

RECOMMENDATIONS

5.1 RECOMMENDATION FOR OPEN FOUNDATION SYSTEM:

(2 BASEMENT + GROUND + 11 FLOORS)

- ❖ In case of raft foundation is adopted, the recommended allowable net safe bearing pressure is 600 kPa at 7.0m or beyond from the existing ground level.
- ❖ For the design of raft the recommended modulus of sub grade reaction of the bearing strata (k_s) is 100000 kN/m³.
- ❖ The raft shall be checked/design for uplift pressure corresponding to groundwater level at the existing ground level.

5.2 RECOMMENDATION FOR EXCAVATION & GROUNDWATER LOWERING:

- ❖ For carrying out excavation either diaphragm wall or secant pile wall is a suitable system due to high ground water table.
- ❖ The design soil profile presets the requisite design data for the estimation of lateral earth pressures and the same hold good for the analysis and design of diaphragm wall or secant pile wall.
- ❖ For ground water lowering, since diaphragm wall or secant pile wall is recommended as shoring for ground water lowering a combination of dewatering bore-wells installed both inside and outside the diaphragm is suggested.

5.3 GENERAL RECOMMENDATIONS:

- ❖ The chloride content in ground water sample is within the permissible limit of 500mg/l as per IS 456 Table 1.0.
- ❖ Corresponding to the sulphate content in 2:1 Water-Soil extract and ground water use Table 4.0 of IS 456 Clause 2.0 for minimum cement content and maximum water cement ratio.
- ❖ Hence no special steel or cement is required for the construction of foundations.
- ❖ The present project site falls in seismic zone-III as per IS 1893-P-I and based on the liquefaction analysis the sub soil formation exists at site is non-liquefiable considering the zone-III seismic intensity.
- ❖ Excavated earth is suitable for backfilling purposes.

AUTHORISED SIGNATORY

DR. C. V. PRASAD

GEOMARINE CONSULTANTS PRIVATE LIMITED

Dr. C. VENKATA PRASAD
Registered Geotechnical Engineer (RGTE)
Registration No: GTE/19/03/003
Chennai Metropolitan Development Authority (CMDA)
No.11, 2nd Main Road, Kannappa Nagar, Thiruvannamiyur,
Chennai-41. Mob No: +919444026189
Email: drcvp@geomarineindia.com

*On behalf of CMDA HRB Panel Committee
the Geo Technical Investigation Report is generally reviewed.*

*Superintending Engineer, C.W.D.,
Planning and Design Circle (Buildings),
Chennai-600 005.*

Annexure – IV [See rule 51(3)]**Form 1****Structural Design Basis Report****(1) This report to accompany the application for Building Developments**

Part1	General Data		
S.No.	Description	Information	Notes
1	Site Address	Door No. Old No: 30 & New No: 47/C, Gandhi Mandapam Road, Kotturpuram, Chennai – 600 085 Comprised in T.S.No. 5/21, 6/31, & 6/63 of Block No.16 Adyar Village, Adyar – Guindy Taluk, Chennai District. Greater Chennai Corporation Zone: 13, Division: 172.	
2	Name of Owner	Sri Kausalya Constructions Ltd, Managing Director, Y Meera Reddy	
3	Name of Registered Developer along with the Registration Number	Sri Kausalya Constructions Ltd, RD/19/05/413	
4	Name of Registered Architect along with the Registration Number	A.Venkatakkrishnan, B.Arch., RA/GR.I/19/03/053	
5	Name of Registered Structural engineer along with the Registration Number	Dr. Alex Jacob SE/GR-I/19/02/001	
6	Use of the building	Office	
7	Number of stories above ground level (including story's to be added later, if any)	G + 12	
8	Number of basements below ground level	2	
9	Height of the Building	48m (FGL to top of Terrace)	
10	Type of structure • Load bearing walls • R.C.C. frame • R.C.C. frame and Shear Walls • Steel frame	RCC Framed structure with shear wall	
11	Soil data • Type of soil • Design safe bearing capacity	Weather Rock Given 60 T/m ² at 7m depth Adopted 18 T/m ²	IS:1893 C1.6.3.5.2 IS: 1904 IS: 1892 IS: 2131 IS: 2720



Dr. ALEX JACOB
B.E., M.Tech (Str), Ph.D(Hon),
M.I.E. (Aust), M.I.E. (Ind)
STRUCTURAL ENGINEER,
41/A, BEACH ROAD, KALAKSHETRA COLONY,
CHENNAI - 600 090,
REG No. SE/GR-I/19/02/001
REG No. RSE100392019

12	Dead loads (unit weight adopted) • Earth • Water • Brick masonry • Plain cement concrete • Reinforced cement concrete • Floor finish • Other fill materials		20 kN/cum 10 kN/cum 20 kN/cum 24 kN/cum 25 kN/cum 20 kN/cum	IS: 875 Part 1
13	Imposed (live) loads		5 kN/m ² 5 kN/m ²	IS: 875 Part 2
		Floor loads Roof loads		
14	Cyclone/Wind • Speed		50 m/s	IS: 875 Part 3
15	Seismic zone		III	IS: 1893 (2002)
16	Importance factor		1.2	IS:1893(2002) Table 6
17	Seismic zone factor (Z)		0.16 (Zone – III)	IS:1893 Table 2
18	Response reduction factor		4	IS:1893 Table 7
19	Fundamental natural period – approx.		1.3	IS:1893 C1.7.6
20	Design horizontal acceleration spectrum value		1.05	IS: 1893 C1.6.4.2
21	Expansion/Separation Joints		Nil	
22	Building is regular/irregular		Regular	IS 1893

- Enclose detailed drawings drawn to scale for each floor
- In case terrace garden is provided, indicate additional fill load and live load along with the detailed drawings drawn to scale

Part 2 Reinforced concrete framed buildings			
Sl. No.	Description	Information	Note
1	Type of building - Regular frames - Regular frames with Shear Walls - Irregular frames - Irregular frames with Shear Walls	Regular frames with Shear Walls	IS: 1893 C1 7.1
2	Number of basements	2	
3	Number of floors including ground floor	G + 12	
4	Horizontal floor system • Beams and slabs • Waffles • Ribbed floor • Flat slab with drops • Flat plate without drops	Beams and Slabs	


DR. ALEX JACOB
 B.E., M.Tech (Str.), Ph.D(Hon),
 M.I.E. (Aust), M.I.E. (Ind)
 STRUCTURAL ENGINEER,
 41/A, BEACH ROAD, KALAKSHETRA COLONY,
 CHENNAI - 600 090.
 REG No. SE/GR-I/19/02/001
 REG No. RSE100392019

