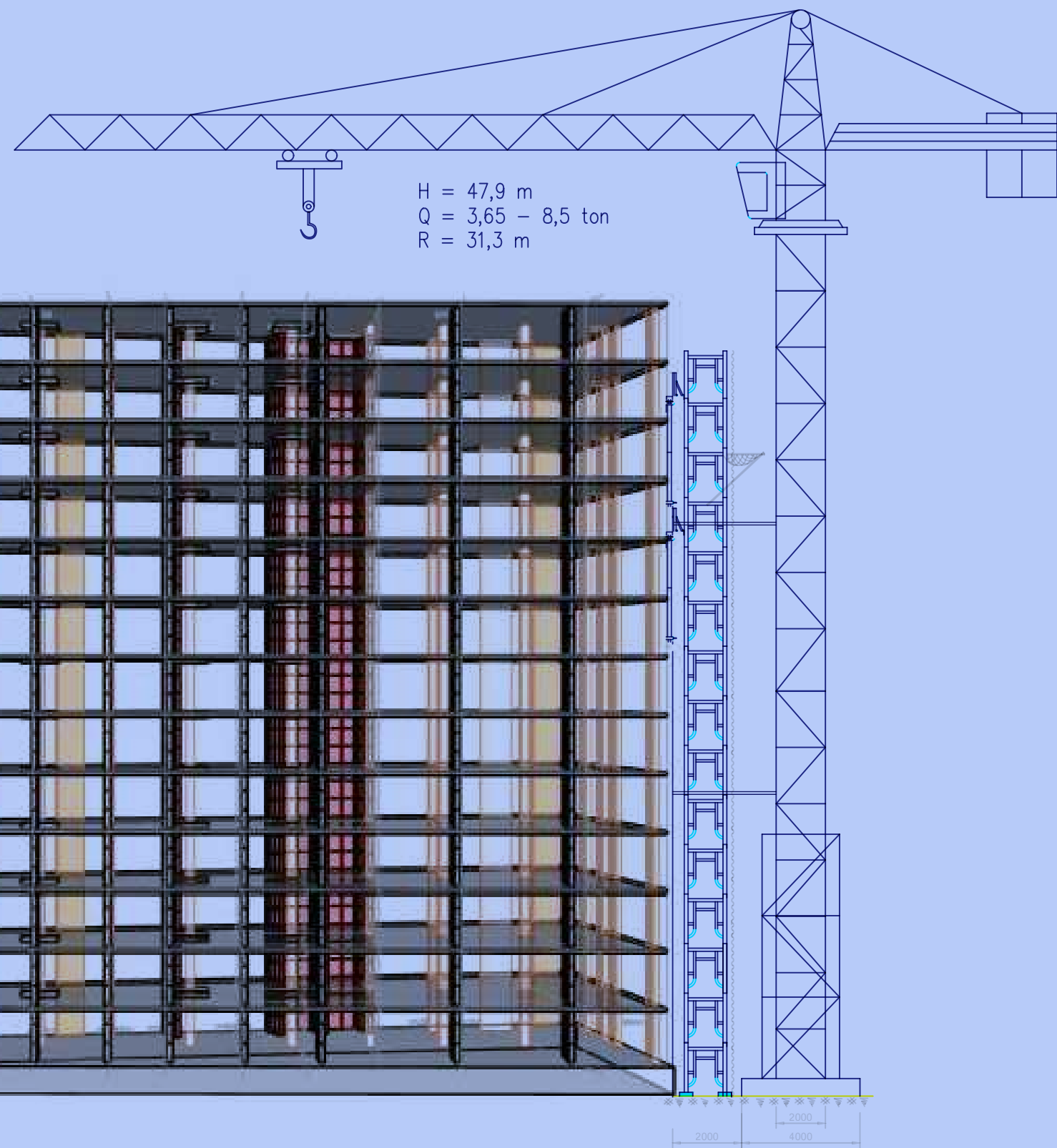


SECTION 1-1

no.	date	initials	revision
job title			
(A)			
drawing title			
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designed	project manager		
ENG - DR-Majid Albana	scale	date	
checked	1-100	6 / 2023	
drawn	job no	sheet no.	
approved	3	ST/D/06	



no	date	initials	revision
job title			
(A)			
drawing title			
Composite scaffolding			
designed ENG - DR-Majdi Albana		project manager	
checked	scale 1-100	date 6 /2023	
drawn	job no. 3	sheet no.	
approved	ST/D/06		



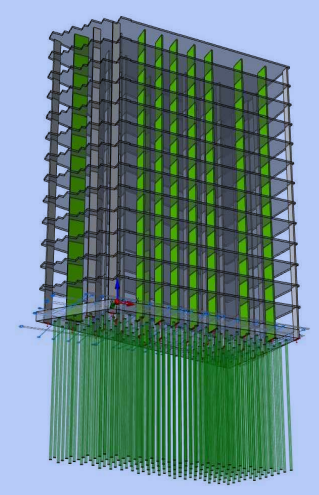
TOWER CRANE



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no	date	initials	revision
job title			
(A)			
drawing title			
TOWER CRANE			
designed	ENG : DR-Majid Albana	project manager	
checked		scale	1-100
drawn		date	6 /2023
approved		job no	3
		sheet no.	ST/D/06



M

Eng MAJ D A bana

المصمم الاستشاري

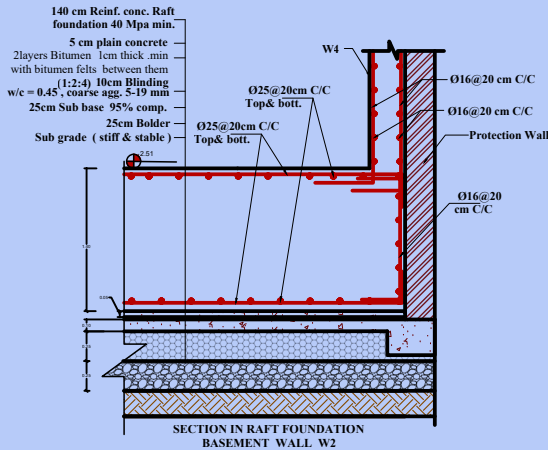
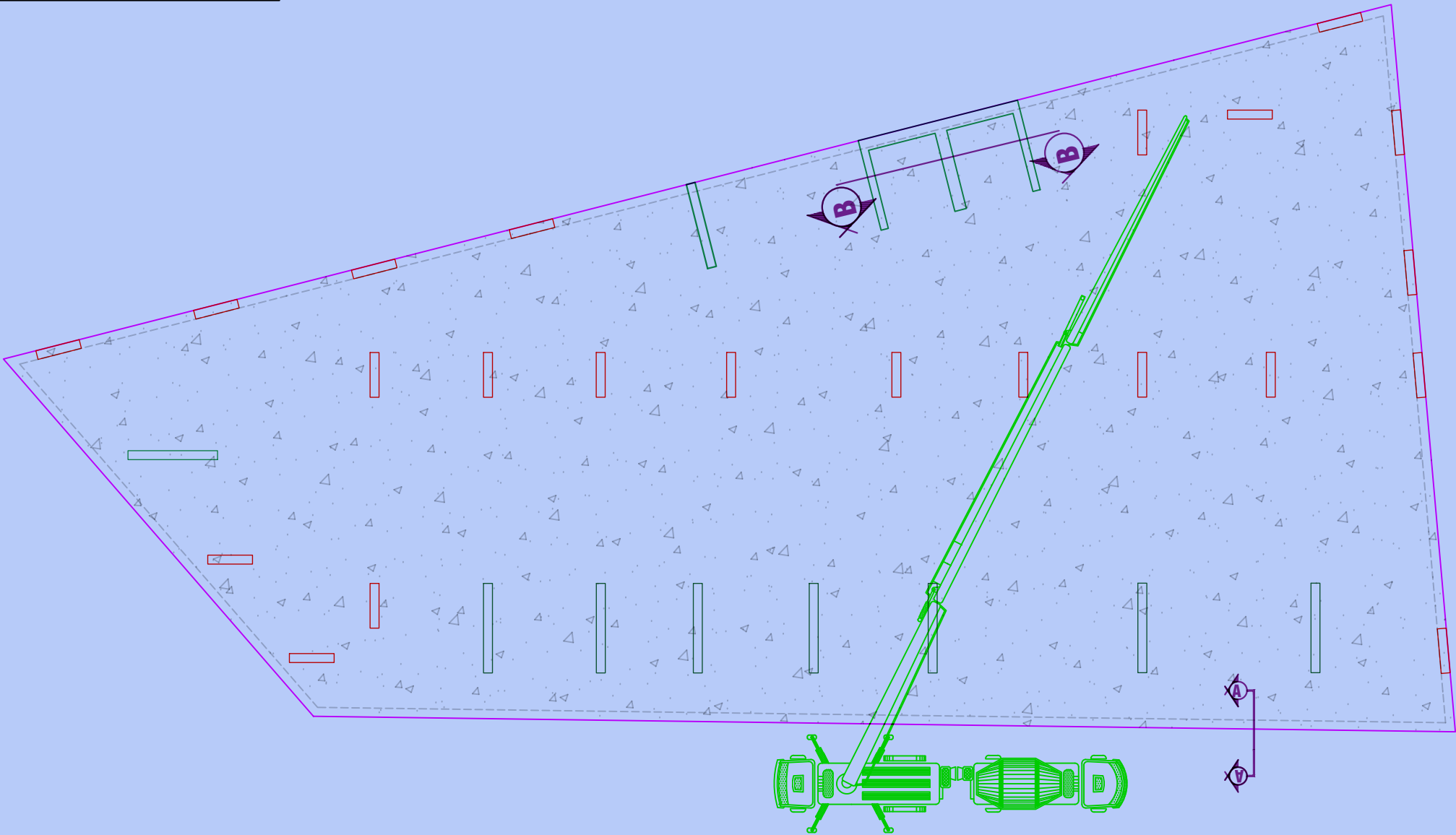
د. ماجد البنا

