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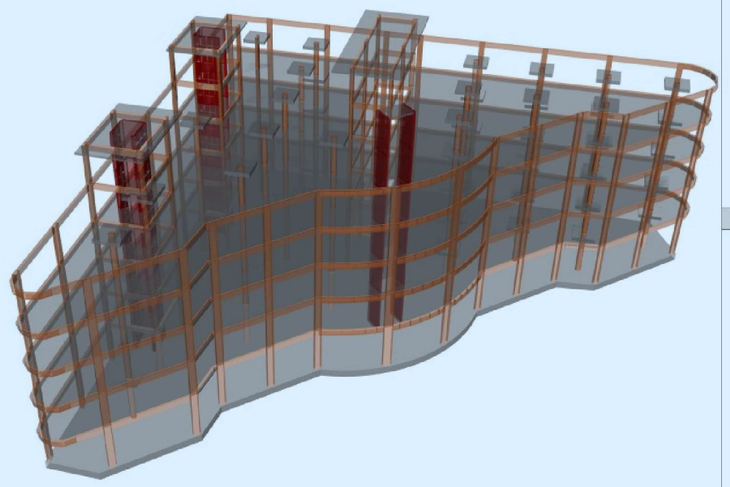

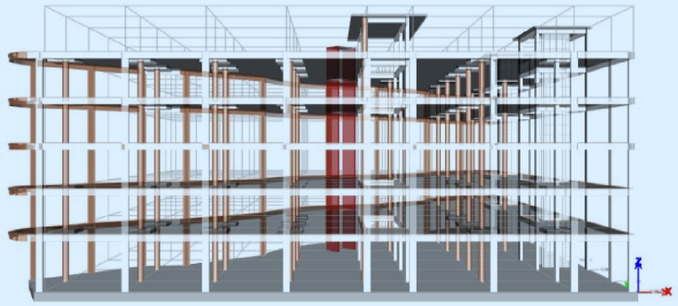

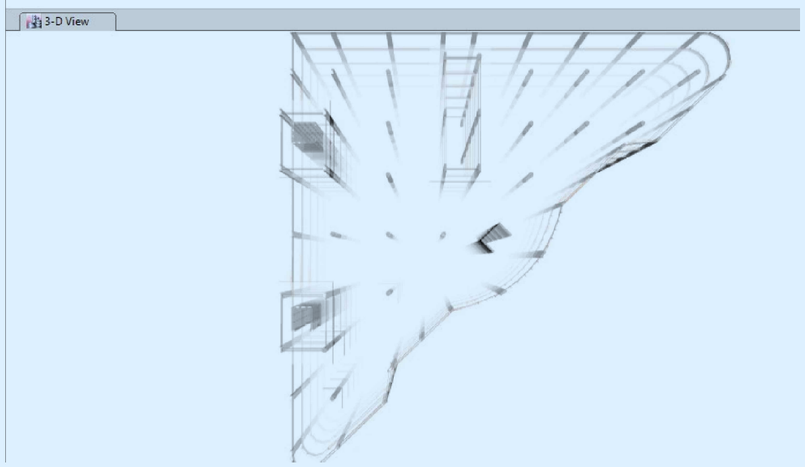


PREPARE BY DR-Majid Albana
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Notes

THE BUILDING SYSTEM WILL BE CONSIDER AS SHEAR WALL BUILDING WITH COLUMNS AND THE SLAB WILL BE AS 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

# MALL BUILDING

Structural Drawings

DRWG. TITLE:

DESIGNED BY DR-Majid Albana

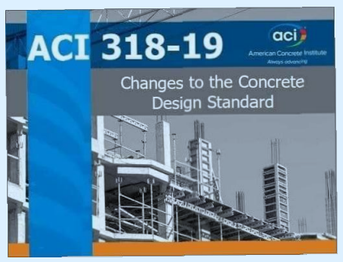
CHECKED BY

SCALE As Shown

DATE 10 /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 APPROVAL 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 (ACSE 7-16)

### B2. DESIGN LOADS

**B2.0 DESIGN CRITERIA**

**2.1 STANDARDS AND LOADS**

**2.1.1 THE CONCRETE DESIGN IS BASED ON ACI-318-19 AND ALL OTHER RELEVANT ACI CODES.**

**2.1.2 LIVE LOADS ARE BASED ON UNIFORM BUILDING CODE UBC (1997), Iraqi Loading Code OR EMPLOYER REQUIREMENTS AND ARE AS FOLLOWS:**

STORES AREA ..... 4.80 KN/M2
RESTAURANT AREA ..... 3.80 KN/M2
ROOF ACCESSIBLE ..... 1.50 KN/M2
ROOF NOT ACCESSIBLE ..... 1.00 KN/M2
STAIRS ..... 4.80 KN/M2

**2.1.3 SUPERIMPOSED DEAD LOADS ADOPTED WHERE NOT ACCURATELY COMPUTED:**

PARTITION (24CM weight) .....VARIES KN/M2
TILING ..... 2.00 KN/M2
FALSE CEILING, E/M INSTALLATIONS ..... 0.50 KN/M2

**2.1.4 WIND LOADS (ASCE 7-07) :**

SPEED 160 Km/Hr
EXPOSURE B

## C. REINFORCED CONCRETE CONSTRUCTION

### C1. CONCRETE

#### C1.1 CONCRETE GRADE AND CHARACTERISTICS

COMPRESSIVE STRENGTH OF CONCRETE, Fcu, AS DEFINED BY ASTANDARD 150mm CUBE AT 28 DAYS SHALL BE AS FOLLOWS:

A. CONCRETE IN CONTACT WITH SOIL :

- BLINDING .....20.MPa.....

B. CONCRETE FROM BASEMENT FLOOR TO FIFTH FLOOR (EXCEPT THIRD FLOOR) :
- COLUMNS AND WALLS .....50.MPa.....
- SUSPENDED BEAMS & SLABS .....40.MPa..

C. CONCRETE FOR THIRD FLOOR ONLY :
- COLUMNS AND WALLS .....50.MPa.....
- SUSPENDED BEAMS & SLABS .....40.MPa..

D. CONCRETE FROM SIXTH FLOOR TO ROOF FLOOR :
- COLUMNS AND WALLS .....50.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/m3) | MAX. W/C RATIO | %GBS/ FLY ASH | 28 DAYS STRENGTH (MPa) |
|---|---|---|---|---|---|---|
| SUPER STRUCTURE | OPC* | 20 | 400* | 0.45* | —— | AS PER C1.1 |
| 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 CONTRACTOR'S 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 SPLICES. 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

WATER TANK WALLS = 50mm
SUSPENDED SLABS = 30mm
BEAMS AND LINTELS = 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.
PILESGROUND 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 FOUNDATIONSBUILDINGS 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. BLOCK 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. DETAILS.
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

J7. 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 57/2022 DATED ON OCTOBER 2023HAS 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

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.

K9. THE BOTTOM OF EACH PILE SHALL BE CLEANED OF EXCESS LOOSE MATERIALS BY AIR LIFT PROCEDURES PRIOR TO FINAL CONCRETING.

SHALL BE PLACED TO THE TOP OF THE BORE HOLE, AND THE EXCESS CONCRETE AND LAITANCE 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 TOLERENCES.

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 ENGINNER'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

K13. 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.

## 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 |
| EJ | 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 |
| MIN | MINIMUM |
| 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 |
| TOF | 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
BASECOURSE
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


DETAIL FOR SLAB SUPPORTING (BACK PROPPING)

| no. | date | initials | revision |
|---|---|---|---|
| | | | |

job title
(A)

drawing title
GENERAL STRUCTURAL NOTES

designed ENG : DR-Majid Albaina
project manager
checked
scale
date
drawn
job no.
sheet no. 1
approved

## 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\1\ \4).
2. BEARING CAPACITY ACCORDING TO THE SOIL REPORT IS (10K/m²) AT DEPTH OF (-4.00m) 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 LIMIT ≤ 25%.
   - PLASTICITY INDEX ≤ 6%.
   - ORGANIC MATERIAL ≤ 2%.
   - $SO_3$ ≤ 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 CONCERET WORK IN CONTACT WITH EARTH OR BELOW D.P.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 | 40 | 20 mm |
| COLUMNS AND SHEAR WALLS | 50 | 20 mm |
| SUSPENDED SLAB, BEAMS AND WALLS | 40 | 20 mm |
| WATER RETAINING STRUCTURES | - | 20 mm |
| PLAIN CONCRETE | 25 | 20 mm |

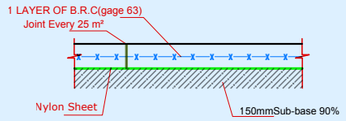
2. SULPHATE RESISTANT CEMENT TYPE 5 SHOULD BE USED IN ALL CONCERET WORK IN CONTACT WITH EARTH OR BELOW D.P.C LEVEL.
3. REINFORCMENT STEEL CONFORM TO ASTM A615 & A616 OR A617 BARS SHOULD BE GRADE 400 FY=410N/mm (60000psi).
4. PLACING OF REINFORCEMENT SHOULD BE ACCORDING TO ACI-315 DETAILING MANUAL.
5.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

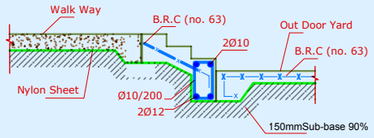
6. MINIMUM BARS SPACING :-
   - CLEAR SPACING BETWEEN PARALLEL BARS SHALL NOT BE LESS THAN BAR DIAMETER OR 4/3 OF MAXIMUM AGGREGATE SIZE BUT NOT LESS THAN 25mm.
   - CLEAR SPACING BETWEEN LAYERS OF BARS TO BE NOT LESS THAN 25mm AND THE UPPER BARS SHOULD BE OVER THE LOWER BARS .
   - IN COLUMNS CLEAR 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 |

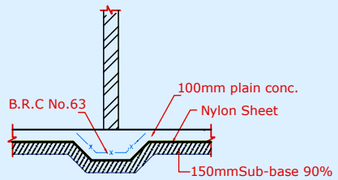
   - LAP LOCATION IN SLABS AND BEAMS :-
     * AT SUPPORT FOR BOTTOM BARS.
     * AT MID SPAN FOR TOP BARS.
   - LAP LOCATION IN FOUNDATION :-
     * AT SUPPORT FOR TOP BARS.
     * AT MID SPAN FOR BOTTOM BARS.
8. VERTICAL REINFORCEMENT IN COLUMN :-
   - WHERE COLUMN FACE ARE OFFSET 75mm OR MORE SPLICE OF VERTICAL BARS TO THE OFFSET FACE SHOULD BE MADE BY SEPARATE 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 BEFOR 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.