5	Soil data Type of soil	Weathered Rock	IS: 1498
	Recommended type of foundation - Independent footings - Raft - Piles Recommended bearing capacity of soil - Recommended type, length, diameter and load capacity of piles - Depth of water table	Raft Given 60 T/m ² at 7m depth Adopted 18 T/m ² -	
6	Foundations Depth below ground level Type - Independent - Interconnected Raft - Piles	8 m Interconnected Raft	
7	System of interconnecting foundations - Plinth beams - Foundation beams	Foundation beams	IS: 1893 C1 7.12.1
8	Grades if concrete used in different parts of building	M-40 for columns M-35 for PT M-25 for all other R.C.C work	
9	Method of analysis used	Response Reduction Method	
10	Computer software used	STADD Pro CONNECT Edition	Version 22.11.00.156
11	Torsion included	Yes	IS: 1893 C1 7.9
12	Base shear a. Based on approximate fundamental period	1.3	IS: 1893 Cl. 7.5.3
	b. Based on dynamic analysis	1.1	
	c. Ratio of a/b	1.2	
13	Distribution of seismic force along the height of the building.	1.2	IS:1893 Cl.7.7
14	The Column of soft ground storey specially designed.	Yes	IS: 1893 Cl.7.10
15	Clear minimum cover provided in - Footing & Pile - Column - Beams - Slabs - Walls	50 mm 40 mm 25 mm 20 mm 20 mm	IS: 456 Cl. 26.4


DR. ALEX JACOB
 B.E., M.Tech (Str), Ph.D(Hon),
 M.I.E. (Aust), M.I.E. (Ind)
 STRUCTURAL ENGINEER,
 41/A, BEACH ROAD, KALAKSHETRA COLONY,
 CHENNAI - 600 090,
 REG No. SE/GR-I/19/02/001
 REG No. RSE100392019

16	Ductile detailing of RC frame - Type of reinforcement used - Minimum dimension of beams - Minimum dimension of columns - Minimum percentage of reinforcement of beams at any cross section - Maximum percentage of reinforcement at any section of beam - Spacing of transverse reinforcement in 2-d length of beams near the ends - Ratio of capacity of beams in shear to capacity of beams in flexure - Maximum percentage of reinforcement in column - Confining stirrups near ends of columns and in beam-column joints	Fe 500 200 mm 200 mm 0.8% 4% 120 mm 1 4 8 mm 100 mm 1 16 mm 32 mm 20mm 32mm 8mm 12mm 8mm 12mm 8mm 10mm	IS: 456 Cl. 5.6 IS: 13920 Cl.6.1 IS: 13920 Cl.7.1.2 IS: 456 Cl.26.5.1(a) IS: 13920 Cl.6.2.1 IS: 456 Cl.26.5.1.1(b) IS: 13920 Cl.6.2.2 IS: 13920 Cl.6.3.5 IS: 456 Cl.26.5.3.1 IS: 13920 Cl. 7.4
	Diameter Spacing - Ratio of shear capacity of columns to maximum seismic shear in the storey. - Reinforcement used for: - Beam - Minimum - Maximum - Column - Minimum - Maximum - Slab - Minimum - Maximum - Stirrups - Minimum - Maximum - Ties - Minimum - Maximum		
17	Does the features require clearance by SDRP Example: High rise building/Prefab building/Building in hazard prone areas	-	

Idealization for Earthquake analysis


DR. ALEX JACOB
B.E., M.Tech (Str), Ph.D(Hon),
M.I.E. (Aust), M.I.E. (Ind)
STRUCTURAL ENGINEER,
41/A, BEACH ROAD, KALAKSHETRA COLONY,
CHENNAI - 600 090.
REG No. SE/GR-I/19/02/001
REG No. RSE100392019

- In case of composite system of shear walls and rigid frames, give distribution of base shear in the two systems on the basis of analysis, and that used for design of each system
- Indicate the idealization of frames and shear walls adopted in the analysis with the help of sketches.
- Submit framing plans of each floor
- In case of basements, indicate the system used to contain earth pressures.

Recommendations of structural Engineer with respect to special requirement needed with respect to structural safety and stability to be taken note of by competent authority feature like incorporation of swimming pool, heavy load on roof, prefabricated structure or any other hazardous features should be included.