+964 770 272 4811

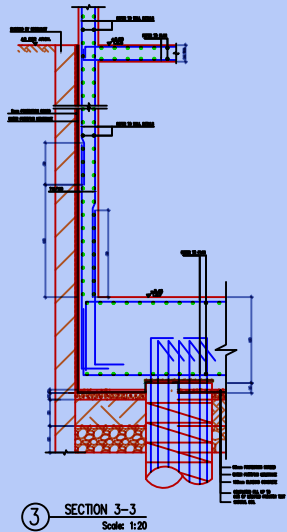
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Typical Section (A-A) of raft foundation



Foundation Plan

THICK. = 1400 mm

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

no.	date	initials	revision
job title			
(A)			
drawing title			
PLAN OF FOUNDATION REINFORCEMENT&SEC.			
designed	checked	scale	date
ENG : DR-Majid Albana		1-100	6 /2023
drawn	job no.	sheet no.	
approved		5	ST/D/05



M

Eng MAJ D A bana

المصمم الاستشاري

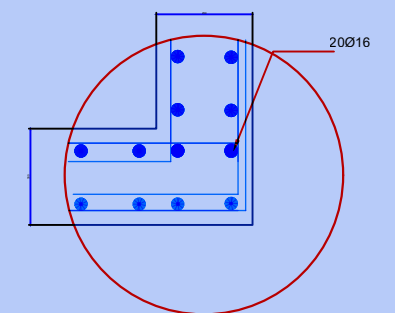
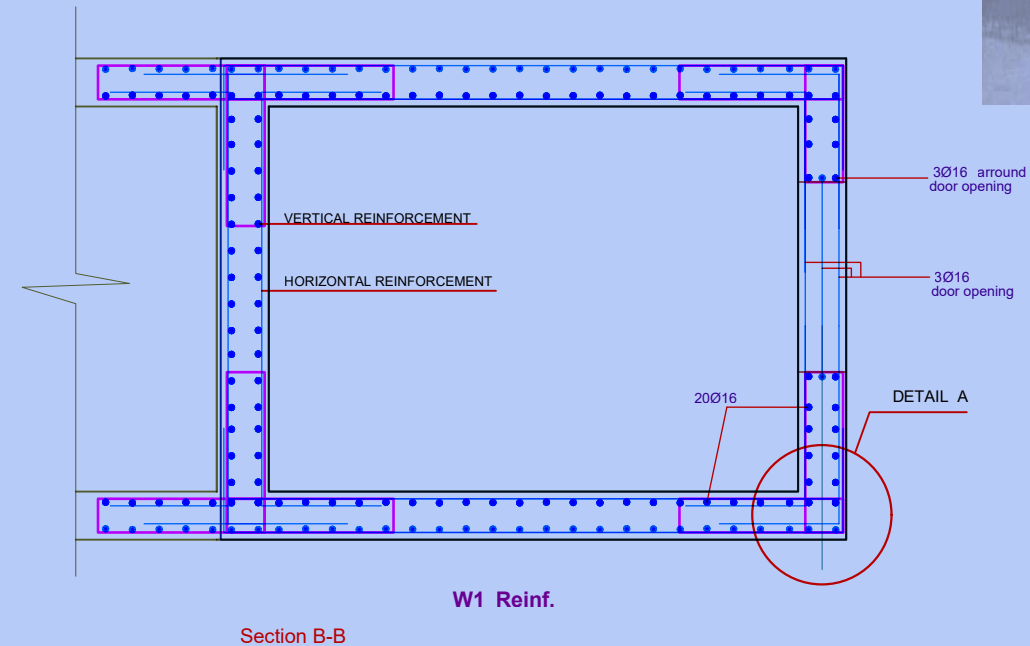
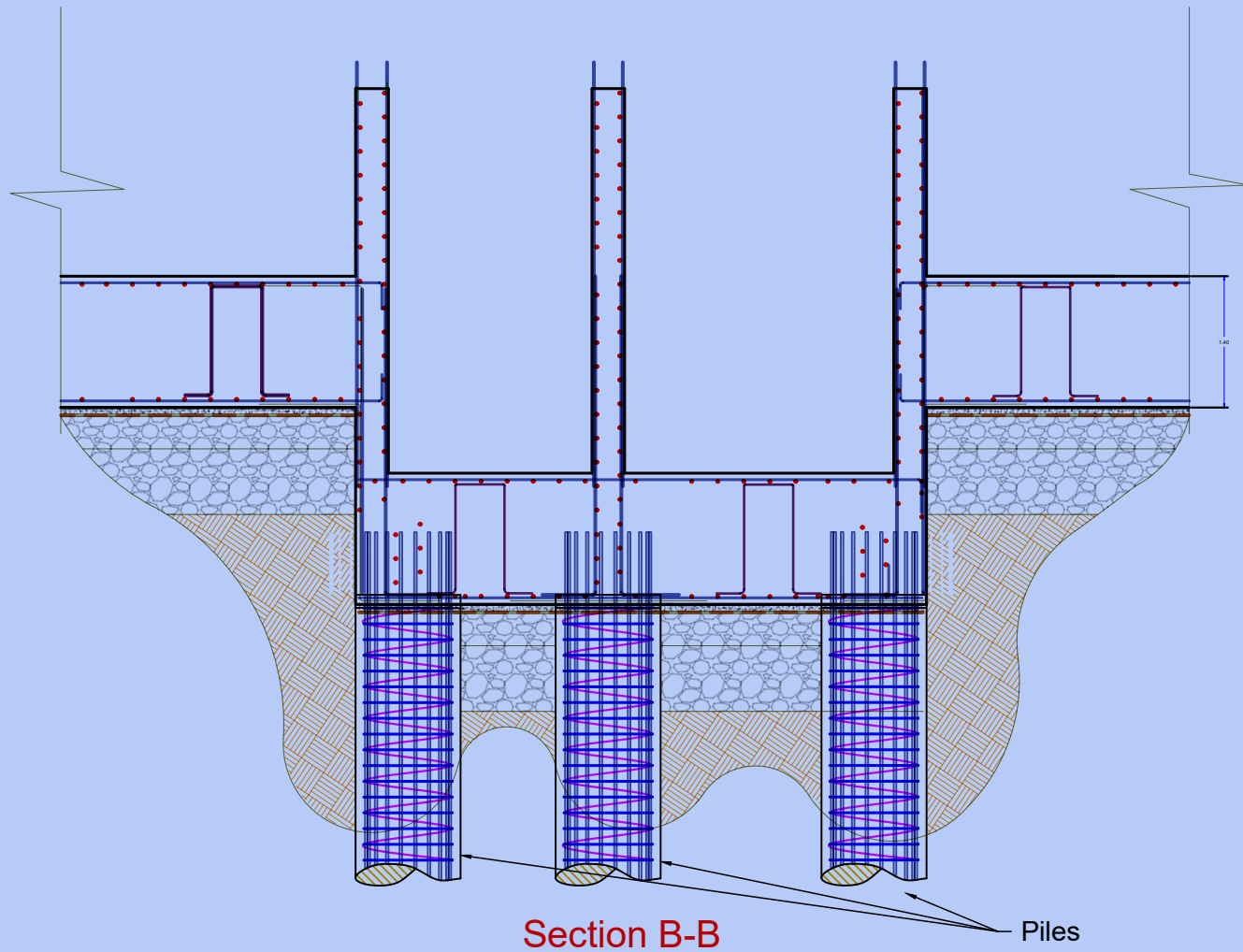
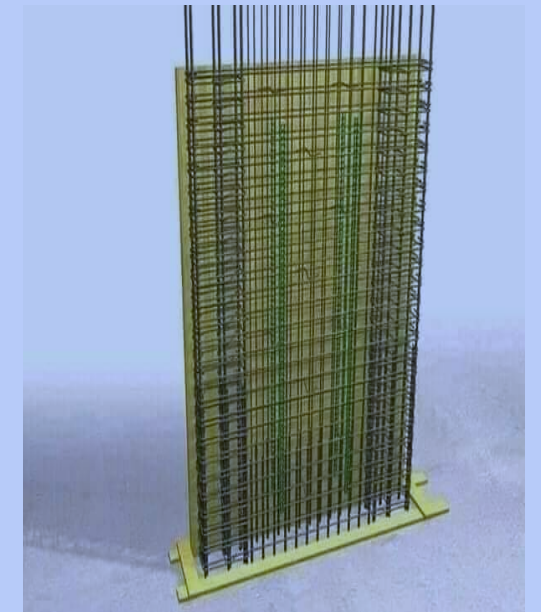
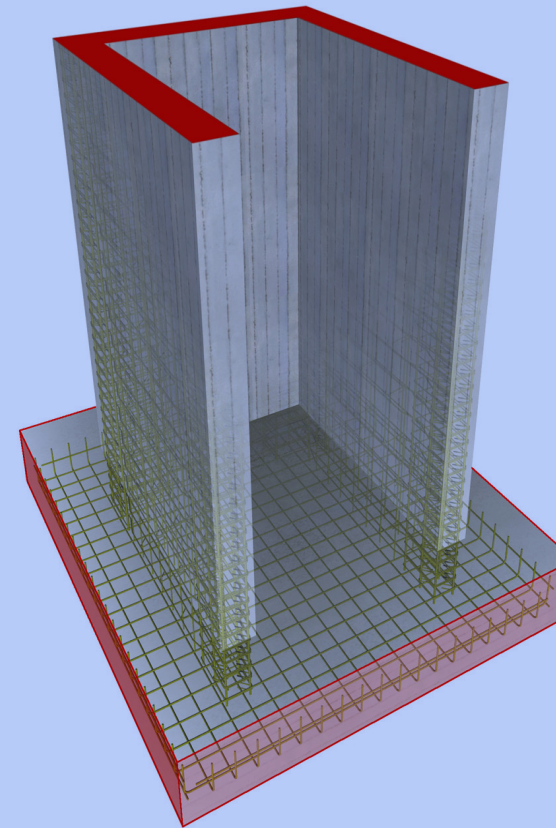
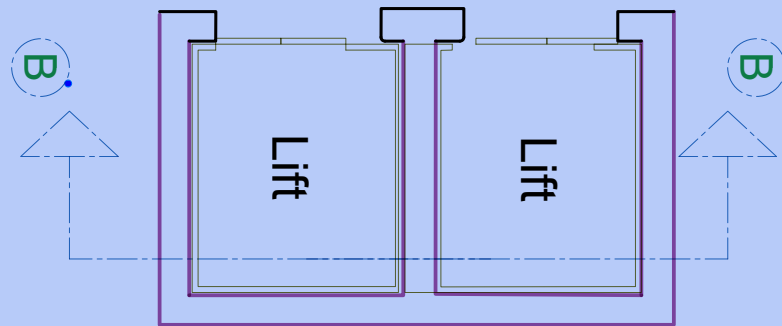
د. ماجد البنا

