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RE REGULATORY RECORD

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DIGITALLY VERIFIED RECORD

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DATE:25/03/2026

# STABILITY CERTIFICATE

1. The detailed engineering and structure design of The Planning Permission Application for the proposed construction of Group Development Residential building consisting 2 Blocks, Block A - Stilt Floor + 5 Floors(Height – 18.30m) with 25 dwelling units, Block B - Stilt Floor + 5 Floors (Height - 18.30m) with 30 dwelling units totally 55 dwelling units with availing premium FSI at T Ponnambalam Salai, Kulapakkam, Chennai comprised inS.No. 116/2 of Kulapakkam village within the limits of Kundrathur Panchayat Union has been done by me/us based on the report of geotechnical investigation (soil test) done by T.J.ENGINEERS Report TJE/001958/2021 DATE:25/03/2023 considering the functional requirement of the building.

2. It is certified that among other factors, the proposed building has been designed to resist earthquake. We have checked parameters and found that the proposed building would be safe.

3. I/we further certify that:

(i) The Minimum grade of concrete is M30

(ii) The Design and analysis have been done using the code of practice for plain and reinforced concrete as per IS 456, Design loads as per IS codes No IS 875 (PART-2) and design of earthquake structure as per IS Code No 1893

4. The building will be safe and sound when used for the purpose for which it is designed.

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Stamp and Signature

Encl: Structural Design Calculation

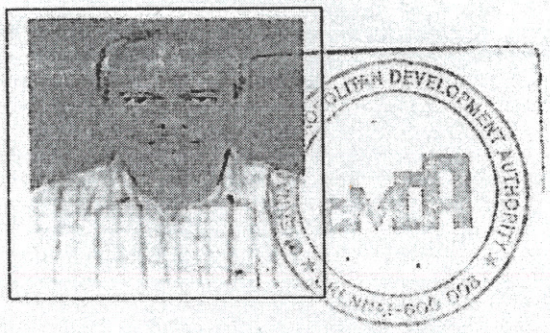
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
'ThalamuthuNatarajan Building', No.1, Gandhi Irwin Road,
Egmore, Chennai-600 008.

# PROFESSIONAL REGISTRATION CERTIFICATE

This is to certify that the **Thiru P. RAMAN** has enrolled as **Registered Structural Engineer Grade-I (SE)** with Chennai Metropolitan Development Authority (CMDA) who has the qualification of **M.E.,(Structural Engg.)** and experience in the relevant field for **18years.**

He has been given the Registration No.**SE/GR-I/2024/02/006** on **27.02.2024.** He shall be required to comply with the duties and responsibilities prescribed by the Government of Tamil Nadu in Part-V, "Registration of Professionals", Tamil Nadu Combined Development and Building Rules, 2019 approved vide G.O.(Ms) No.18 MAWS (MA1) Dept. dated 04.02.2019.

This Registration is valid upto **26.02.2029.**



27/2/24.

**(A. MEGANATHAN)**
**Superintendent**

Self Attested

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# STRUCTURAL STABILITY CERTIFICATE

Name of work : The Planning Permission Application for the proposed construction of Group Development Residential building consisting 2 Blocks, Block A - Stilt Floor + 5 Floors(Height – 18.30m) with 25 dwelling units, Block B - Stilt Floor + 5 Floors (Height - 18.30m) with 30 dwelling units totally 55 dwelling units with availing premium FSI at T Ponnambalam Salai, Kulapakkam, Chennai comprised inS.No. 116/2 of Kulapakkam village within the limits of Kundrathur Panchayat Union

Preamble :

1. I hereby certify that the structural design sheet is done for column, Foundation, Slab and beam.

2. The usage of the building is Stilt floor + 5 upper Floors.

3. The Super Structure is built on outer 230mm walls and inner 115mm walls.

4. All concrete for RCC members in Stilt + 5 Floors are M30 concrete.

5. The structural design includes the Earth quake Criteria as per IS: 1893(part 1)-latest revision.

This is to certify that the Structural Design of the proposed construction of residential building at above said site has been DESIGNED on the basis of EARTHQUAKE RESISTANT DESIGN OF STRUCTURES IS 1893 (Part1): 2002 General Provisions & Buildings, with latest declaration of Seismic Zone III, Zone factor 0.16 and according to I.S. Loading standards I.S. – 875. All precautions have been taken as per the CONTENTS OF REPORT FOUNDATION ANALYSIS. This Report has recommendations for effect of Seismic Condition for this Soil.