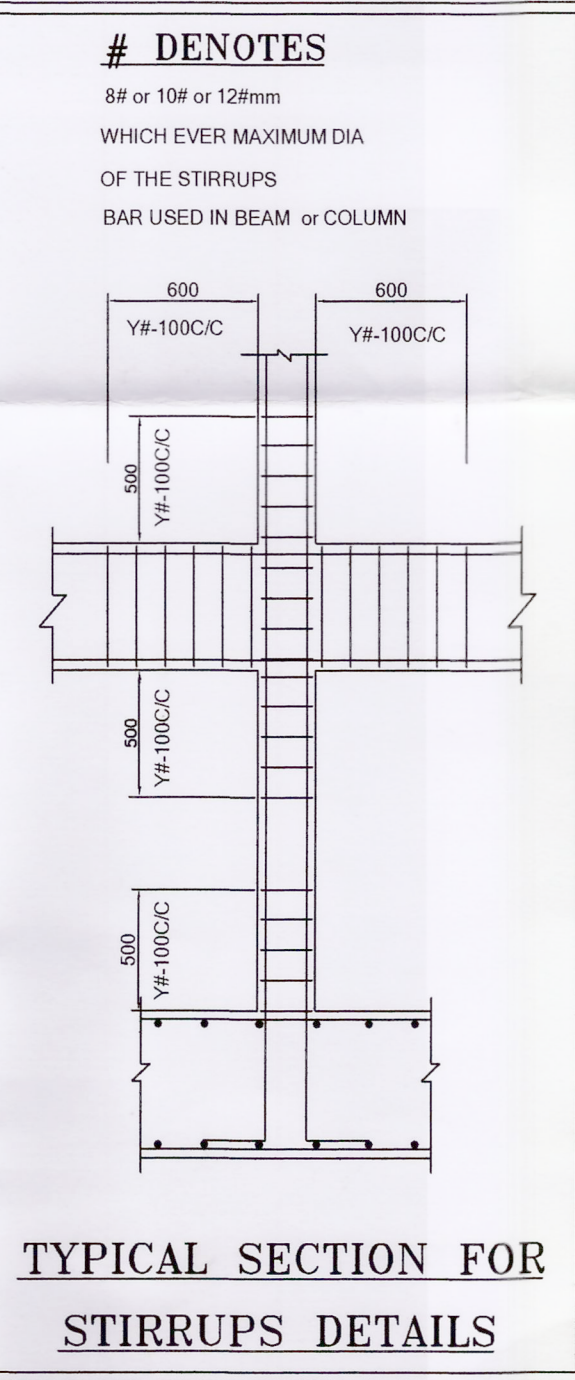
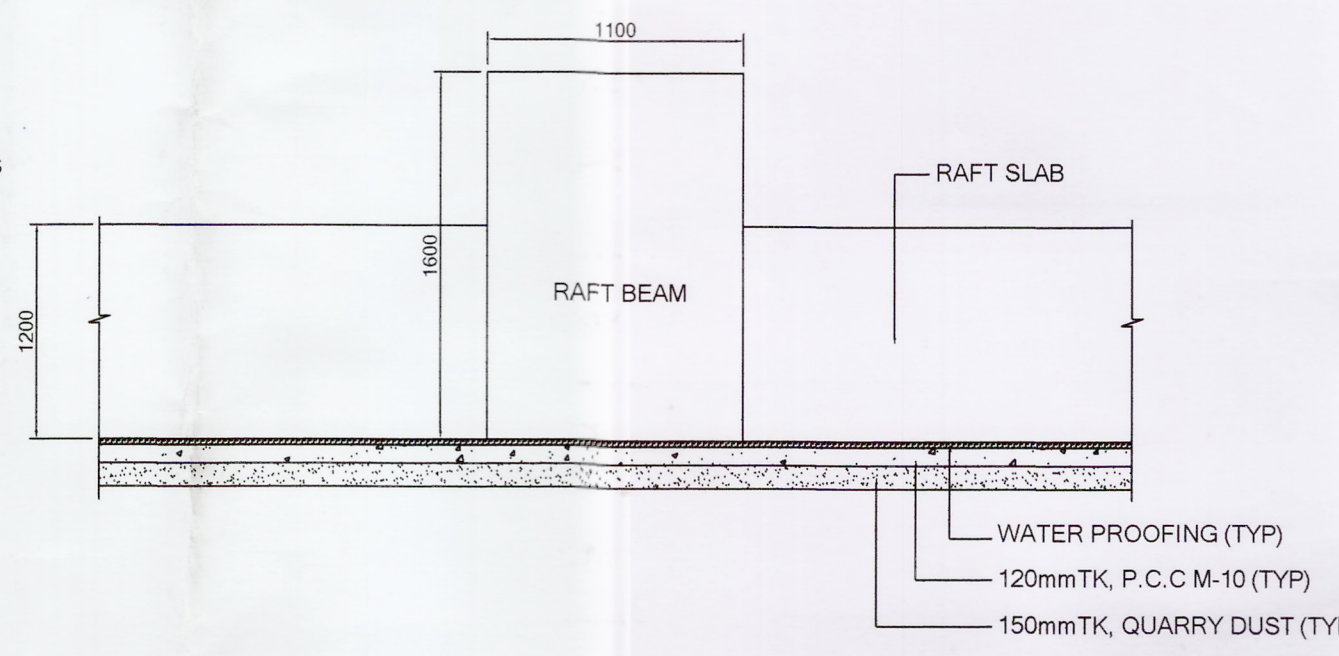
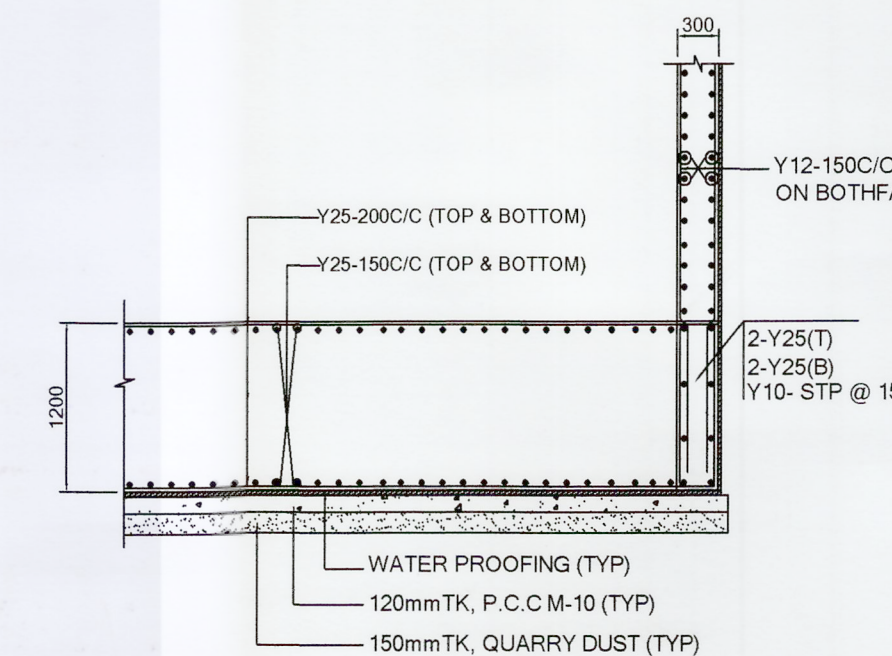
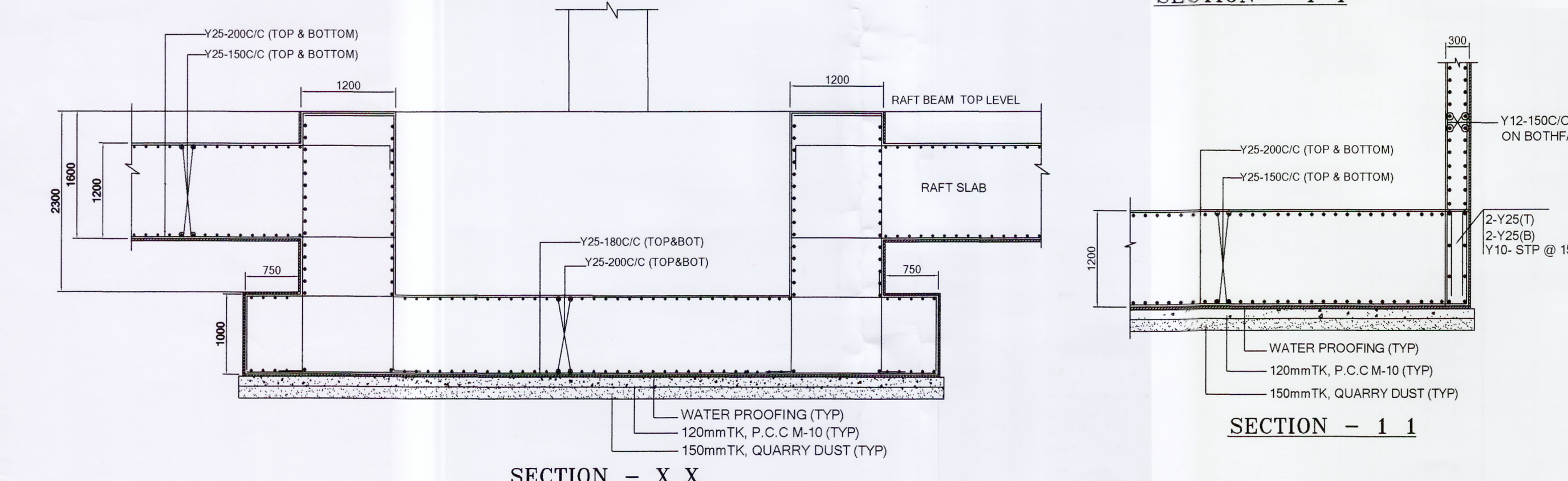