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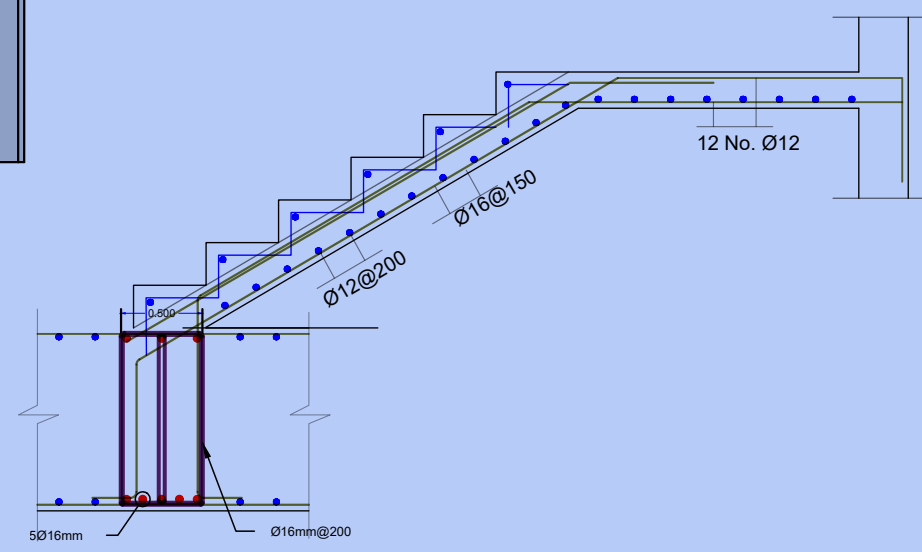
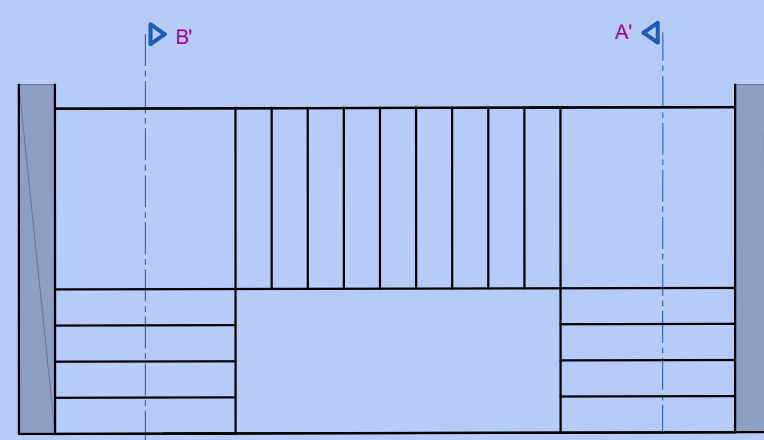