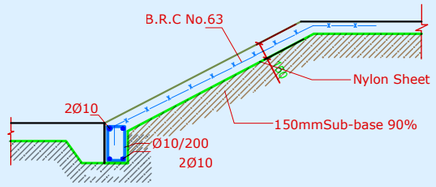

Typical Detail Of Out Door Yard



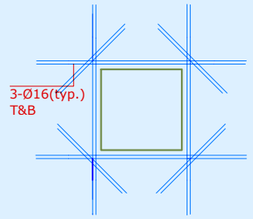

Typical Sec. For Stair On Earth



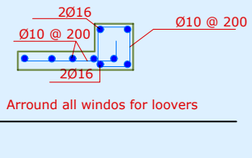

CONSTRUCTION OF PARTITION ON GROUND SLAB
provid construction joint for max.(5mx5m)



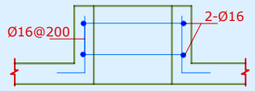

Typical Sec. Of Ramp



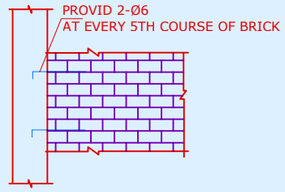

TYPICAL REINF. AROUND OPENNINGS UP TO 600



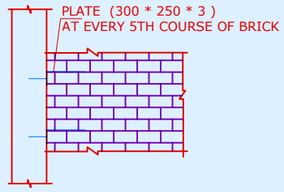

Arround all windos for loovers



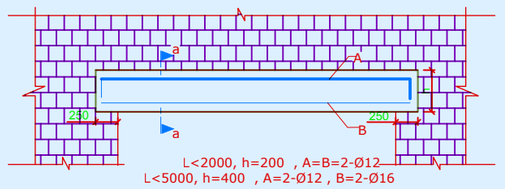

TYPICAL UP STAND DETAIL ROOF OPENNINGS



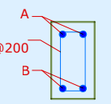

CONECTION BETWEEN BRICK WALL AND R.C. COLUMN
proposel 1




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




LINTEL REINFORCEMENT




SEC. ( a - a )

## 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 |

| no. | date | initials | revision |
|---|---|---|---|
| | | | |

job title
(A)

drawing title
GENERAL NOTES

| | | |
|---|---|---|
| designed ENG : DR-Majid Albana | project manager | |
| checked | scale | date |
| drawn | job no. | sheet no. 2 |
| approved | | |

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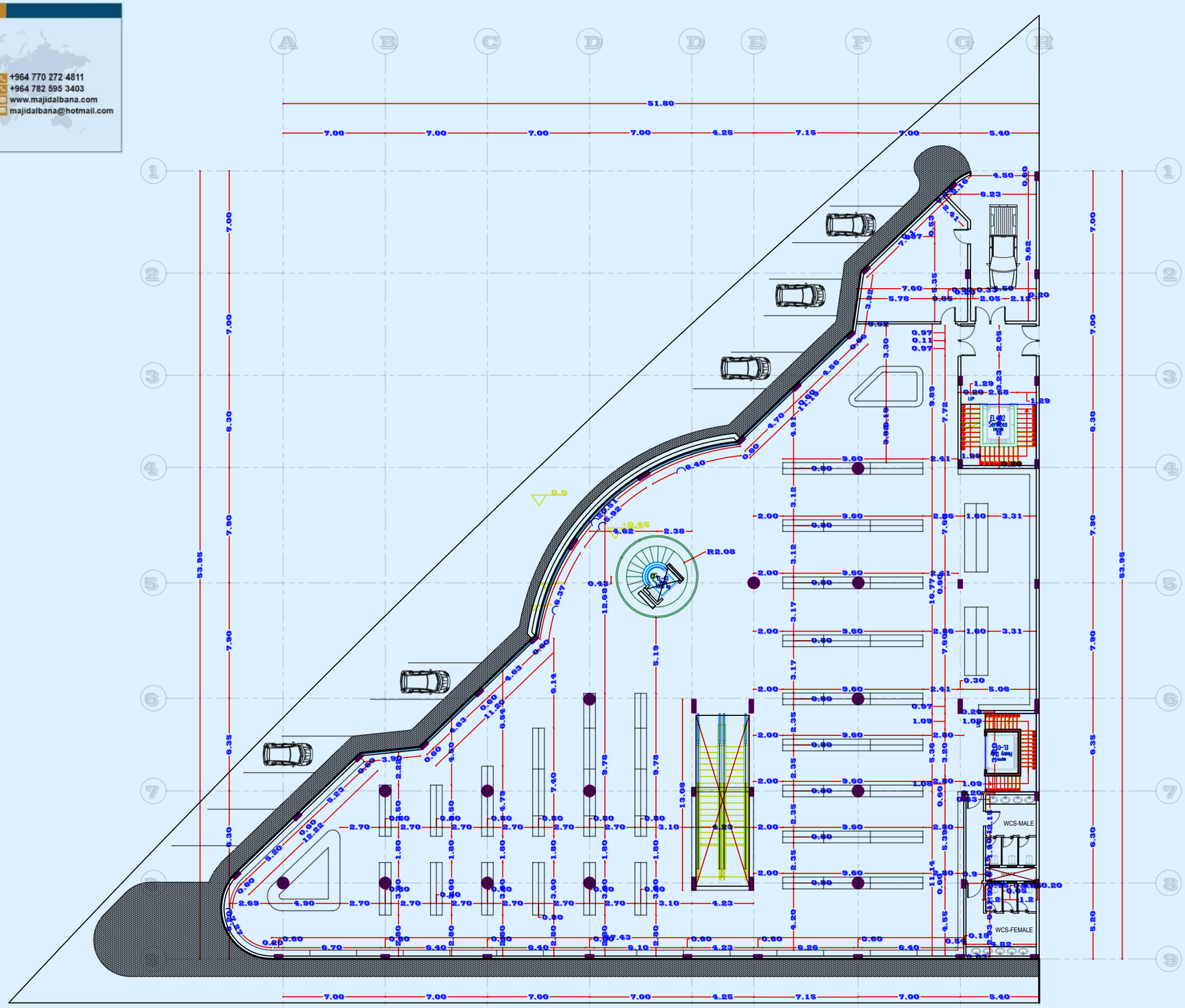



| no. | date | initials | revision |
|---|---|---|---|
| | | | |

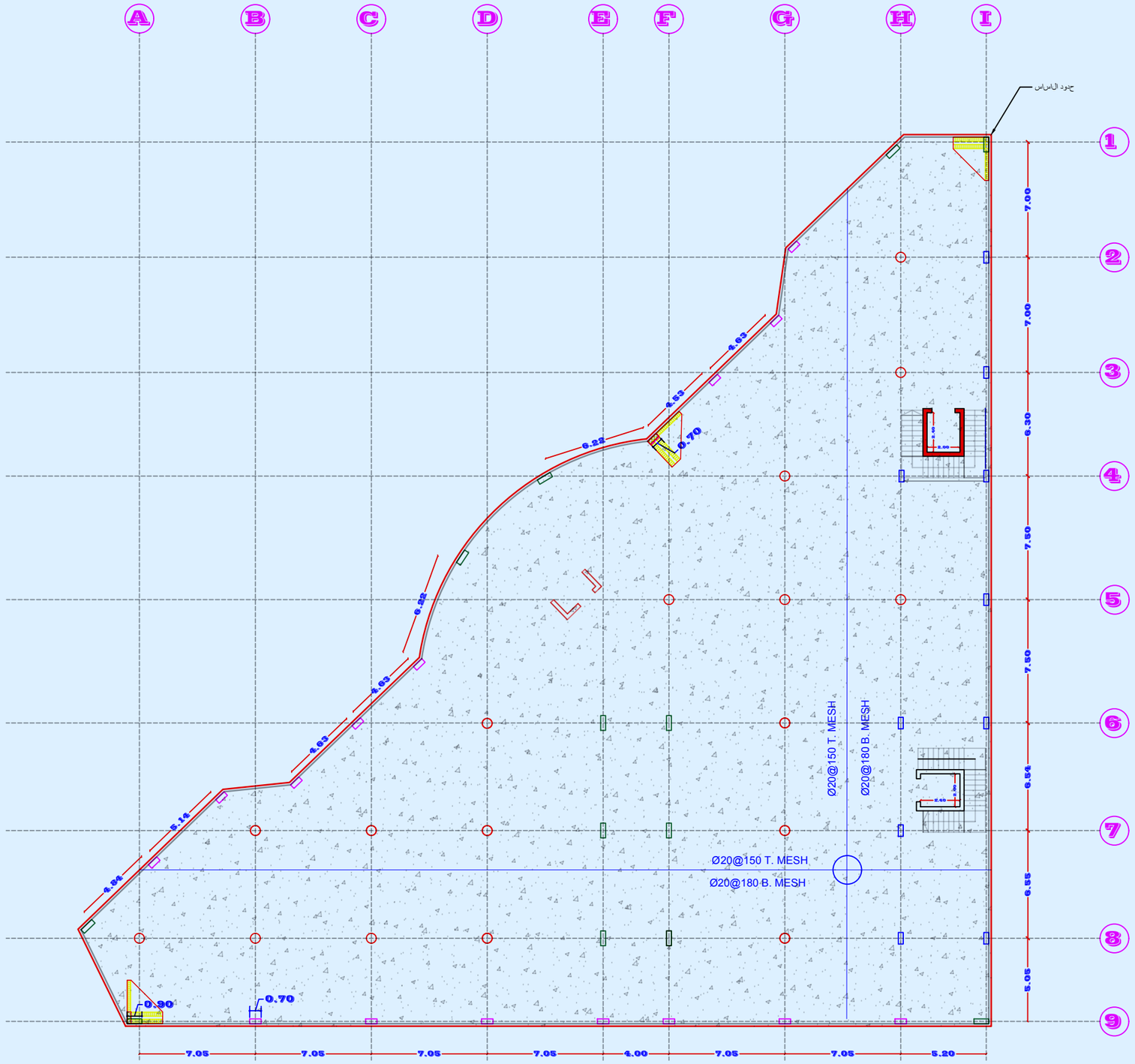
job title

(A)

drawing title

# Plan of Ground floor

| | | | |
|---|---|---|---|
| designed | ENG : DR-Majid Albana | project manager | |
| checked | | scale 1-100 | date 10 /2023 |
| drawn | | job no. 3 | sheet no. ST/D/06 |
| approved | | | |





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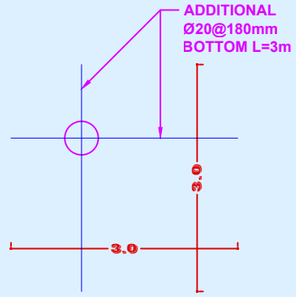
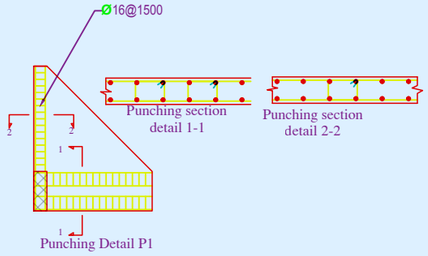



FOR ALL COLUMNS




-Fcu = 35 N/mm2
-Fy = 420 N/mm2.