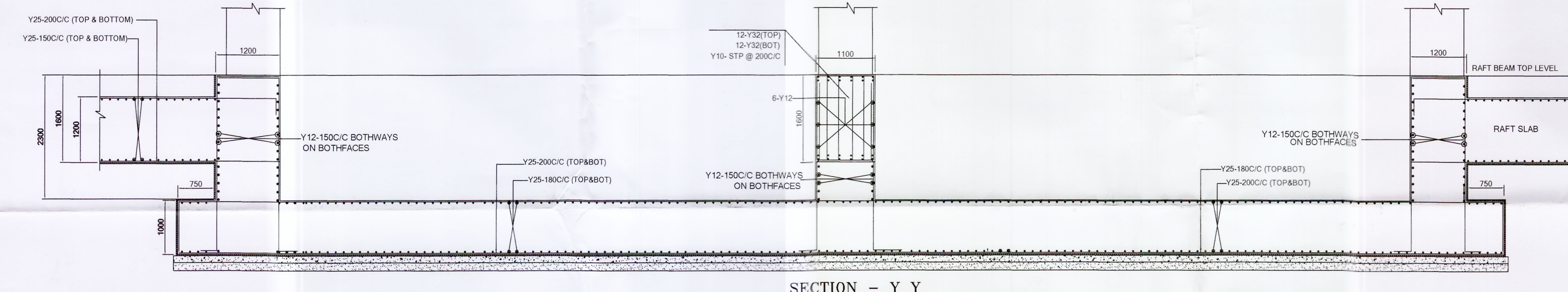
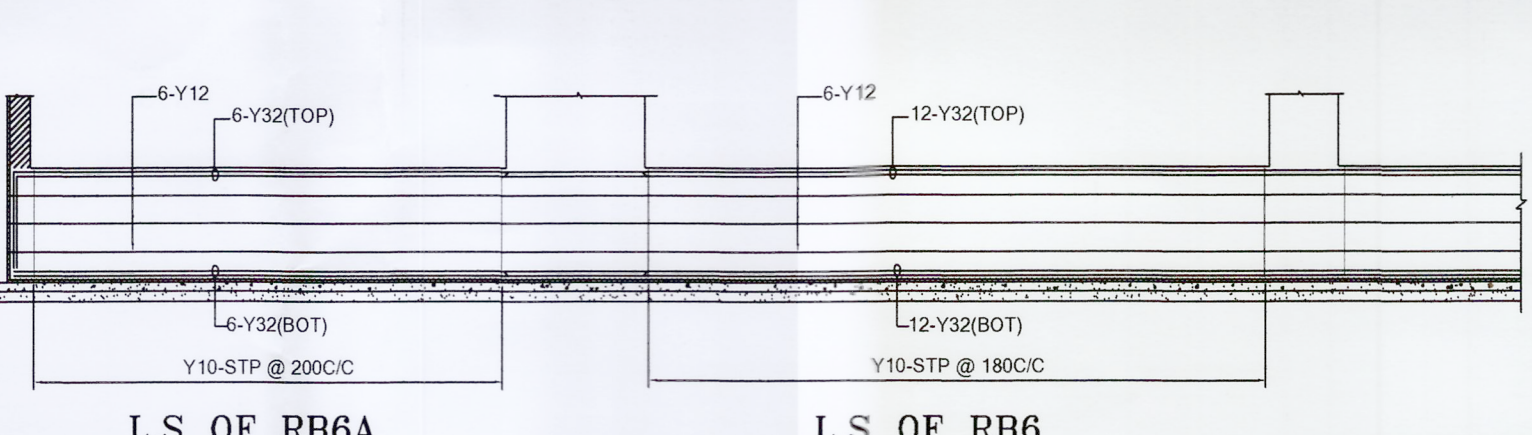
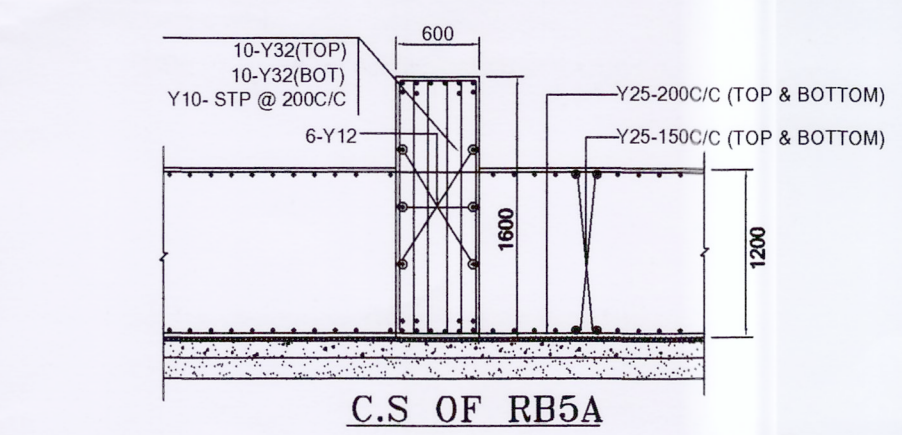
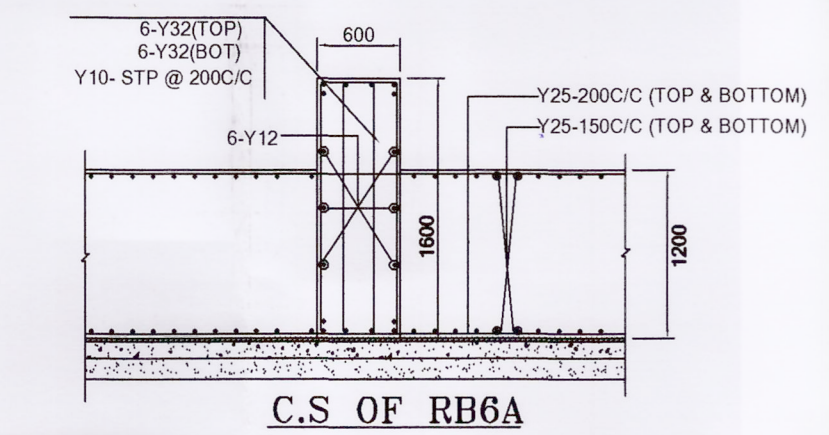
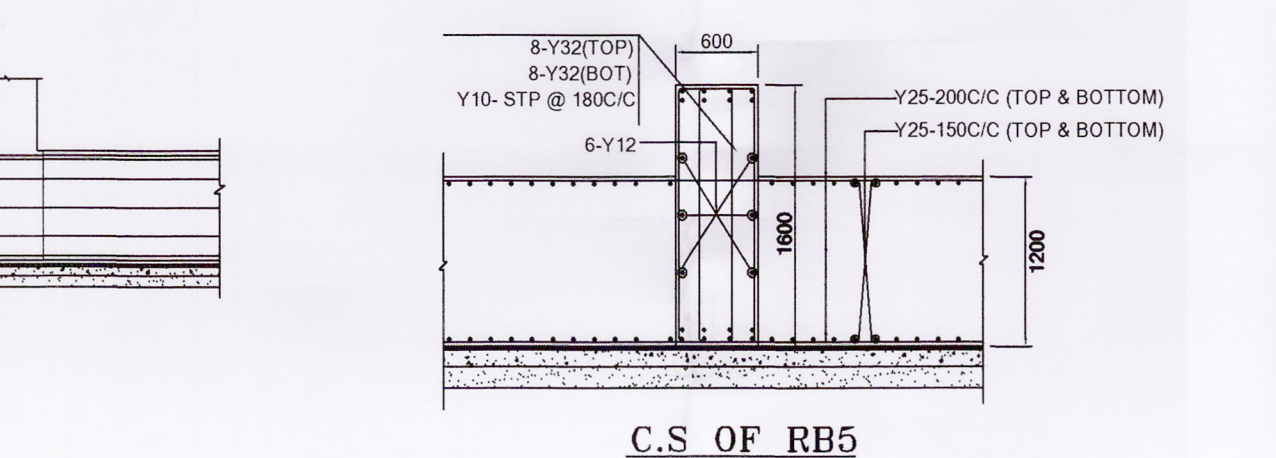