MINIMUM LAP LENGTH (UNLESS NOTED ON DRAWINGS) SHOULD BE AS TABLE BELWO :-

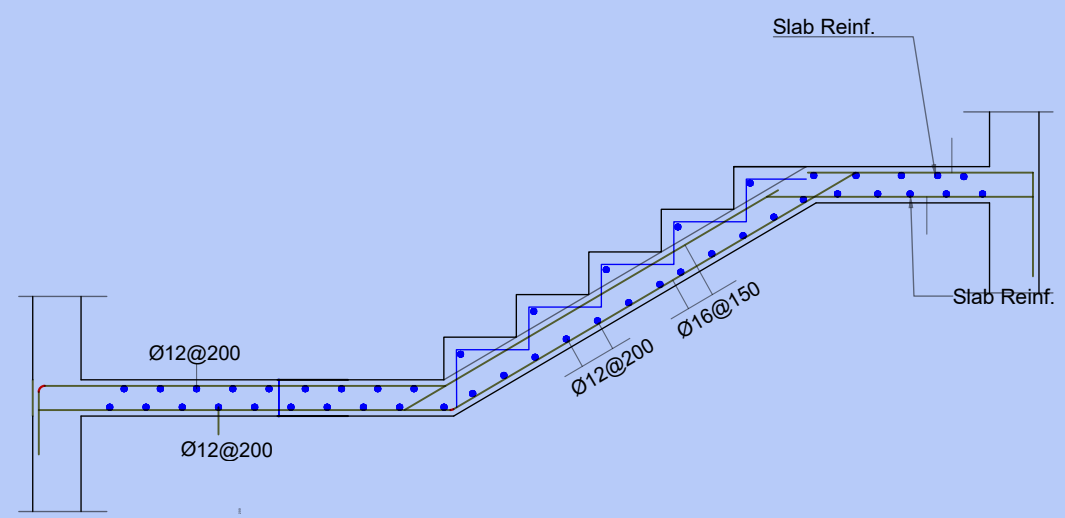
BAR DIA.(mm)	10	12	16	18	20	22	25
LAP LENGTH (mm) IN COLUMNS	400	500	600	650	700	800	900
LAP LENGTH (mm) IN ELSE WHERE	400	600	700	800	900	1000	1250

DETAIL A

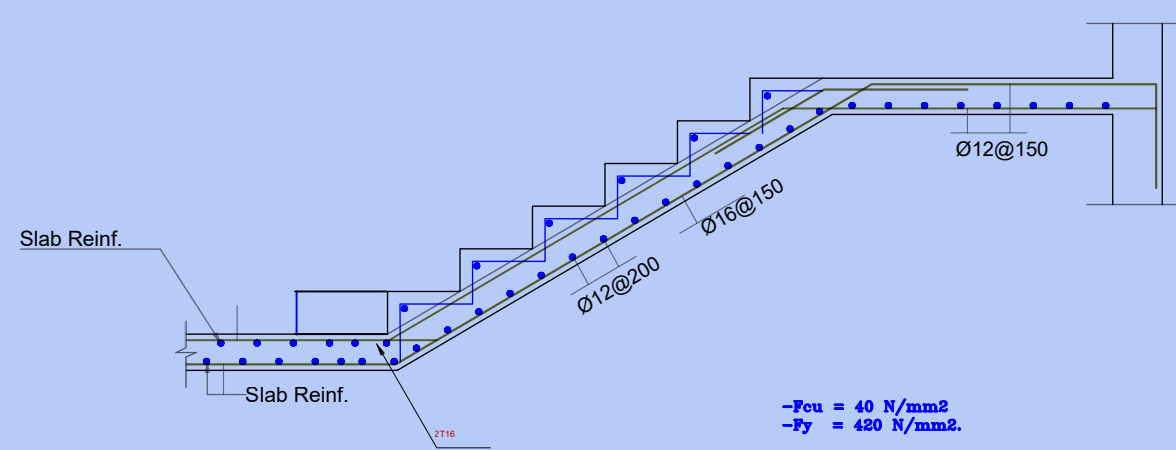
no	date	initials	revision
job title			
(A)			
drawing title			
Section B-B lift detail			
designed	ENG : Majid Albana		project manager
checked	ENG : Majid Albana		scale
drawn	ENG : Majid Albana		date
approved			job no.
		6	sheet no.
		ST/D/06	



SECTION A'-A' (between Foundation & landing)



SECTION A'-A' (between slab & landing)



-F_{cu} = 40 N/mm²
-F_y = 420 N/mm².

CONCRETE COVERS

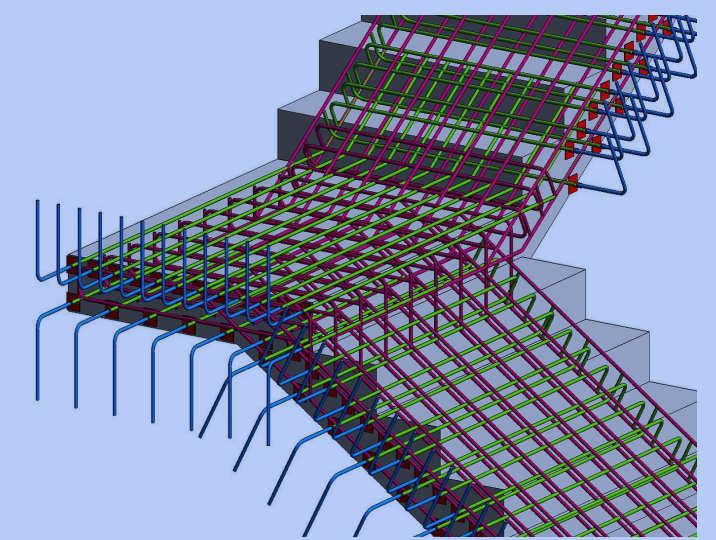
-SLABS	= 25 mm
-BEAMS	= 40 mm
-COLUMNS	= 40 mm
-WALLS	= 25 mm
-SLAB ON GRADE	= 50 mm
-RAFT FOUNDATION	= 75 mm

-THE BUILDING IS DESIGNED FOR
BASEMENT + GROUND FLOOR +
12FLOORS + PENT-HOUSE



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no.	date	initials	revision
job title			
(A)			
drawing title			
Stairs detail			
designed	project manager		
checked	scale	date	
drawn	job no.	sheet no.	
approved	7	ST/D/07	



COLUMNS OR WALLS ID	SIZE		REMARK
	(mm)	WIDTH (mm)	
W1	2000	300	
W2	250		just basement
W3	3000	300	
W4	2500	2500	lift <input type="checkbox"/>

Notes

-F_{cu} = 50 N/mm²
-F_y = 420 N/mm².

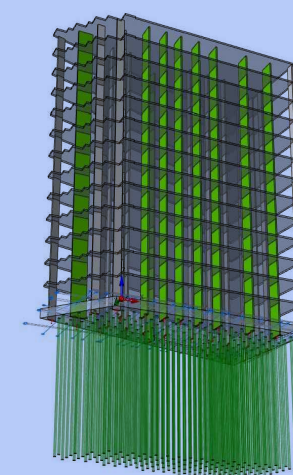
CONCRETE COVERS

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

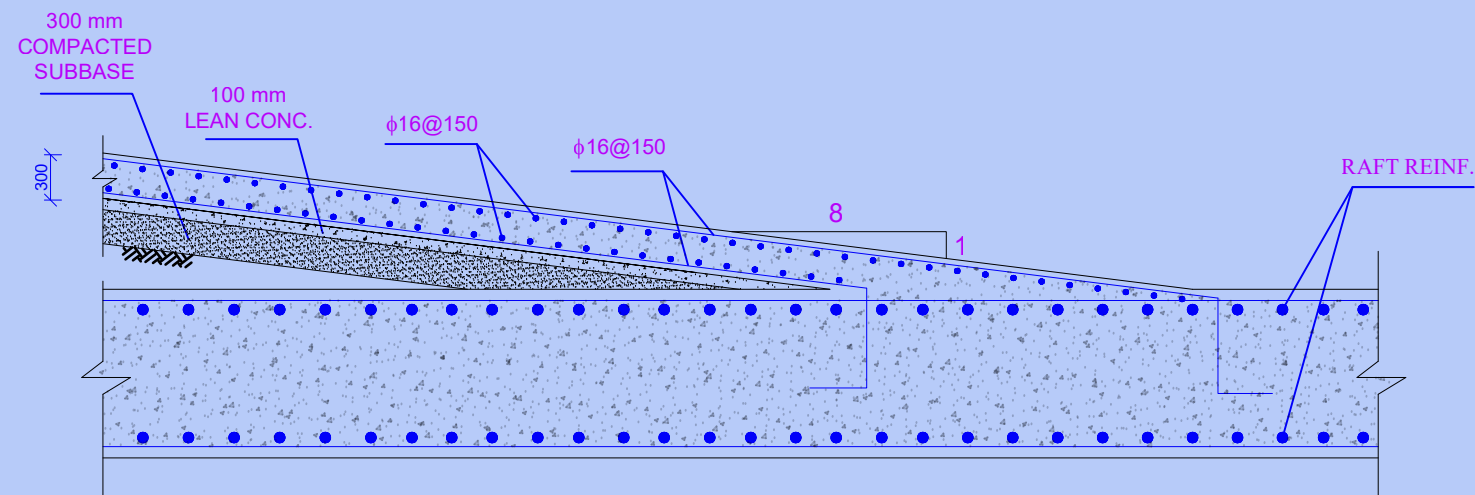
-THE GEOTECHNICAL INVESTIGATION REPORT DIDN'T DONE BY THE CLIENT,AND ALL FOUNDATIONS SHOULD BE REDESIGNED AFTER FINISHING THE GEOTECHNICAL INVESTIGATION AND THE BEARING CAPACITY OF THE SOIL ASSUMED TO 100 kN/m²
-THE BUILDING IS DESIGNED FOR BASEMENT + GROUND FLOOR + 12 FLOORS + PENT-HOUSE