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## CALCULATION OF SEISMIC CO-EFFICIENT

| | |
|---|---|
| Name of city | : Chennai |
| Type of Building | : Residential Building |
| Building Frame System | : Special RC-Moment resisting frame (SMRF) |
| Fundamental Natural Period (Ts) | : (0.075)h ^3/4 =0.483sec. |
| Soil conditions | : medium |
| Zone Factor (Refer Table:2) (Z) | : 0.16 (moderate) |
| Importance Factor (Refer Table:6) (I) | : 1 |
| Response Reduction (Refer Table:7) | : 5.0 |
| Average response acceleration Co-efficient (Sa/g) | : 2.35 |

## EARTH QUAKE ANALYSIS:

| | |
|---|---|
| Horizontal Seismic Co-efficient (Ah) | = (Z/2)( I / R)(Sa/g)<br>= (0.16/2) (1/5.0) (2.35)<br>= 0.038 |
| Design value of Ah | = 0.038 |
| Type of Foundation | : Combined Footing |

## 1. GENERAL LOADING CONDITIONS:

| | |
|---|---|
| (a) Imposed loads on Roof | - 1.50kN/$m^2$ |
| (b) Imposed loads on Hall, Kitchen. & Bed, Residential | - 2.00kN/$m^2$ |
| (d) Dead weight of R.C.C | - 25kN/$m^3$ |
| (e) Dead weight of Brick Work | - 20kN/$m^3$ |

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## 2. LOADING ON SLABS:

### 2.1 Loading on Roof slab:

| | | |
|---|---|---|
| Roof finished with lime concrete terracing | =(0.10)(20) | =2.000kN/m$^2$ |
| S/W of slab 125mm thick | =(.125)(25) | =3.125kN/m$^2$ |
| Dead load | =5.125kN/m$^2$ | |
| Live load | =1.50kN/m$^2$ | |
| Total load on Roof | = 6.625kN/m$^2$ | |

### 2.2 Loading on Floor slabs:

| | |
|---|---|
| Floor finish | = 1.00kN/m$^2$ |
| S/w of slab 125mm thick | = 3.125kN/m$^2$ |
| Dead load | =4.125kN/m$^2$ |
| Live load | =2.00kN/m$^2$ |
| Total load on Roof | = 6.125kN/m$^2$ |

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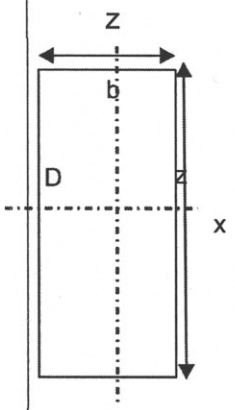
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## 3 DESIGN:

### 3.1 COLUMN DESIGN

| | | | | |
|---|---|---|---|---|
| Grade of Concrete | | | M 30 | |
| Characteristic Strength of Reinf. | | N/mm² | 500 | |
| Width of Column | b | mm | 300 | |
| Depth of Column | D | mm | 600 | |
| Unsupported Length of Column | $l_x$ | mm | 3000 | |
| Unsupported Length of Column | $l_y$ | mm | 3000 | |
| Clear Cover to Reinf. | | mm | 40 | |
| Diameter of Bar | | mm | 20 | |
| Load | | T | | |
| Moment | $M_{xx}$ | T.m | | |
| Moment | $M_{zz}$ | T.m | | |
| Factored Load | $P_u$ | kN | 690.000 | 1 |
| Factored Moment | $M_{ux}$ | kN.m | 89.950 | 1 |
| Factored Moment | $M_{uz}$ | kN.m | 32.510 | 1 |
| Effective Length of Column | $l_{ex}$ | mm | 3600 | 1.2 |
| | $l_{ez}$ | mm | 3600 | 1.2 |
| | $l_{ex}/D$ | | 6 | 0 |
| | | | <12- Short Column | |
| | $l_{ey}/b$ | | 12 | 0 |
| | | | <12- Short Column | |
| Additional Moment due to Slender | $M_{ax}$ | kN.m | 0 | |
| Additional Moment due to Slender | $M_{az}$ | kN.m | 0 | |
| Percentage of Reinf. | $p$ | % | 1.8 | |
| Gross Area of Cross Section | $A_g$ | mm² | 180000 | |
| Ultimate Axial Load | $P_{uz}$ | kN | 3601.26 | |
| d'/D (about x-x axis) | | | 0.084 | 0.1 |
| d'/D (about y-y axis) | | | 0.167 | 0.2 |
| ( Table 60 ) | k1 | | 0.207 | |