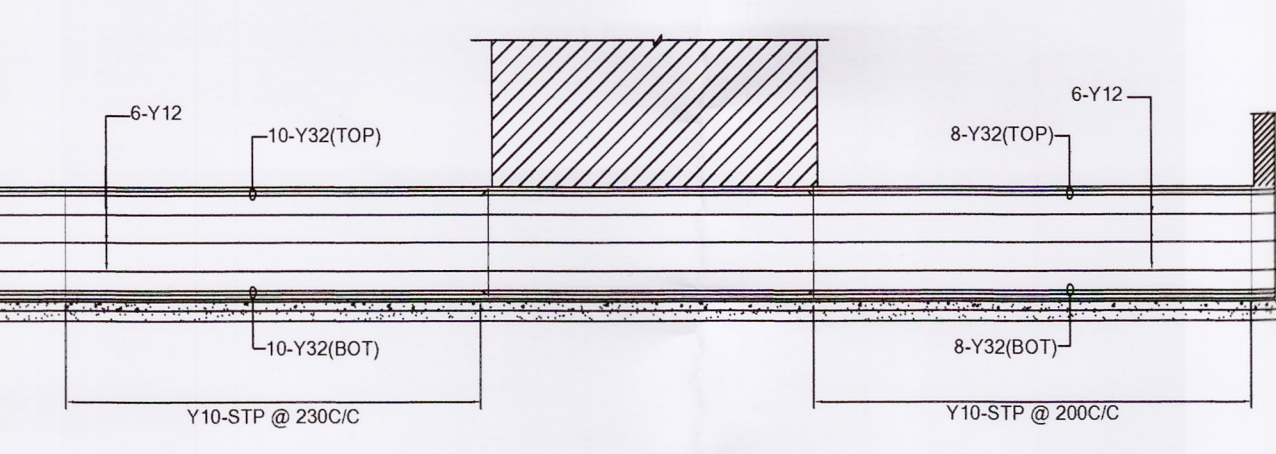
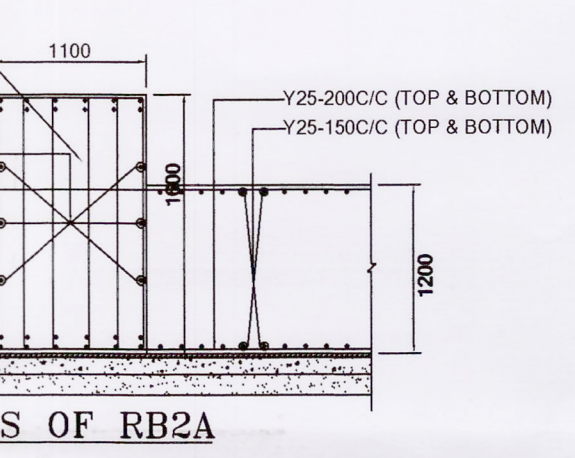
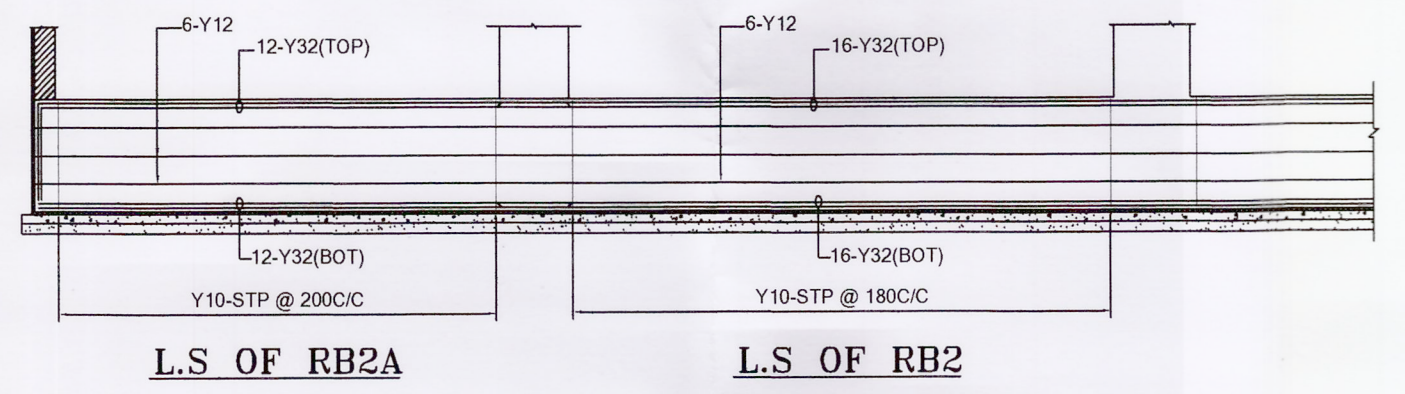
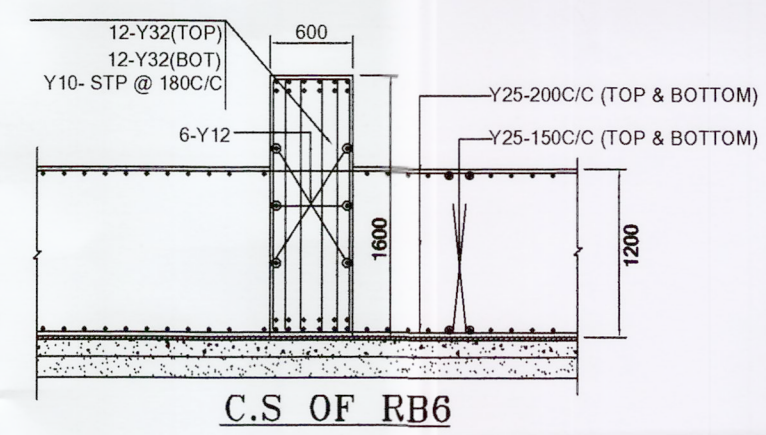