[illegible]

WALL KEY PLAN



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



Technical drawing of a reinforced concrete slab cross-section. The drawing shows a rectangular slab with a central rectangular opening. The slab is reinforced with top and bottom longitudinal bars ($\phi 16 @ 150$) and vertical bars ($\phi 16 @ 150$). The opening is filled with a brickwork pattern. Dimensions are given in meters: 0.4m for the width of the slab, 4.00m for the length of the slab, and 0.3m for the height of the slab. The opening is 0.4m wide and 0.3m high. The drawing is labeled "VAR." on the left and "0.3" on the right.

Reinf. conc. Raft foundation .

5 cm plain concrete

2layers Bitumen 1cm thick .min
with bitumen felts between them

(1:2:4) 10cm Blinding

w/c = 0.45 , coarse agg. 5-19 mm

25cm Sub base 95% comp.

25cm Bolder

Sub grade (stiff & stable)

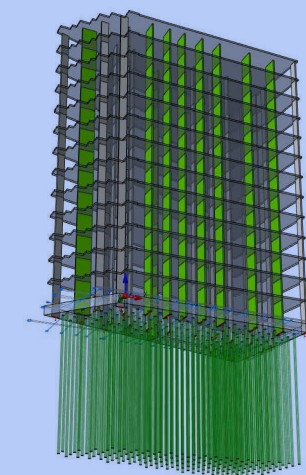
Ø12@20cm C/C

Ø16@15cm C/C

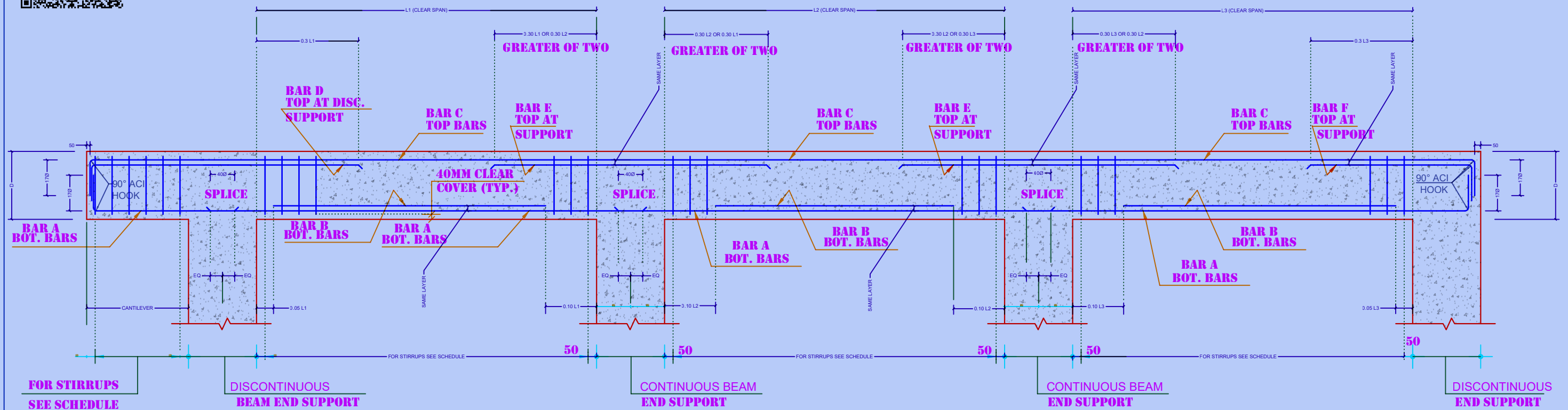
-2.70

-2.70

SECTION IN RAFT FOUNDATION & STAIR NECK

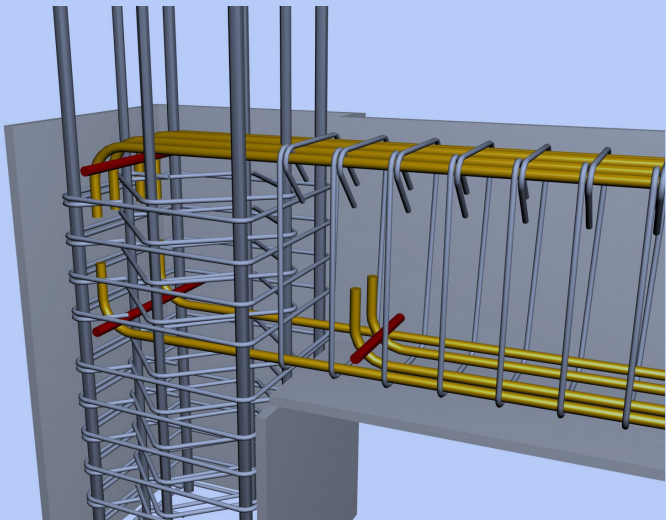
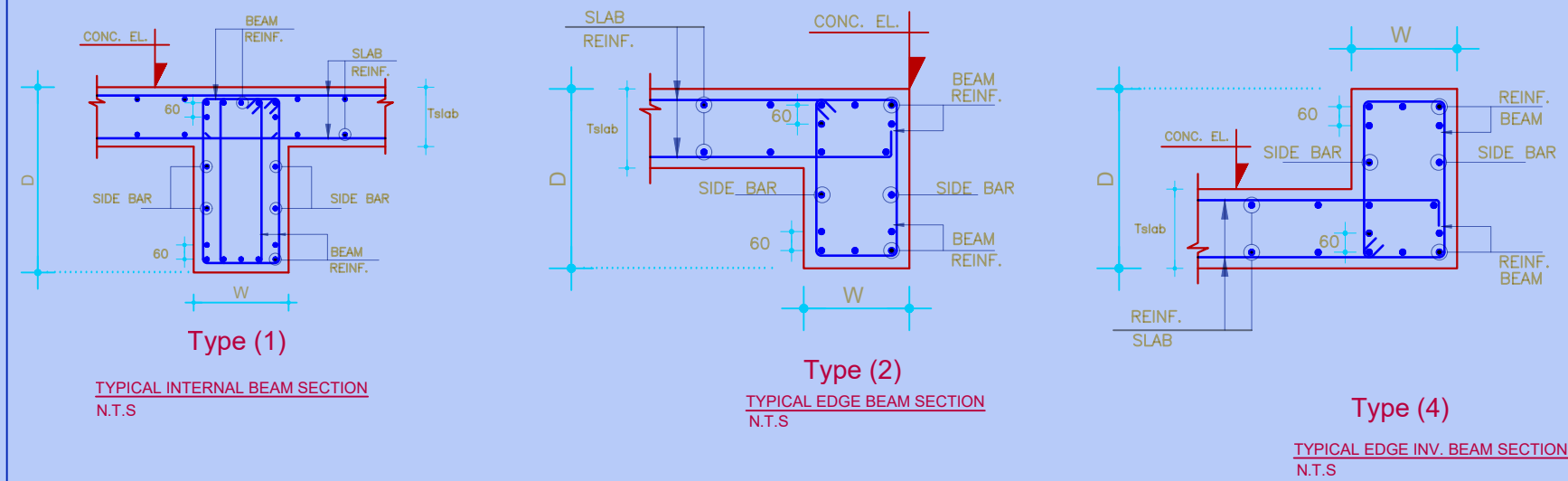


no.	date	initials	revision	
job title				
(A)				
designed ENG : DR-Majid Albana				
checked		project manager		
drawn		scale 1-100	date 6 /2023	
approved		job no.	sheet no.	
		10 ST/D/10		