CONCRETE COVERS

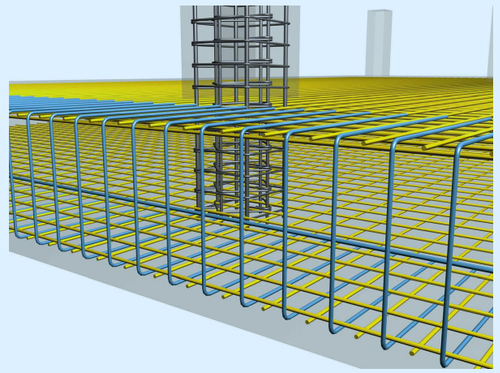
| | |
|---|---|
| -SLABS | = 25 mm |
| -BEAMS | = 40 mm |
| -COLUMNS | = 40 mm |
| -WALLS | = 25 mm |
| -SLAB ON GRADE | = 50 mm |
| -RAFT FOUNDATION | = 75 mm |

# Foundation Plan

**THICK. = 800 mm**

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 |



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

| 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: 10 /2023 |
| drawn | job no.: 4 | sheet no.: ST/D/04 |
| approved | | |

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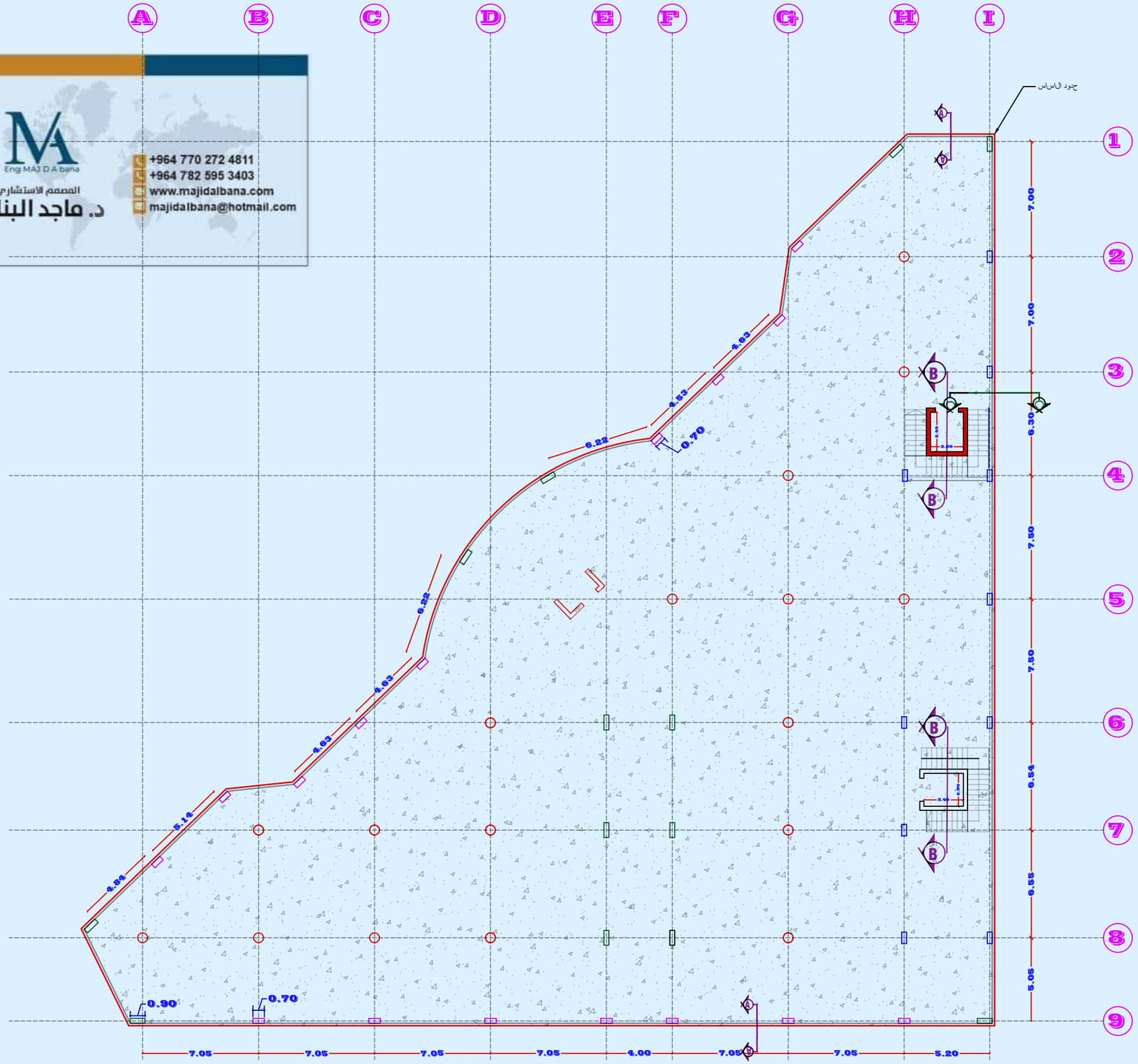
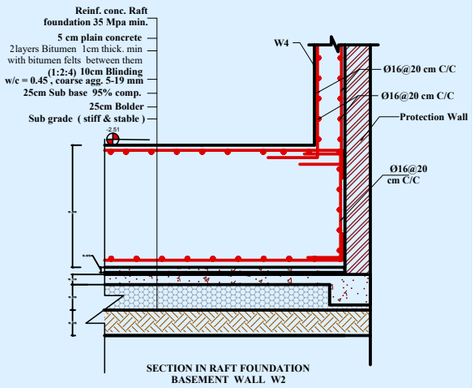
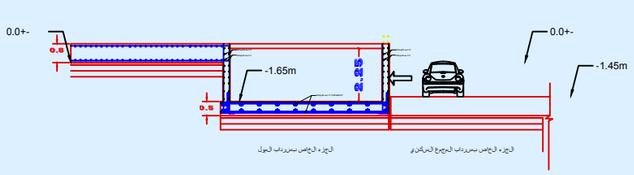



# Foundation Plan

**THICK. = 800 mm**




Typical Section (A-A) of raft foundation




Section (C-C) of raft foundation

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

| no. | date | initials | revision |
|---|---|---|---|
| | | | |

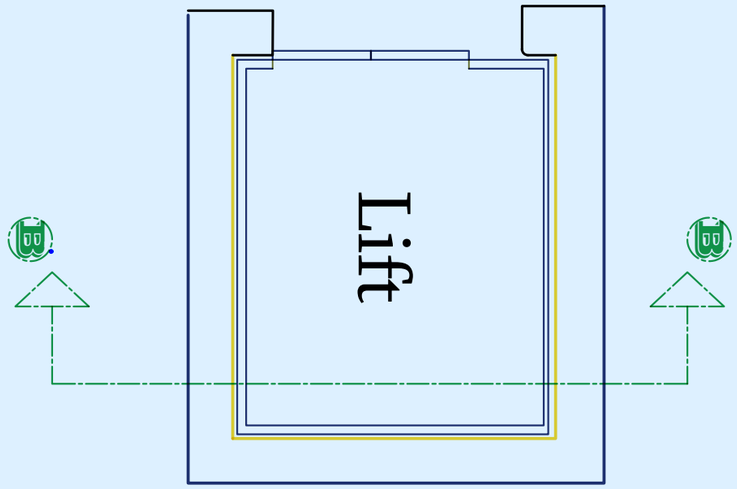
job title

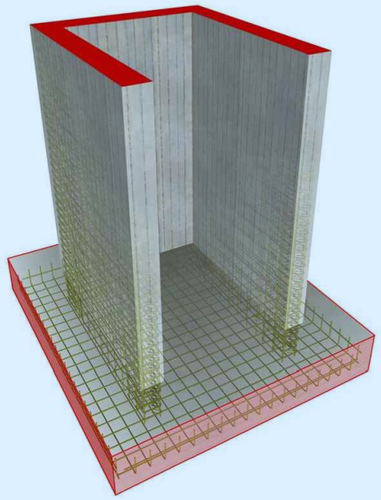
(A)

drawing title

PLAN OF FOUNDATION
REINFORCEMENT&SEC.

| | | |
|---|---|---|
| designed: ENG : DR-Majid Albana | project manager | |
| checked | scale: 1-100 | date: 10 /2023 |
| drawn | job no.: 5 | sheet no.: ST/D/05 |
| approved | | |



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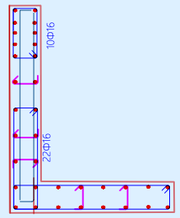
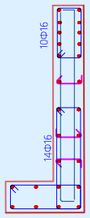
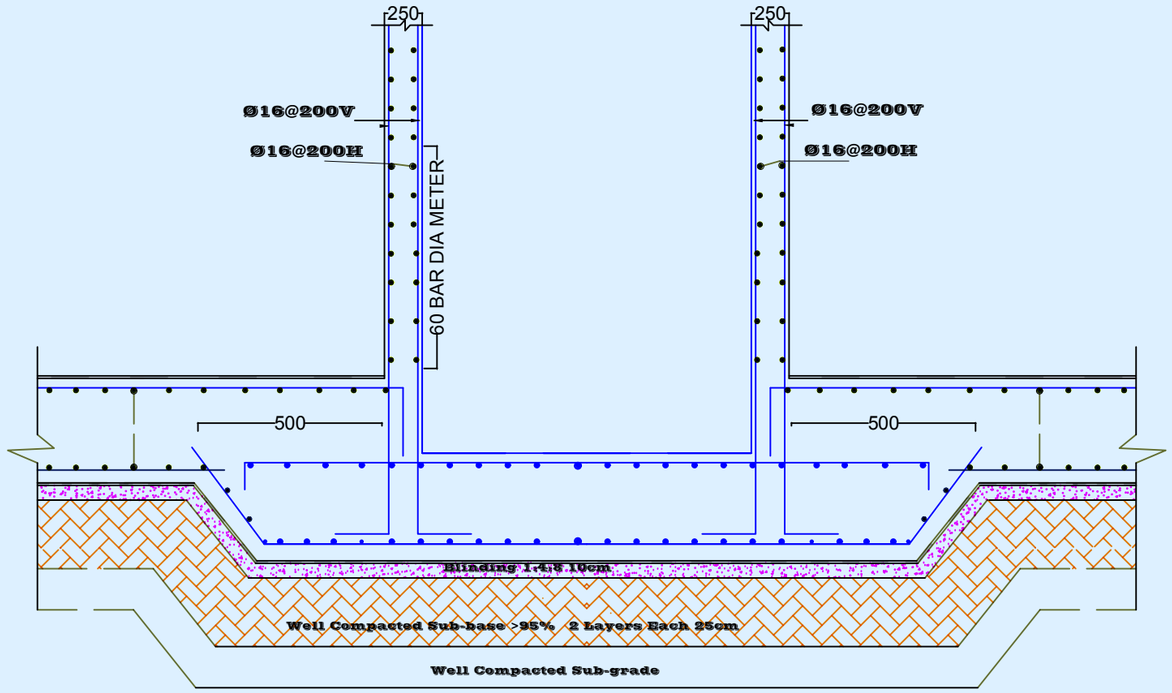


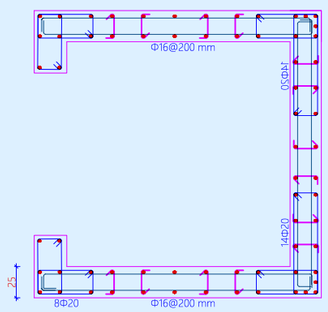

W3 Reinf.