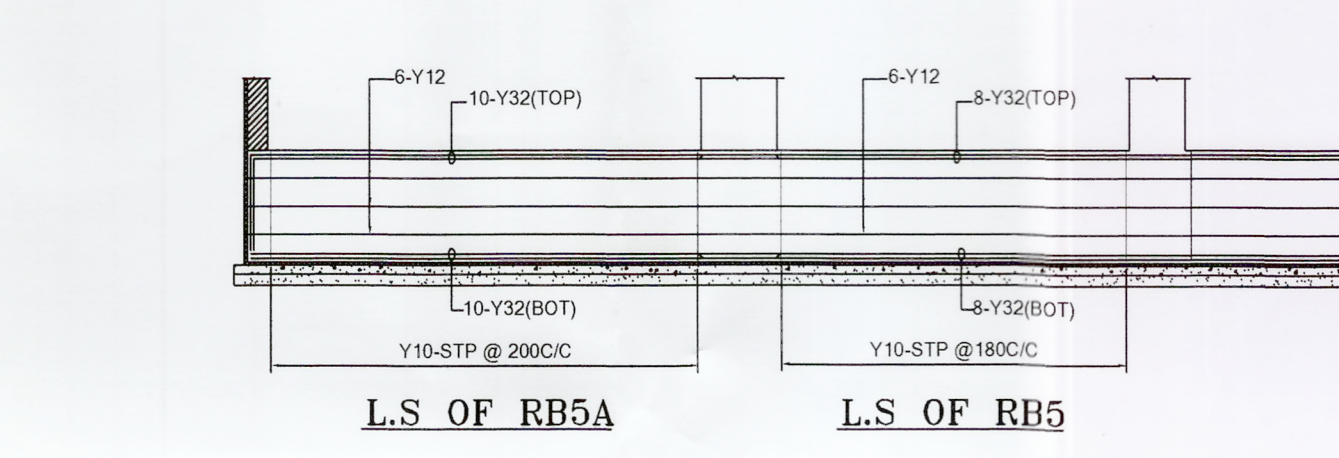
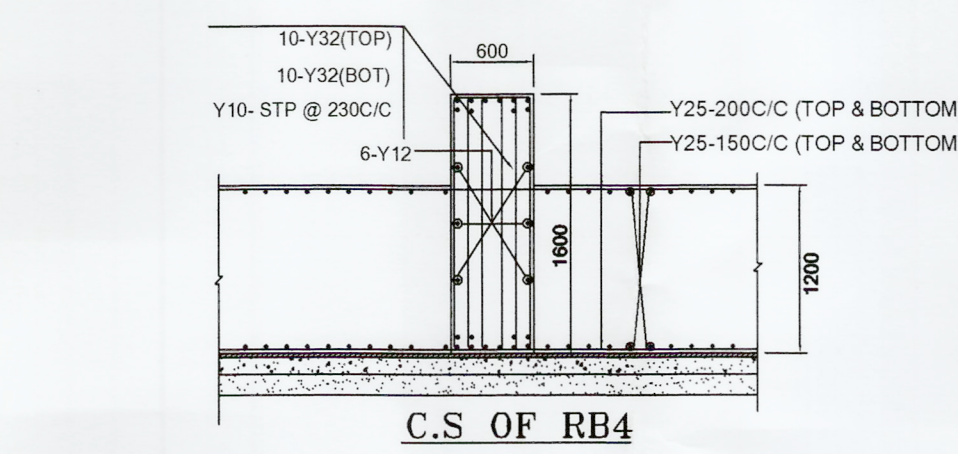
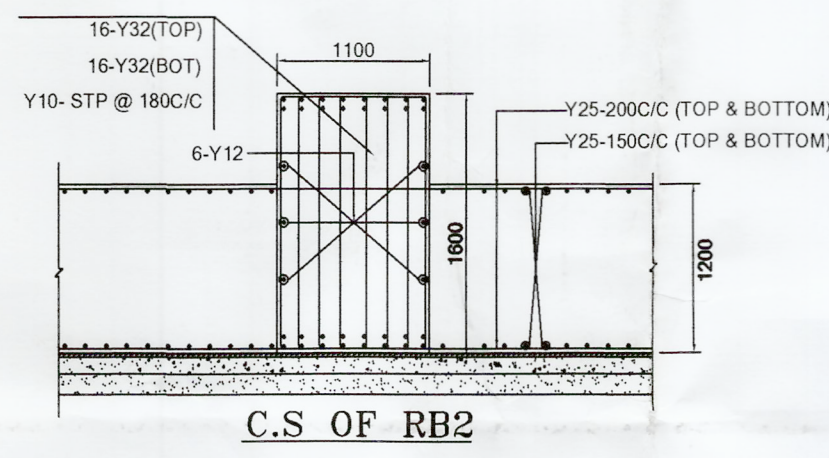
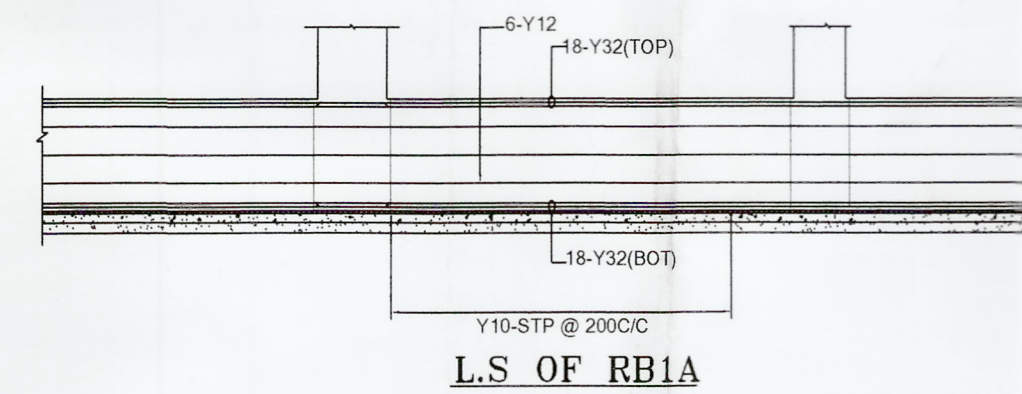
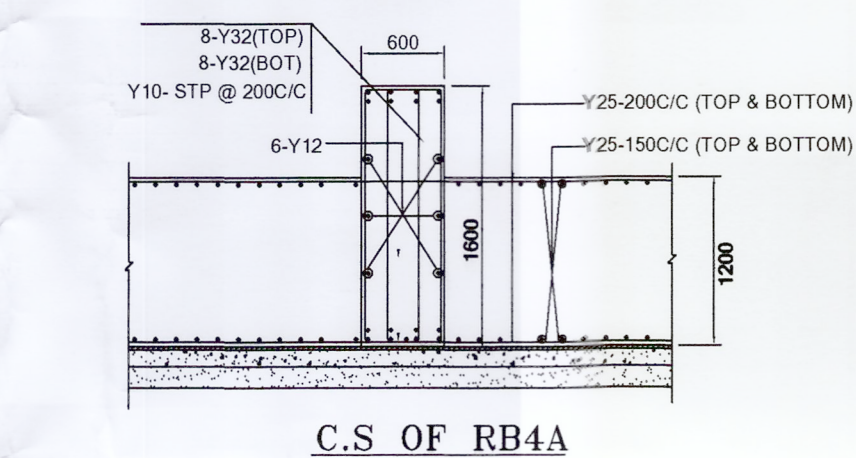