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| | | | | |
|---|---|---|---|---|
| | k2 | | 0.328 | |
| | $P_{bx}$ | kN | 1224.072 | |
| | k1 | | 0.184 | |
| | k2 | | 0.028 | |
| | $P_{bz}$ | kN | 1002.672 | |
| | $k_x$ | | 1.000 | |
| | $k_y$ | | 1.000 | |
| Minimum Eccentricity | $e_x$ | mm | 26 | |
| | $e_y$ | mm | 16 | |
| Moments due to min. eccentricity | $M_{ex}$ | kN.m | 17.94 | < 89.950 kN.m |
| Moments due to min. eccentricity | $M_{ez}$ | kN.m | 11.04 | < 32.510 kN.m |
| **Total Moments for which the column is to be designed are** | | | | |
| | $M_{ux}$ | kN.m | 89.950 | |
| | $M_{uz}$ | kN.m | 32.510 | |
| **The section is to be checked for biaxial bending** | | | | |
| | $P_u/f_{ck}bD$ | | 0.128 | |
| | $p/f_{ck}$ | | 0.06 | |
| Referring (d'/D is0.1) | $M_u/f_{ck}bD^2$ | | 0.09 | |
| | $M_{ux1}$ | kN.m | 291.600 | |
| Referring to (d'/D = 0.2 ) | $M_u/f_{ck}bD^2$ | | 0.100 | |
| | $M_{uy1}$ | kN.m | 162.000 | |
| | $M_{ux}/M_{ux1}$ | | 0.308 | |
| | $M_{uy}/M_{uy1}$ | | 0.201 | |
| | $P_u/P_{uz}$ | | 0.192 | |
| | | *a* | 0 | 1 |
| Mux/Mux1 + Muy/Muy1 | | | 0.509 | < 1 OK |
| Area of Reinforcement | As | $mm^2$ | 3240 | |
| Minimum no of to be provided | | | 6 | |
| No of Bars to be provided | Nos. | | 11 | |
| Provide 11 Nos of 20 Diameter | | | | |

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## 3.2 FOUNDATION DESIGN

### 3.2.1 COMBAINED FOOTING

**1 Footing Size Design**

| | | |
|---|---|---|
| Load 1 | Pu1 | 660 KN |
| Load 2 | Pu2 | 690 KN |
| Combine load | Pcu | 1350 KN |
| Design Load | Pc | 990 KN |
| Moment in x dir | Mux | 35 KN-m |
| Moment in y dir | Muy | 40 KN-m |
| c/c dist b/w col in x dir | | 3.430 meters |
| c/c dist b/w col in y dir | | 0.000 meters |
| Col Dim | x dir | 0.60 meters |
| | y dir | 0.30 meters |
| SBC | q | 120 KNm2 |
| Footing Size required | A req | 8.25 sqmm |
| Footing Size Provided | L | **6.00 meters** |
| | B | **2.30 meters** |
| Area Provided | A prvd | **13.80 meters** |
| | x bar | 1.753 |
| | y bar | 0.000 |
| | Zx | 5.29 |
| | Zx | 13.80 |
| | Nup | 78 KNm2 |