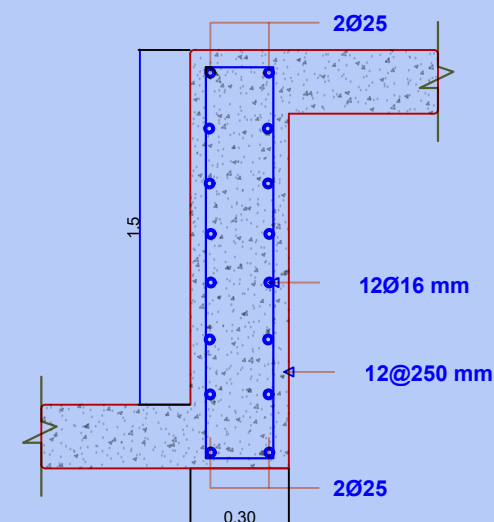


- NOTES:
- 1. REFER TO BEAM SCHEDULE FOR NO. AND SIZE OF TOP AND BOTTOM BARS REQUIRED PER BEAM.
 - 2. PROVIDE 60MM CENTRE TO CENTRE WHEN SCHEDULES CALL FOR 2 LAYERS OF REBARS.
 - 3. FOR CANTILEVER BEAMS OR RIBS, BARS SHOULD BE EXTENDED UP TO ONE HALF THE CANTILEVER SPAN.


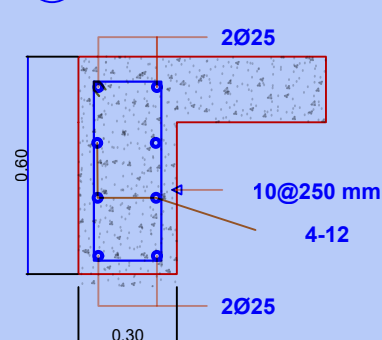
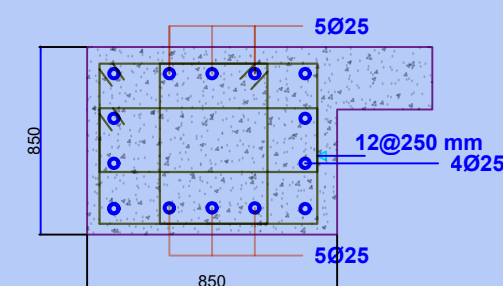
TYPICAL BEAM LONGITUDINAL SECTION
NOT TO SCALE



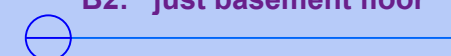
no.			
date			
initials			
revision			
job title			
TYPICAL BEAM LONGITUDINAL SECTION (A)			
drawing title			
designed		project manager	
checked		scale	
drawn		date	
approved		job no.	
		sheet no.	
		11	