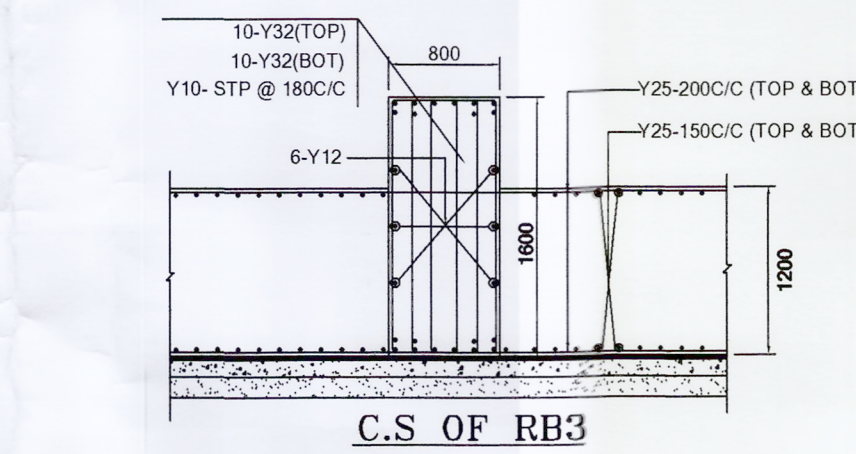
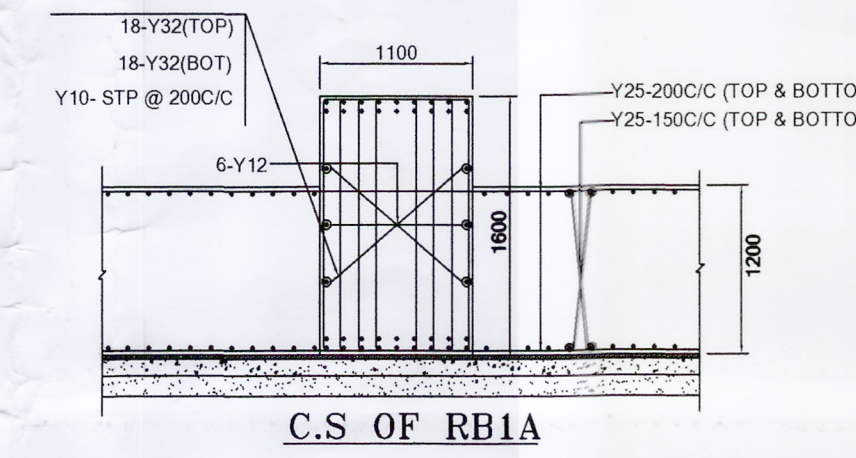
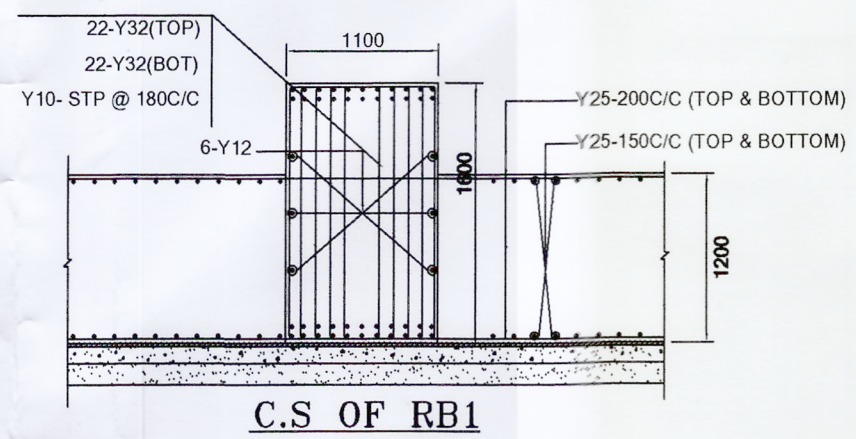
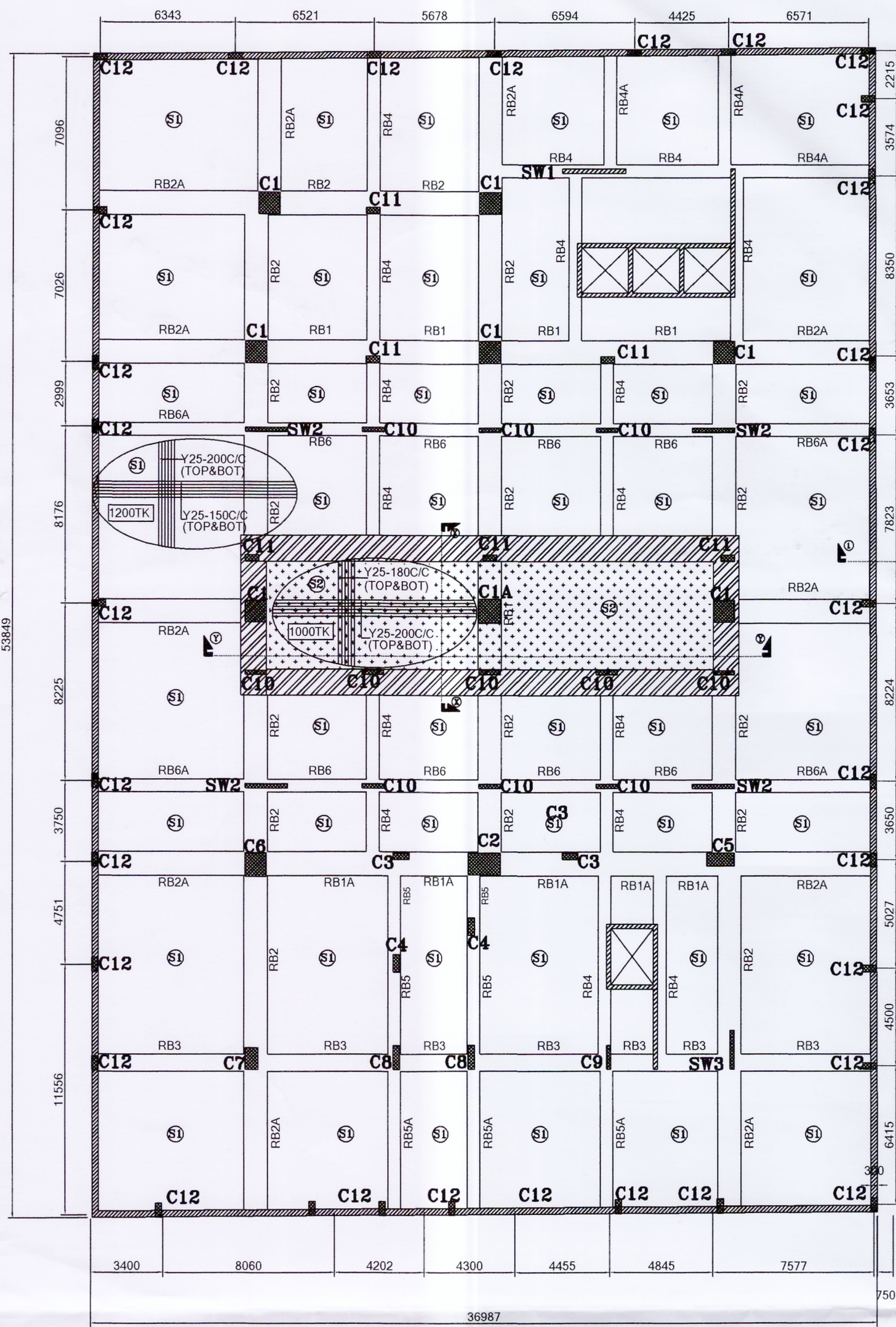