W4 Reinf.




Section B'-B'




W1 Reinf.

Section B-B

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 |

| no. | date | initials | revision |
|---|---|---|---|
| | | | |

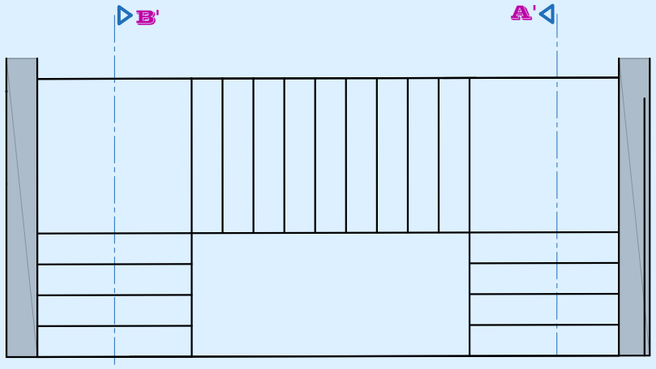
job title

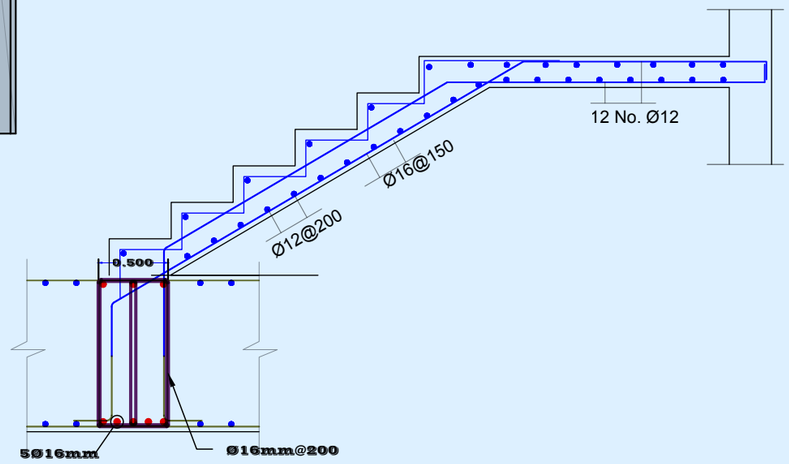
(A)

drawing title

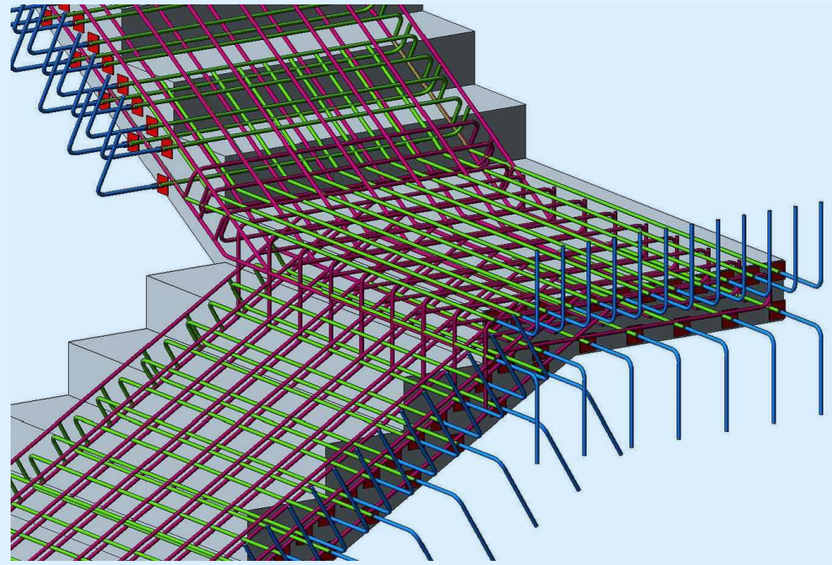
Section A'-A' lift detail

| | |
|---|---|
| designed ENG : Majid Albana | project manager |
| checked ENG : Majid Albana | scale 1-100 / date 10 /2023 |
| drawn ENG : Majid Albana | job no. 6 / sheet no. ST/D/06 |
| approved | |




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



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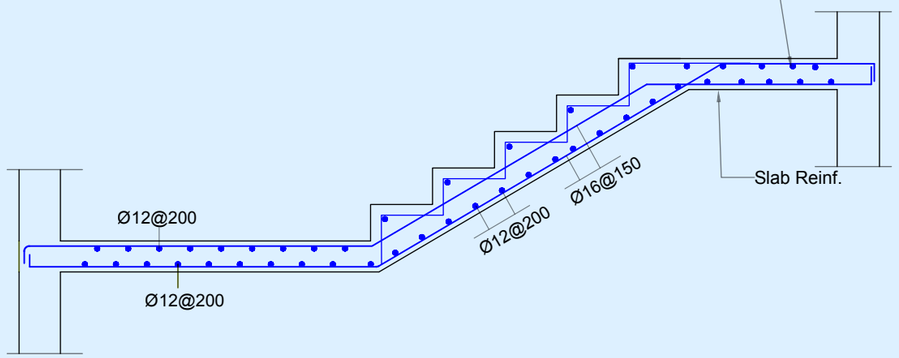
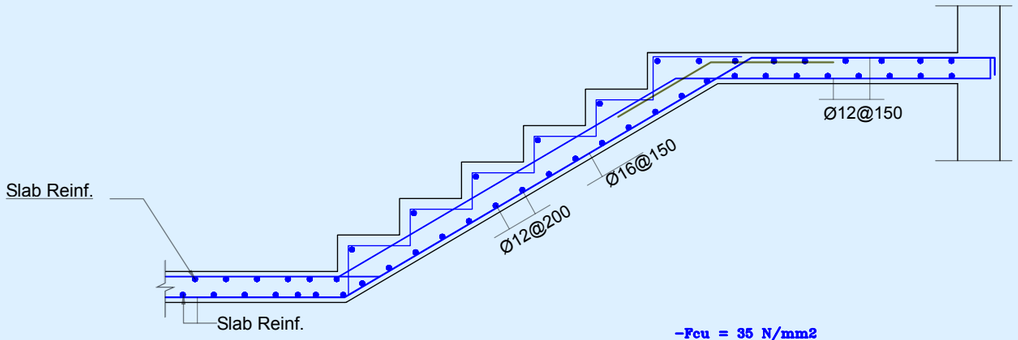



SECTION A'-A' (between slab & landing )




**-Fcu = 35 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 |

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

| no. | date | initials | revision |
|---|---|---|---|
| | | | |

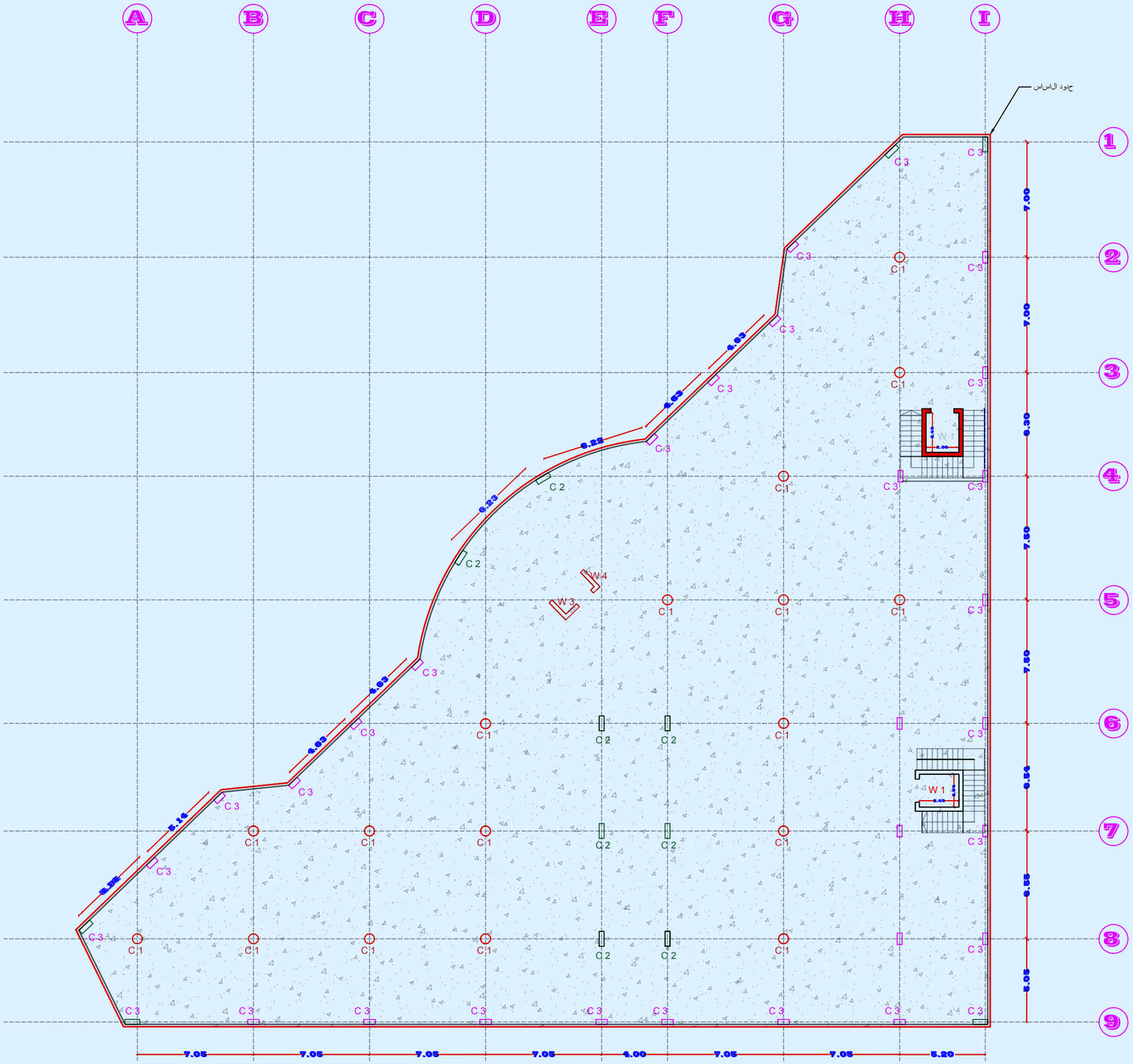
job title

(A)

drawing title

**Stairs detail**

| | | |
|---|---|---|
| designed: ENG : DR-Majid Albana | project manager | |
| checked | scale: 1-100 | date: 10 /2023 |
| drawn | job no. 7 | sheet no. ST/D/07 |
| approved | | |