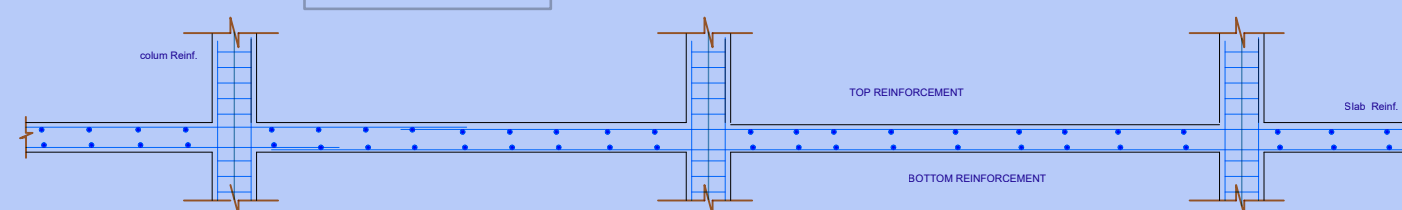
SEC. 2-2

 **B3**

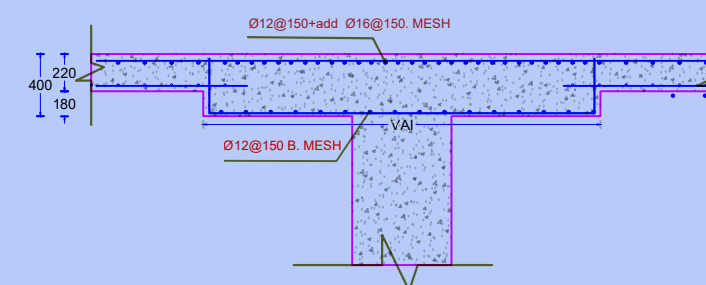
B2: just basement floor



SLAB THICKNESS = 220 mm



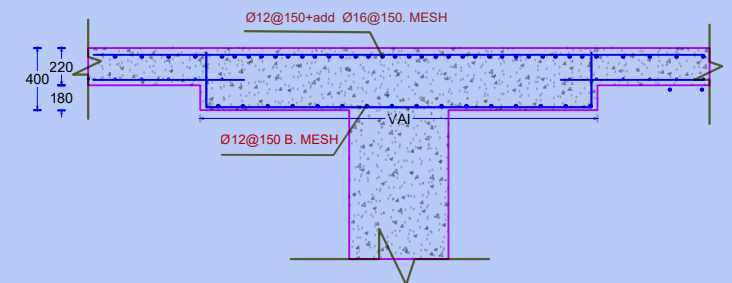
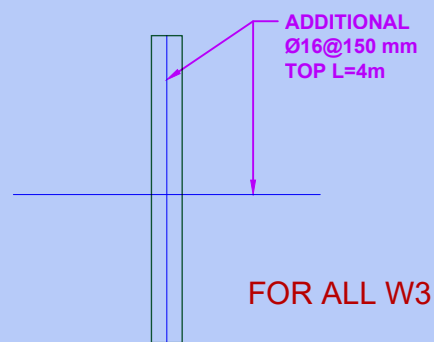
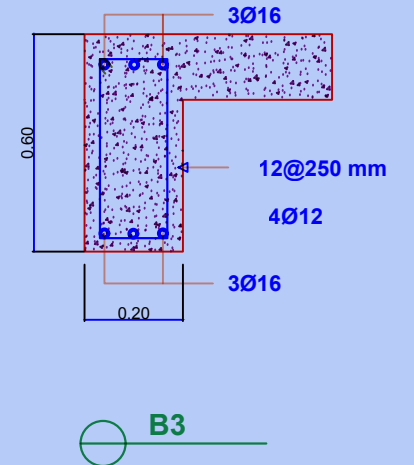
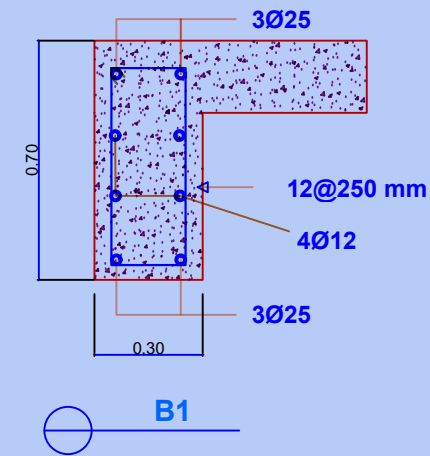
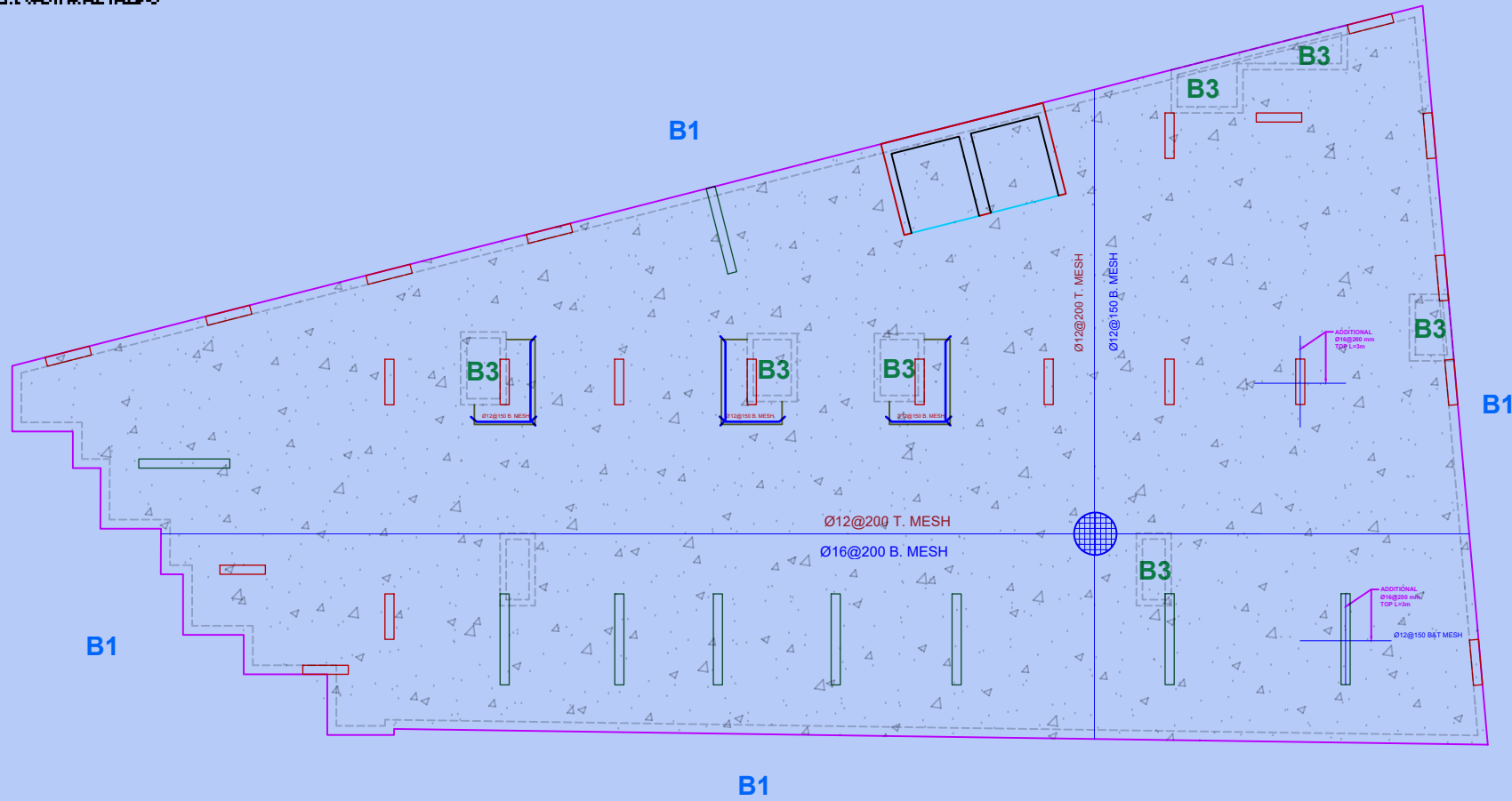
Typical SLAB reinforcement



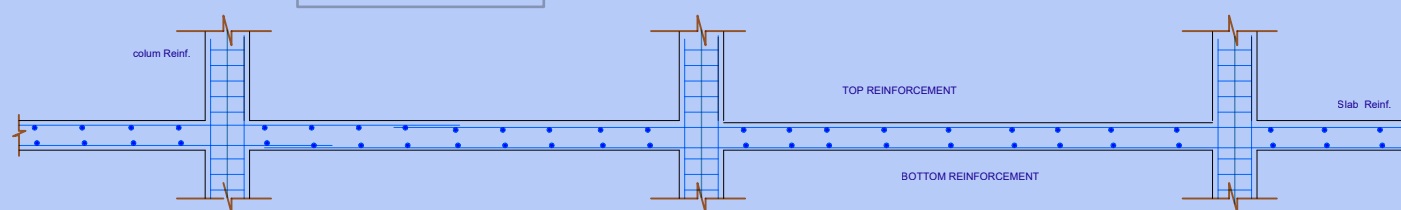
BAR DIA.(mm)	10	12	16	18	20	22	25
LAP LENGTH (mm) IN COLUMNS	400	500	600	650	700	800	900
LAP LENGTH (mm) IN SLAB & BEAMS	400	600	700	800	900	1000	1250

. 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 6 / 2022		
drawn	job no.	sheet no.		
approved			12 ST/D/	



SLAB THICKNESS = 220 mm



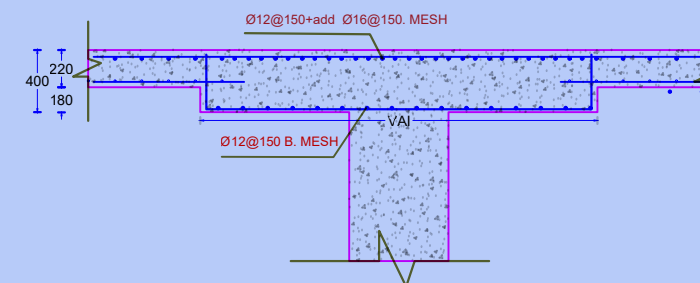
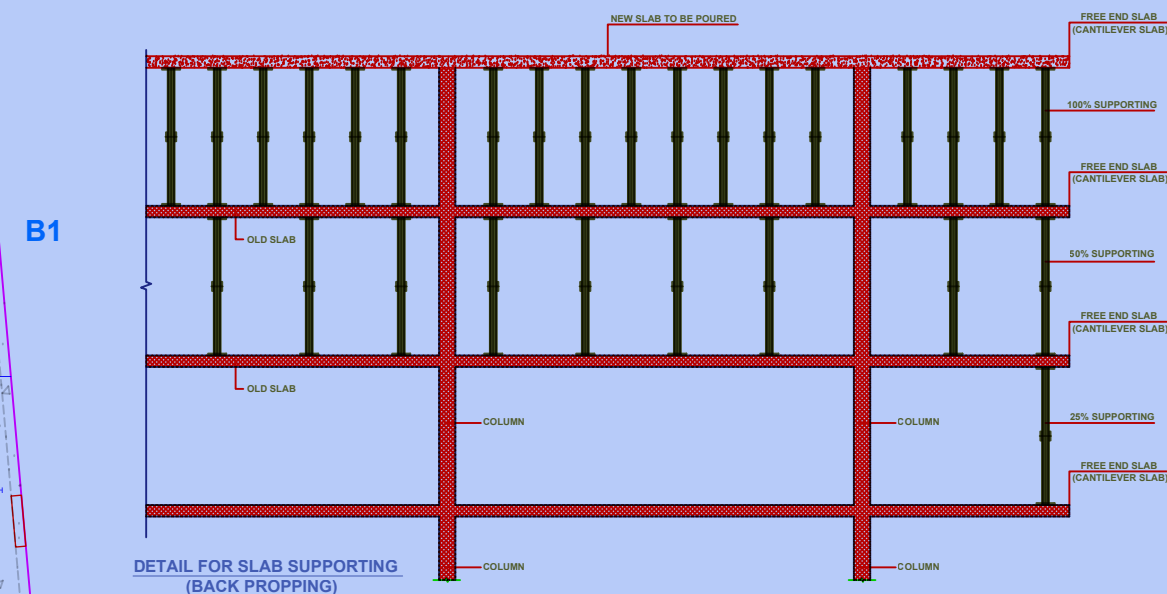
Typical SLAB reinforcement

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 6 /2023			
drawn	job no.	sheet no.			
approved	12		ST/D/11		