Structural Engineer Seal and Signature

Dr. ALEX JACOB
 B.E., M.Tech (Str), Ph.D(Hon),
 M.I.E. (Aust), M.I.E. (Ind)
 STRUCTURAL ENGINEER,
 41/A, BEACH ROAD, KALAKSHETRA COLONY,
 CHENNAI - 600 090.
 REG No. SE/GR-I/19/02/001
 REG No. RSE100392019

On behalf of CMDA HRB Panel Committee,
 the structural Design calculations are generally reviewed.

[Handwritten signature]
 Superintending Engineer, P.W.D.,
 Planning and Design Circle (Buildings),
 Chempauk, Chennai-600 005.



SCHEDULE OF STRUCTURAL DETAILS:

2B+G+12

- REFER ARCH. DWG. FOR CENTRE LINE DIMENSIONS.
- CONCRETE MIX
 - (i) COLUMN & SHEAR WALL - M40
 - (ii) ALL OTHER R.C.C WORKS - M25
- ALL REINFORCEMENTS ARE OF Fe500 GRADE.
- LAP LENGTH SHALL BE 50 x DIA OF THE BAR
- CLEAR COVER TO MAIN REINF.
 - (i) COLUMN 40mm
 - (ii) RAFT BEAM 50mm
 - (iii) RAFT SLAB 50mm
 - (iv) R.C.C WALL 25mm

On behalf of CMDA HRB Panel Committee,
the Structural Drawings are reviewed and found
generally in order.
It is the responsibility of the Site/Structural Engineer
concerned to scrutinize the details and implement
at site as per detailed drawings and specifications.
K. Narasimhan
Superintending Engineer (Structural),
Planning and Design Circle (Buildings),
Chennai-600 085.

R.No	Description of Revision	Date	Revised By
STRUCTURAL CONSULTANT			
Dr. ALEX JACOB			
CIVIL & STRUCTURAL CONSULTING ENGINEERS			
41/A, BEACH ROAD, KALAKSHETRA COLONY BESANT NAGAR, CHENNAI - 600 090. PH. NO. 044 - 2491 09 45 email : alex.jacobuc@gmail.com web site : www.unitedconsultants.in			

PRINCIPAL ARCHITECT :

OWNER

PROJECT TITLE
PROPOSED CONSTRUCTION OF HIGH RISE BUILDING (HRB)
WITH 48.0 MTR HEIGHT (FGL TO TOP OF TERRACE)
CONSISTING OF EXTENDED DOUBLE BASEMENT FLOOR +
STILT FLOOR (PART) + GROUND FLOOR (PART) + 12
FLOORS OFFICE COMMERCIAL BUILDING AT OLD NO.30 & NEW
NO. 47/ C GANDHI MANDAPAM ROAD & AMBADI ROAD,
KOTTURPURAM , CHENNAI - 600 085 COMPRISED IN T.S
NO. 5 / 21, 6/31 & 6/ 63 OF BLOCK NO. 16 ADYAR
VILLAGE, GUINDY TALUK, CHENNAI DIST. GREATER CHENNAI
CORPORATION ZONE: 13 & DIV: 172

DRAWING TITLE

RAFT FOUNDATION DETAIL

PROJECT NO
UC-1261-CORPORATION-SKCL-KOTTURPURAM

SHEET NO :
01/02

DSND	Dr.ALEX JACOB
DRN	MANIMEGALAI
DATE	25.08.22
SCALE	1 : 100

FILE NAME E:\MANIMEGALAI\UC - 1261 -CORPORATION-KOTTURPURAM - COULMN DETAIL