COLUM & WALL KEY PLAN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## SCHEDULE OF COLUMNS AND WALLS

| COLUMNS OR WALLS ID | SIZE (mm) | SIZE WIDTH (mm) | REMARK |
|---|---|---|---|
| | | | |
| W1 | 2000 | 300 | |
| W2 | 250 | | just basement |
| W3 | 3000 | 300 | |
| W4 | 2500 | 2500 | lift |

Notes

-Fcu = 45 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 THE BEARING CAPACITY OF THE SOIL = 100 kN/m2*
*-THE BUILDING IS DESIGNED FOR BASEMENT + GROUND FLOOR +3 FLOORS + PENT-HOUSE*

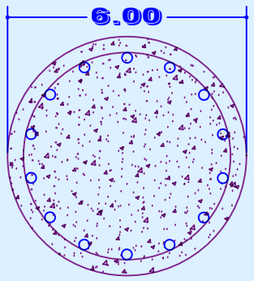
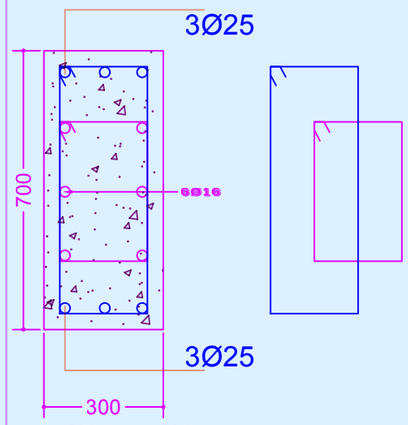
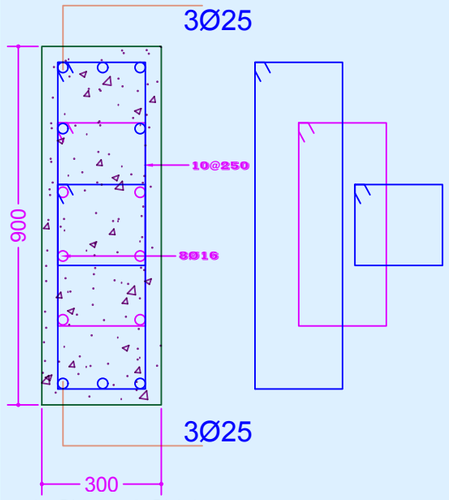
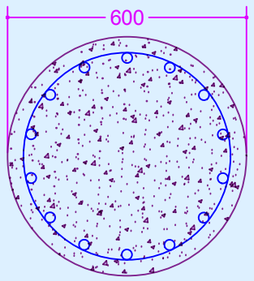
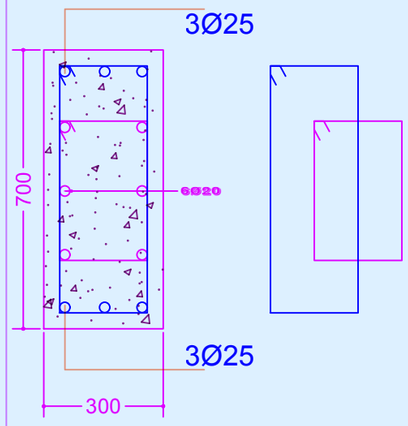
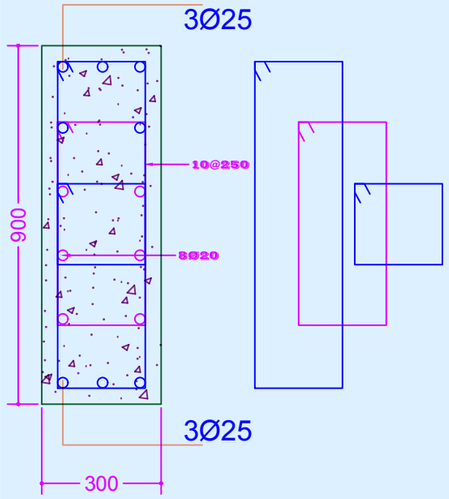
. all dim. from ARCH D.W.G.

| no. | date | initials | revision |
|---|---|---|---|
| | | | |

job title: (A)

drawing title: COLUM KEY PLAN

| | | |
|---|---|---|
| designed: ENG : DR-Majid Albana | project manager | |
| checked | scale: 1-100 | date: 10 /2023 |
| drawn | job no.: 8 | sheet no.: ST/D/08 |
| approved | | |

| | | | | | |
|---|---|---|---|---|---|
| Main Bar | | | 14- Ø20 | 6 Ø20+6Ø16 | 6 Ø20+8Ø16 |
| Ties | Roof Floor | | Ø12@200<br>1Ties/Set | Ø10@250<br>2Ties/Set | Ø10@250<br>3Ties/Set |
| Section | 2 nd Floor | FCU<br>C 45 |  |  6 Ø20+6Ø16 |  6 Ø20+8Ø16 |
| Main Bar | | | 14- Ø20 | | |
| Ties | | | Ø12@200<br>1Ties/Set | Ø10@250<br>2Ties/Set | Ø10@250<br>3Ties/Set |
| Section | 1st Floor<br>Ground Level<br>foundation level | C 45 |  |  |  |
| Dowels | | | 14 - Ø25<br>C 1 | 6 Ø25+6Ø20<br>C 3 | 6 Ø25+8Ø20<br>C 2 |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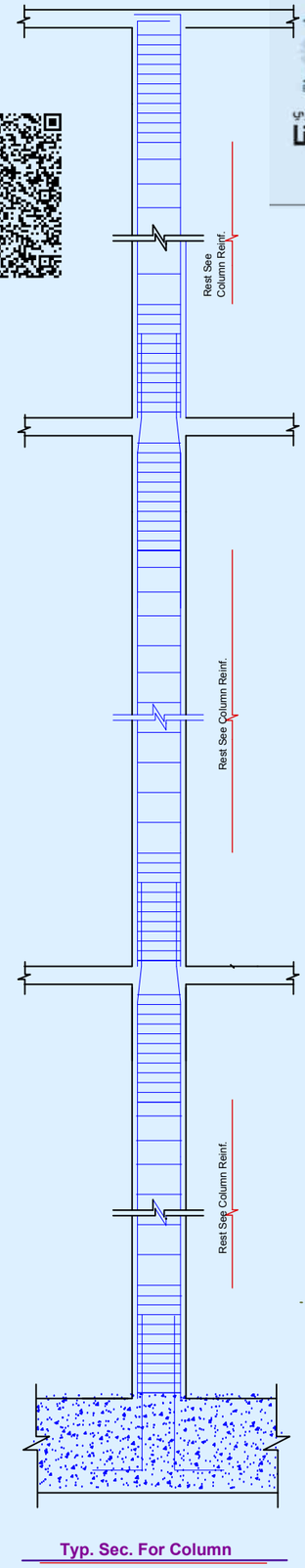
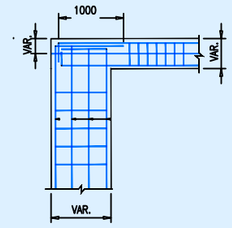
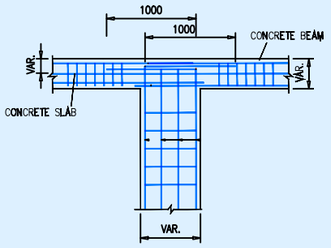


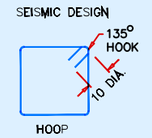

Typ. Sec. For Column




TYPICAL EDGE TO BEAM DETAIL




TYPICAL INTERNAL WALL TO BEAM DETAIL




| no. | date | initials | revision |
|---|---|---|---|
| | | | |

job title

(A)

drawing title

SCHEDULE OF WALL

| | | | |
|---|---|---|---|
| designed | ENG : DR-Majid Albana | project manager | |
| checked | | scale 1-100 | date 10 /2023 |
| drawn | | job no. 9 | sheet no. |
| approved | | | |