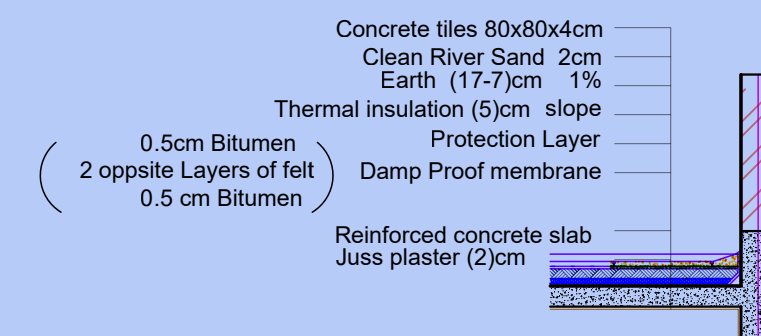
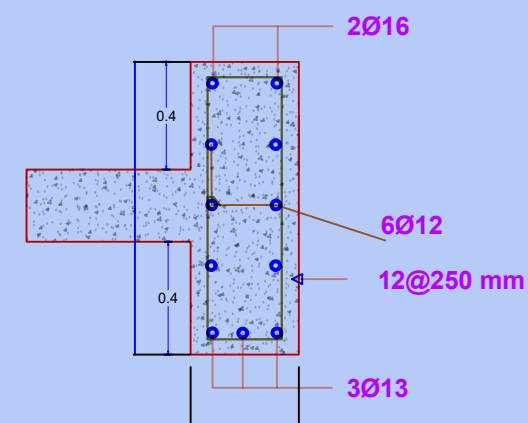
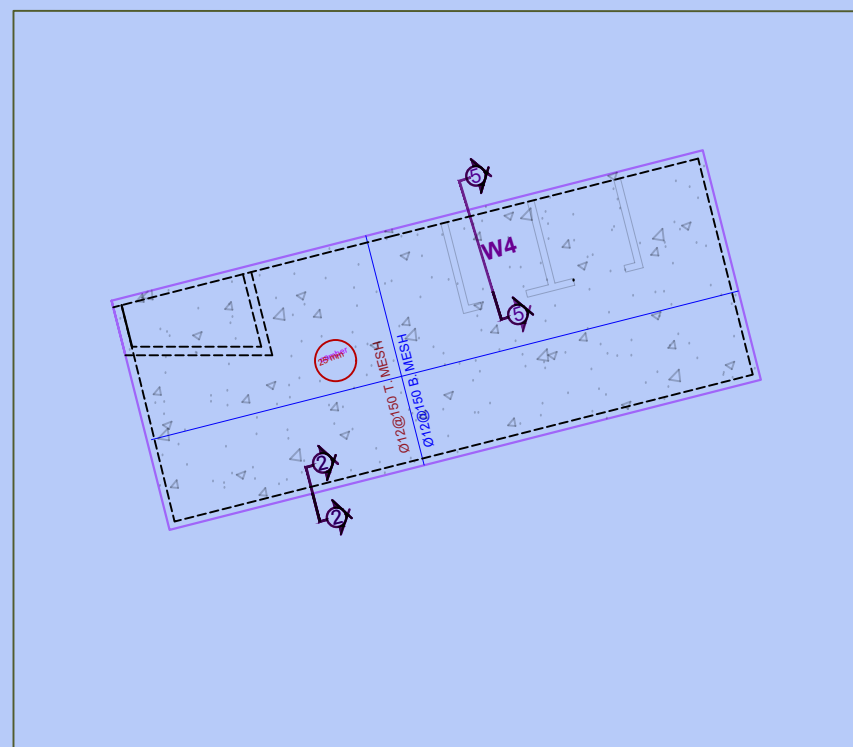


The diagram illustrates the typical reinforcement layout for a concrete slab. It shows a horizontal section of a slab with three columns. The slab thickness is indicated as 220 mm. The reinforcement consists of top bars (labeled 'TOP REINFORCEMENT') and bottom bars (labeled 'BOTTOM REINFORCEMENT'). The columns are reinforced with 'column Reinf.' and the slab is reinforced with 'Slab Reinf.'. The diagram is titled 'Typical Slab reinforcement'.

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.

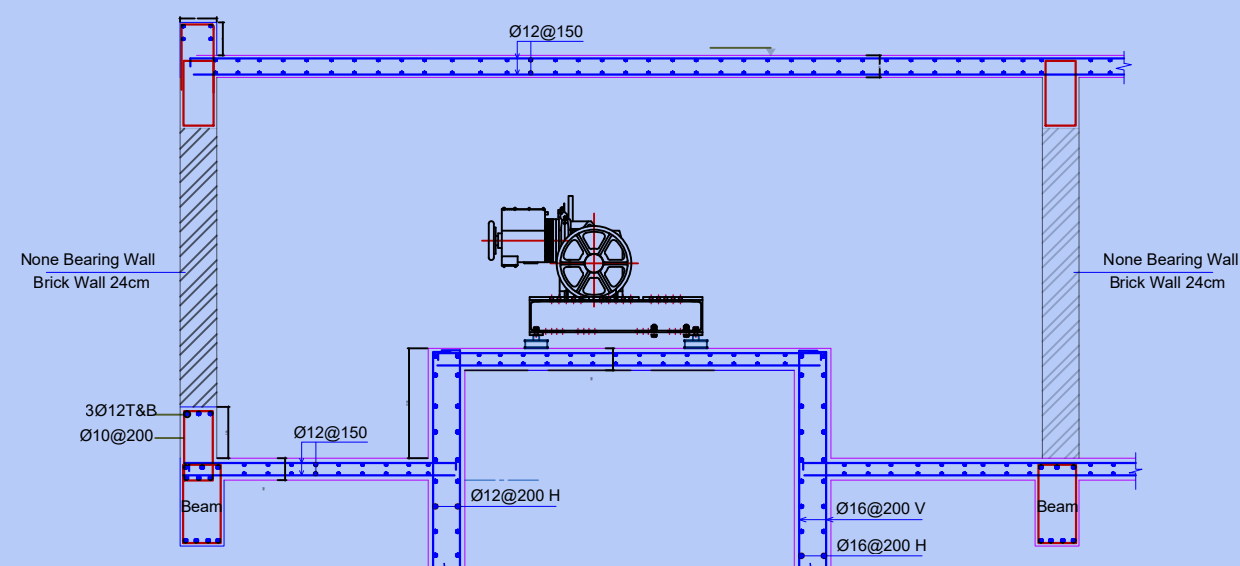
no	date	initials	revision	
job title				
(A)				
drawing title				
PLAN OF SLAB				
REINFORCEMENT&SEC.				
designed	project manager			
checked	ENG : DR-Majid Albana	scale	1-100	date 6 /2010
drawn		job no.		sheet no.
approved			12	ST/D.



ROOFING

25 mm
Camber

slab camber 25 mm

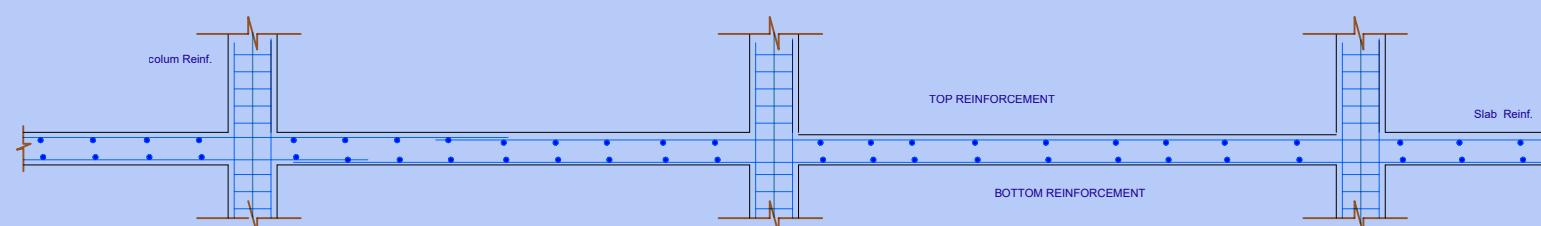


Section 5-5

sec. 2-2

SLAB REINFORCEMENT (PEN HOUSE FLOOR)

SLAB THICKNESS = 250 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 PENTHOUSE SLAB REINFORCEMENT&SEC.				
designed	ENG : DR-Majid Albana		project manager	
checked			scale	date
			1-100	6 /200
drawn			job no.	sheet no.
approved			20	