SCHEDULE OF COLUM

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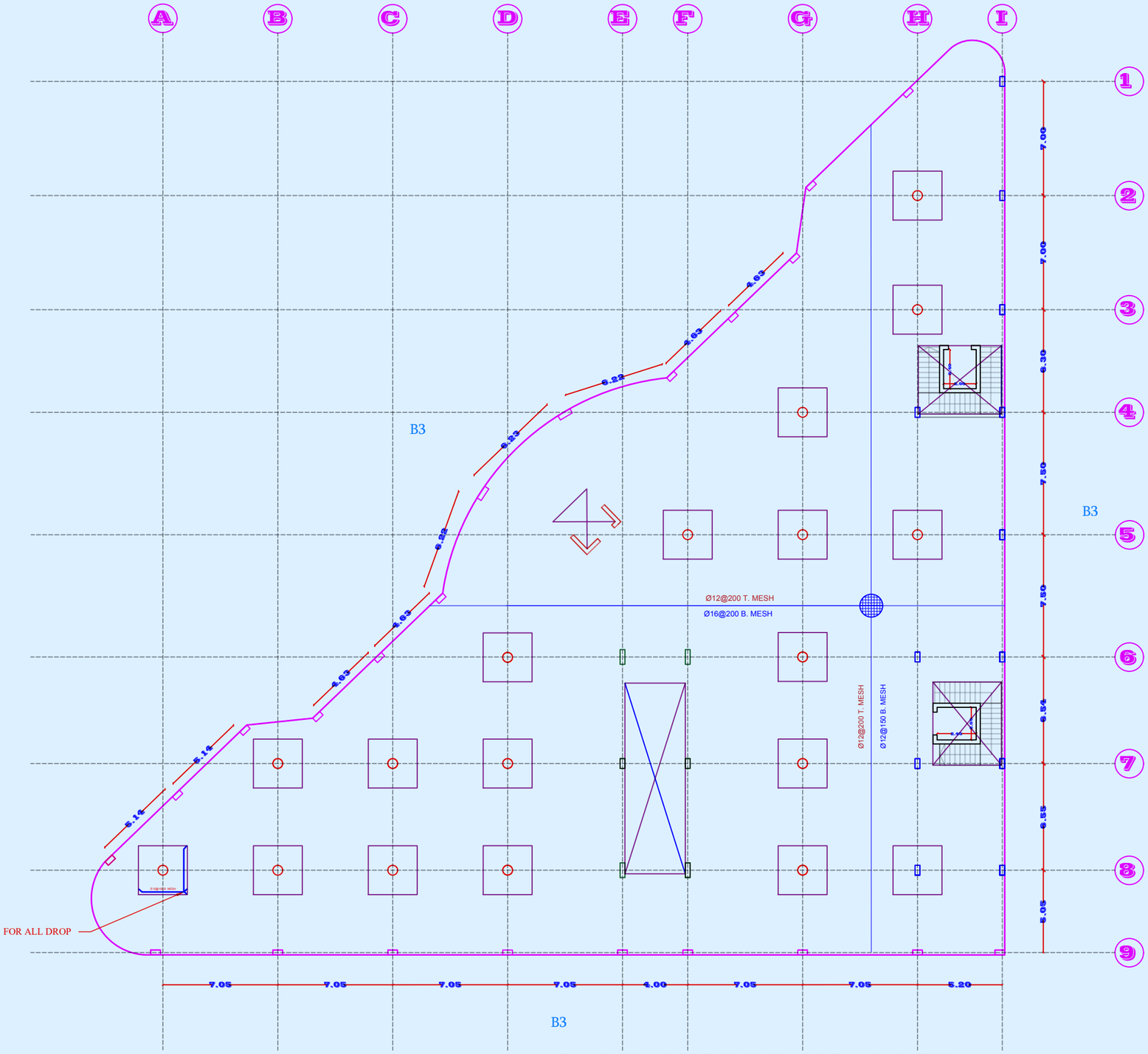
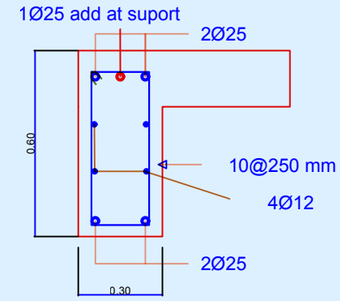
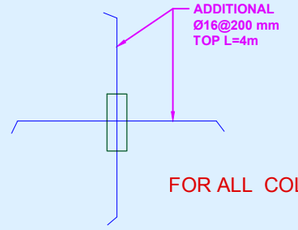
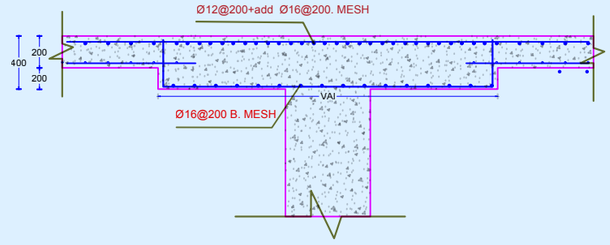


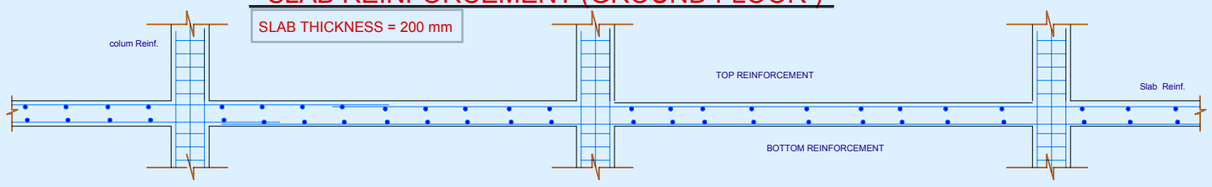

B3

25 mm Camber

slab camber 25 mm

## SLAB REINFORCEMENT (GROUND FLOOR )

SLAB THICKNESS = 200 mm




Typica 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 | 550 | 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 |
|---|---|---|---|
| | | | |

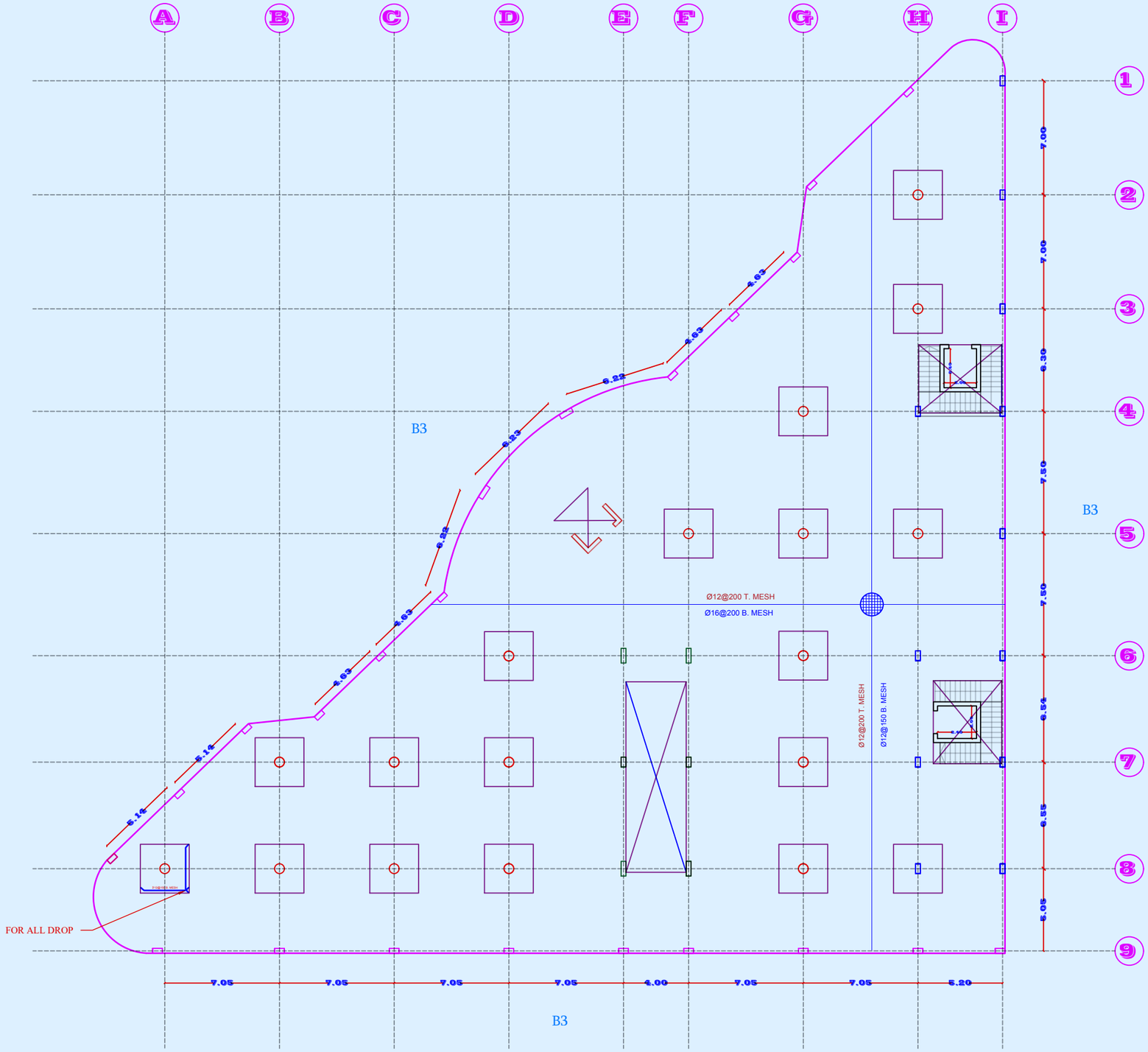
job title

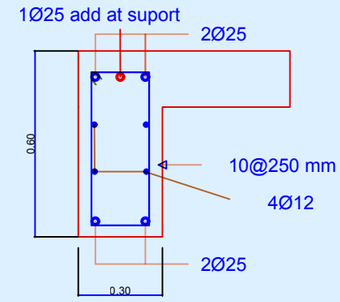
(A)

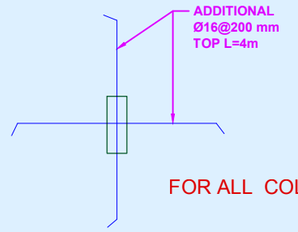
drawing title

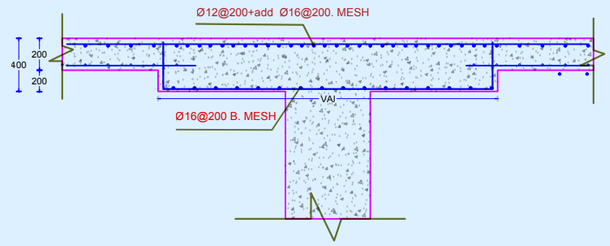
PLAN OF SLAB REINFORCEMENT&SEC.

| | | | |
|---|---|---|---|
| designed | ENG : DR-Majid Albana | project manager | |
| checked | | scale | 1-100 |
| drawn | | job no. | 12 |
| approved | | sheet no. | ST/D/11 |
| | | date | 10 /2023 |



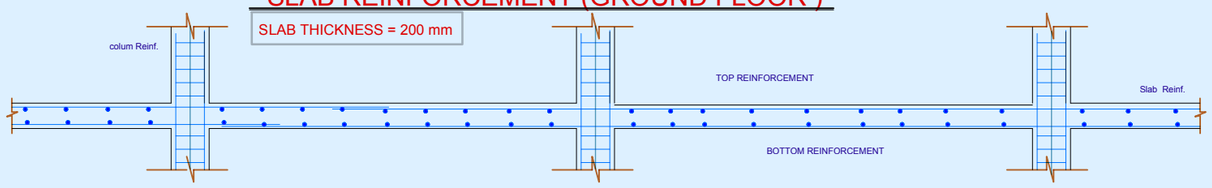

B3

25 mm Camber

slab camber 25 mm

## SLAB REINFORCEMENT (GROUND FLOOR )

SLAB THICKNESS = 200 mm




Typica 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 | 550 | 700 | 800 | 900 |
| LAP LENGTH (mm) IN SLAB & BEAMS | 400 | 600 | 700 | 800 | 900 | 1000 | 1250 |

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

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| 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 10 /2023 |
| drawn | | job no. 12 | sheet no. ST/D/11 |
| approved | | | |

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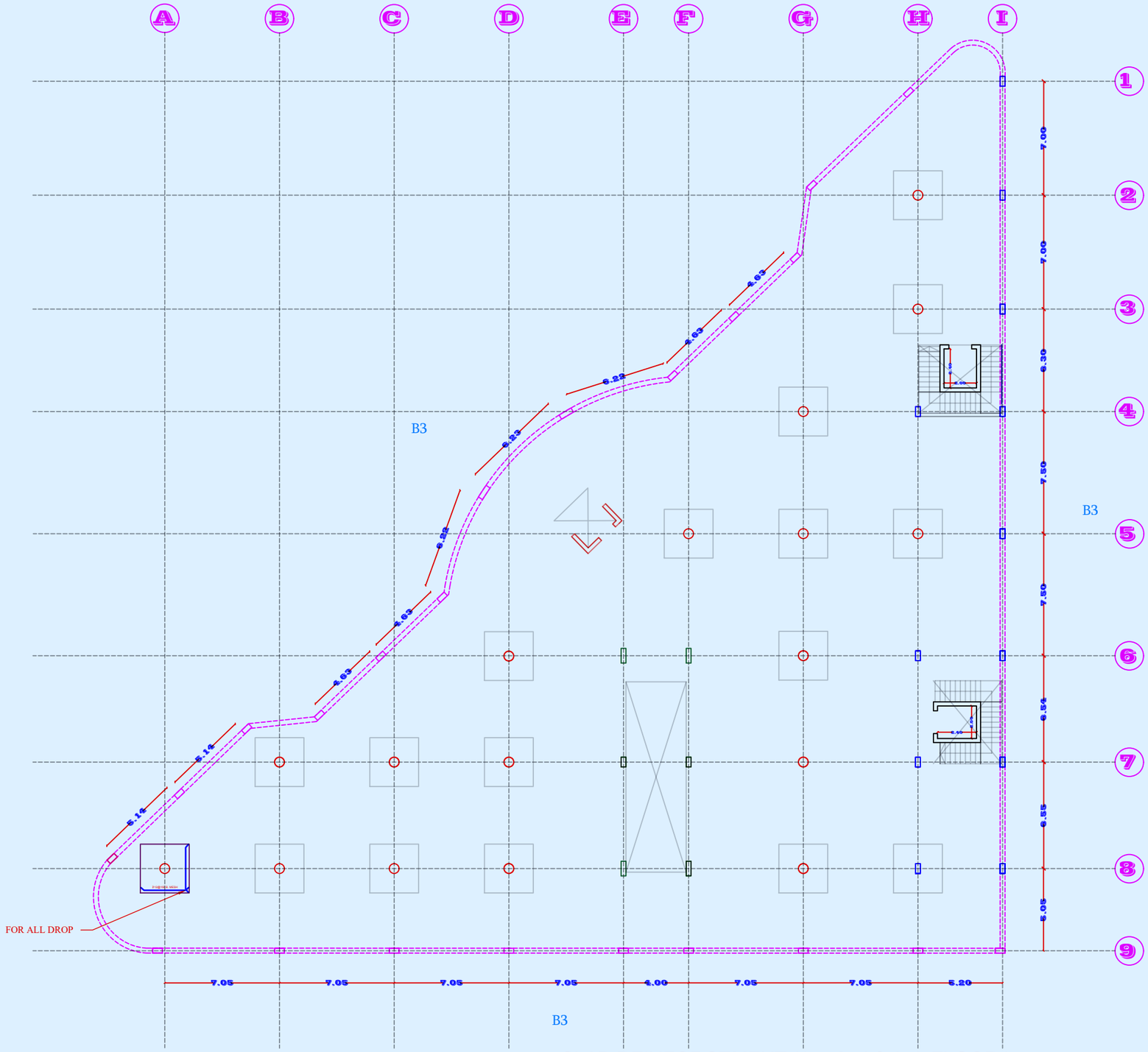
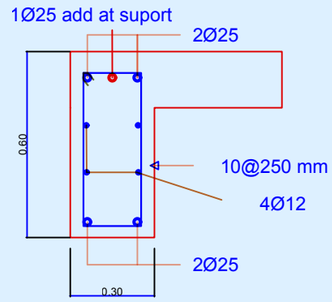
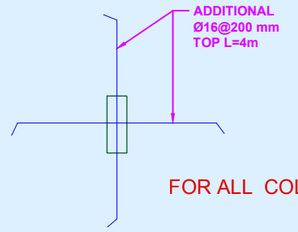
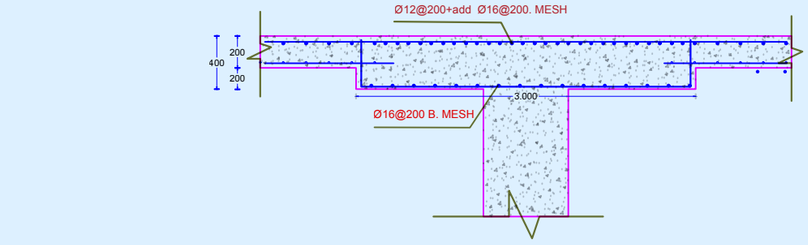


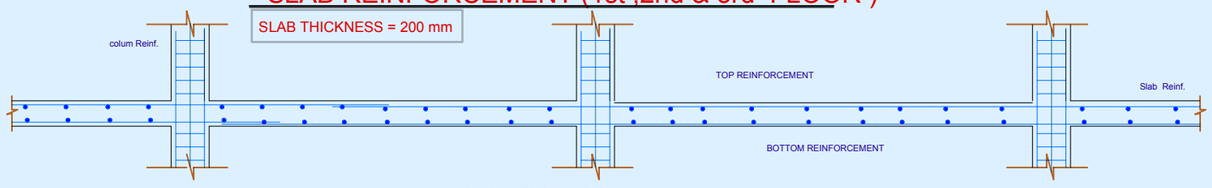

B3

25 mm Camber

slab camber 25 mm

## SLAB REINFORCEMENT (1st ,2nd & 3rd FLOOR )

SLAB THICKNESS = 200 mm




Typica 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 | 550 | 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 10 /2023 |
| drawn | job no. 12 | sheet no. ST/D/11 |
| approved | | |

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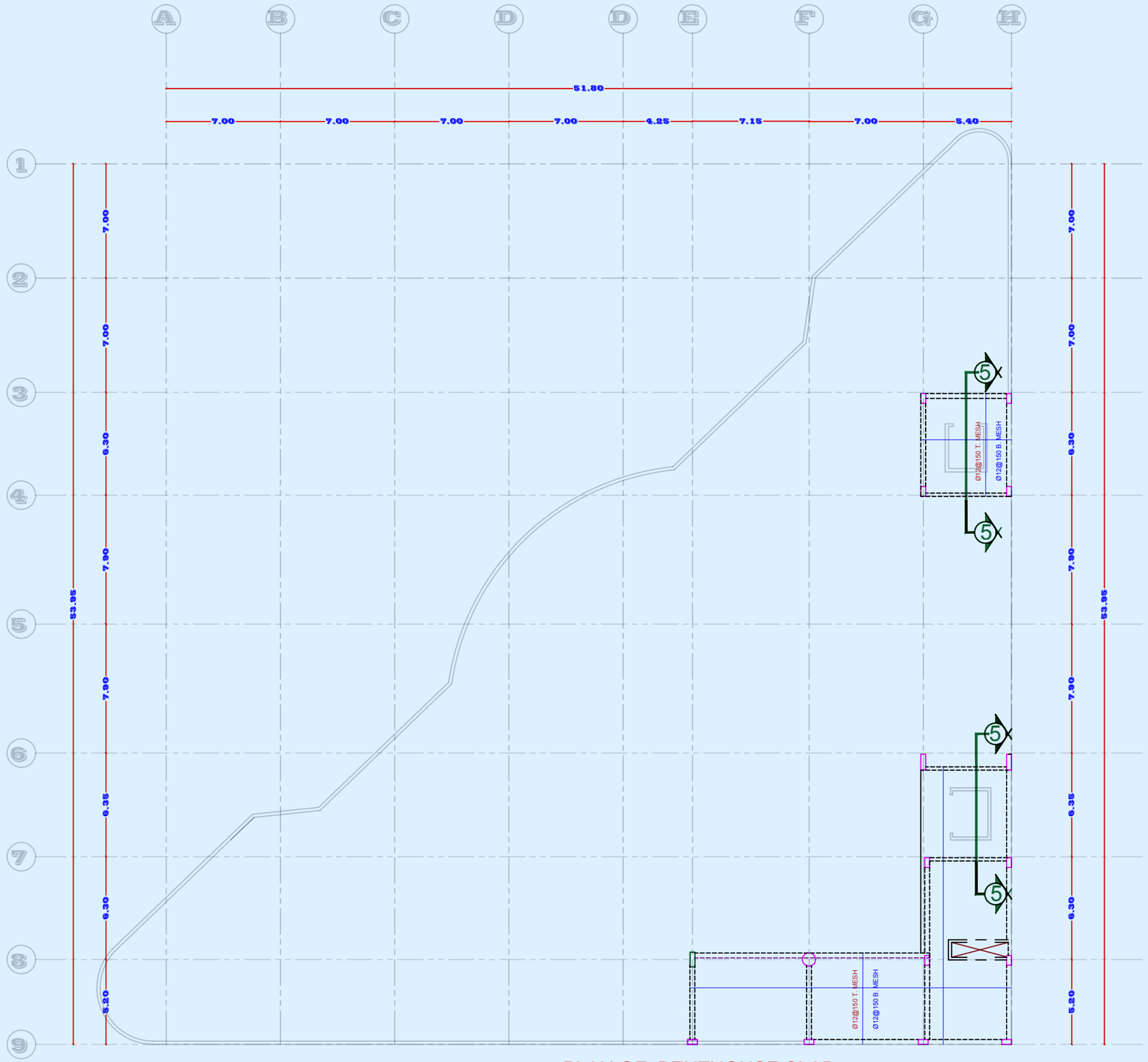


## PLAN OF PENTHOUSE SLAB

SLAB THICKNESS = 250 mm

PLAN OF PENTHOUSE SLAB

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

| | |
|---|---|
| designed: ENG : DR-Majid Albana | project manager |
| checked | scale: 1-100 / date: 10 /2023 |
| drawn | job no.: 12 / sheet no.: ST/D/11 |
| approved | |

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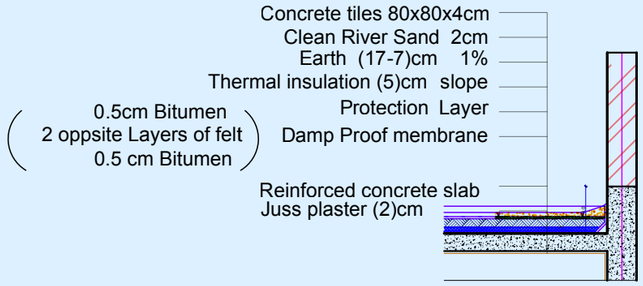
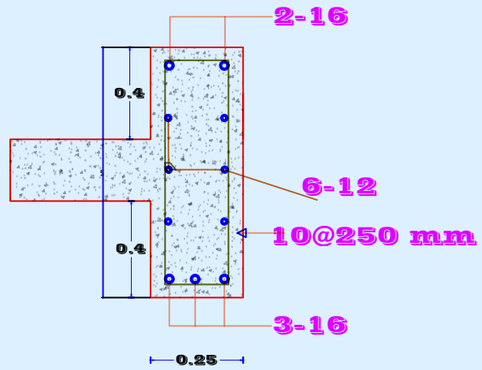
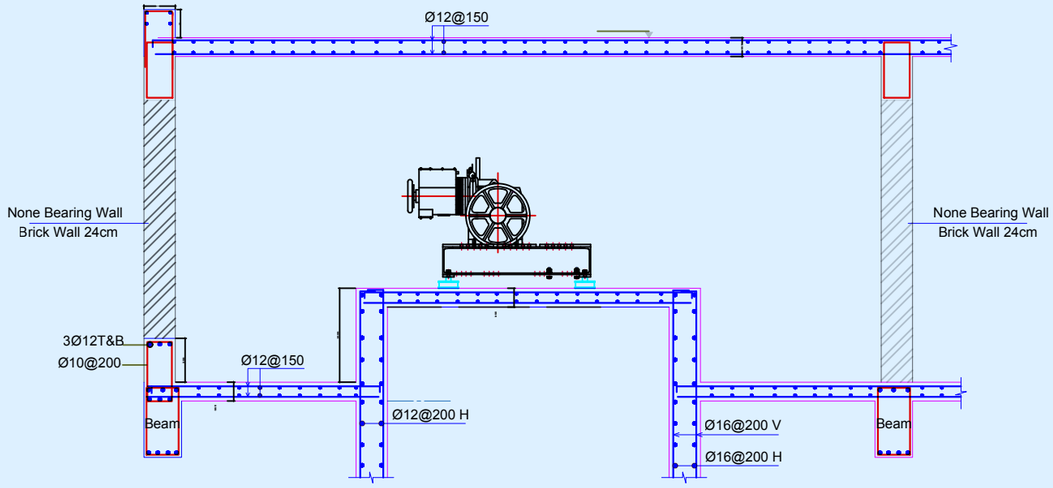



## sec. 5-5

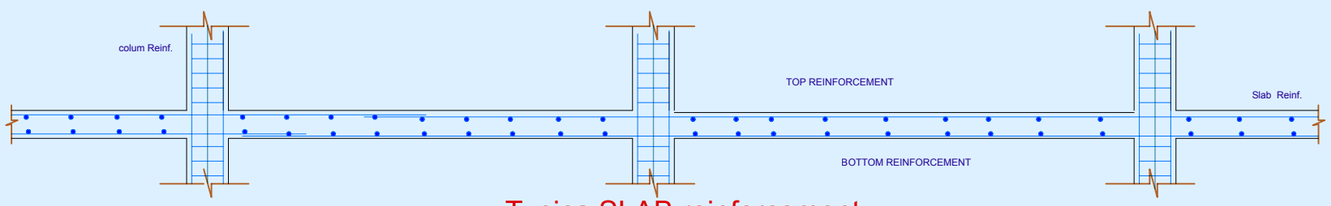
## sec. 2-2

25 mm Camber

slab camber 25 mm

## SLAB REINFORCEMENT (PEN HOUSE FLOOR )

SLAB THICKNESS = 250 mm




Typica 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) | COLUMNS | 400 | 500 | 600 | 650 | 700 | 800 | 900 |
| LAP LENGTH (mm) | SLAB & BEAMS | 400 | 600 | 700 | 800 | 900 | 1000 | 1250 |

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

| no. | date | initials | revision |
|---|---|---|---|
| | | | |

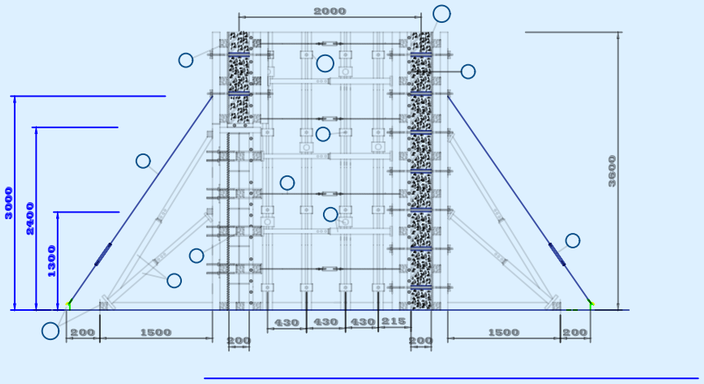
job title

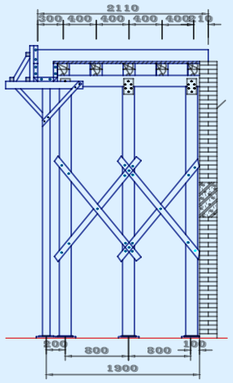
(A)

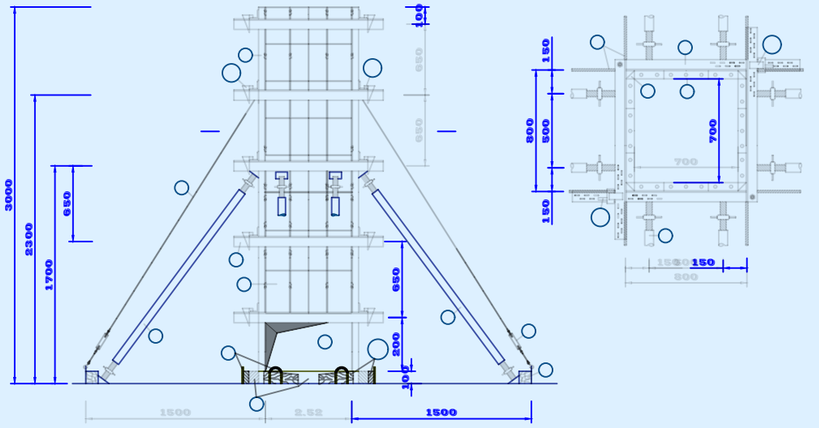
drawing title

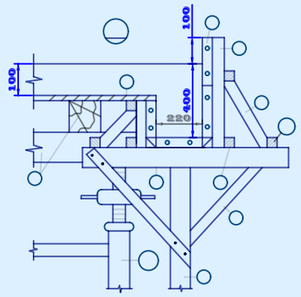
PLAN OF PENTHOUSE SLAB REINFORCEMENT&SEC.

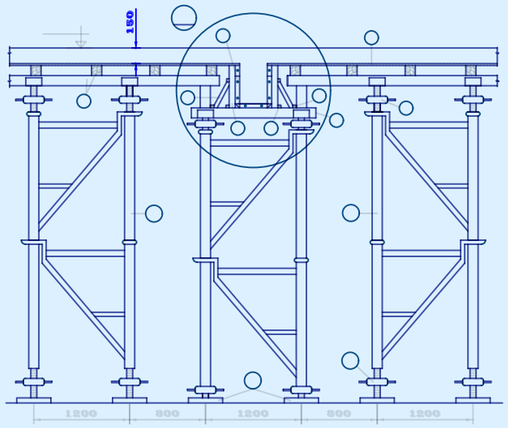
| | |
|---|---|
| designed ENG : DR-Majid Albana | project manager |
| checked | scale 1-100 / date 10 /2023 |
| drawn | job no. 20 / sheet no. |
| approved | |

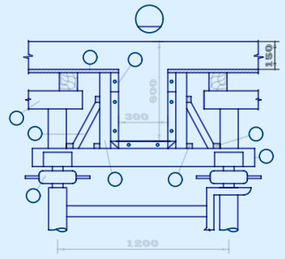


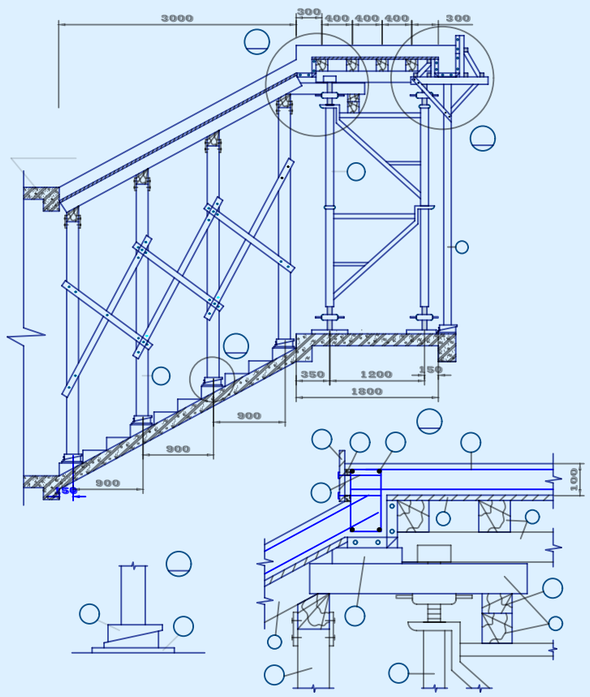



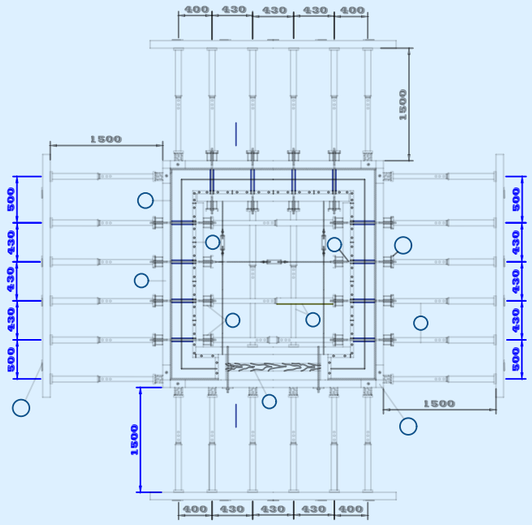




# Composite scaffolding

| no. | date | initials | revision |
|---|---|---|---|
| | | | |

job title

(A)

drawing title

**Composite scaffolding**

| | |
|---|---|
| designed: ENG : DR-Majd Albana | project manager |
| checked | scale: 1 - 100 / date: 10 /2023 |
| drawn | job no.: 17 / sheet no.: ST/D/06 |
| approved | |