Footing Size OK

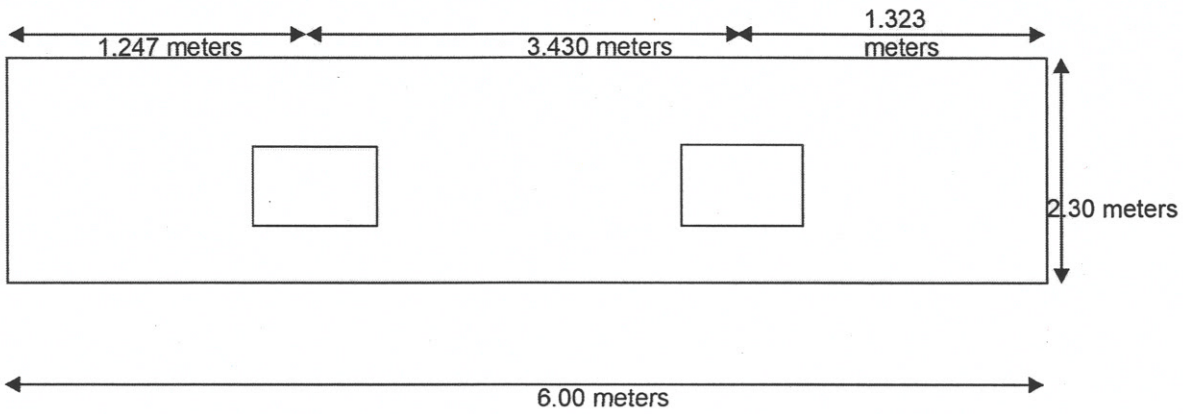
**2 Beam Design**

| | | |
|---|---|---|
| Total Load | W | 78 KNm2 |
| Factored Load | Wu | 271 KNm2 |

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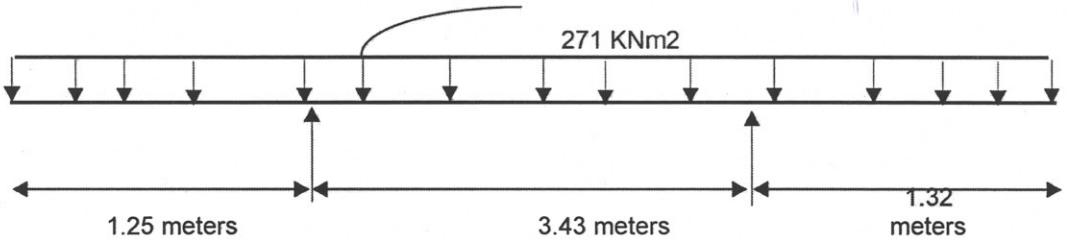
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| | | |
|---|---|---|
| Beam Size | width | 600 mm |
| | depth | 685 mm |
| Moment | Mb | 898 KN-m |

Design the beam from the BEAM DESIGN SHEET

**Bottom Reinforcement**

| Type | Bar dia | Nos | Area of Steel |
|---|---|---|---|
| Layer 1 | 20 mm | 6 | 1885 sqmm |
| Layer 2 | - | | |
| Layer 3 | - | | |
| | | Total Steel Provided | 1885 sqmm |
| | | Percentage of Steel | 0.487 % |

**Top Reinforcement**

| Type | Bar dia | Nos | Area of Steel |
|---|---|---|---|
| Layer 1 | 20 mm | 6 | 1885 sqmm |
| Layer 2 | - | | |

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| | | | |
|---|---|---|---|
| Layer 3 | - | | |
| | | Total Steel Provided | 1885 sqmm |

## 3 Slab Design

| | | | |
|---|---|---|---|
| Net upward pressure | Nup | 78 KNm2 | |
| | l | 0.85 meters | */=width of footing from col face* |
| Bending Moment | Ms | 28 KN-m | *M=Nup*l²/2* |
| Factored Moment | Mus | 43 KN-m | *1.5*Ms* |
| Concrete | fck | 30 MPa | |
| Steel | fy | 500 MPa | |
| Minimum Depth Required | dmin | 103 | *d=sqrt(Ms/Rumax*1000*b)* |
| Depth Provided | D | **600 mm** | |
| Clear Cover | c | 50 mm | |
| Effective Cover | d' | 56 mm | |
| Effective Depth | d' | 544 mm | |

| Area of Steel across x dir | Spacing c/c in mm | | |
|---|---|---|---|
| | 12# | 16# | 20# |
| 653 sqmm | 173 c/c | 308 c/c | 481 c/c |

Minimum Ast required across x direcion

| | | | |
|---|---|---|---|
| Ast across x direction | **12 mm dia** | **@ 150 mm c/c** | **754 sqmm** |
| Dist Ast across y direction | **10 mm dia** | **@ 150 mm c/c** | **524 sqmm** |

## 4 Shear Check for Slab

| | |
|---|---|
| Vu1 | 36 KN |
| ζv | 0.066 MPa |
| ζc | 0.265 MPa |

Shear Check OK

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## 3.3 BEAM DESIGN

### Beam Design

**Beam Data**

| | |
|---|---|
| width | 230 mm |
| depth | 530 mm |
| clear cover to main reinf. | 30 mm |
| Slab Thickness | 125 mm |

| | | |
|---|---|---|
| d' | 48 mm | *.= cc+ sdia + mdia/2* |
| eff depth | 482 mm | *.= d - d'* |

**Material Grades**

| | |
|---|---|
| Concrete | 30 MPa |
| Steel | 500 MPa |

| | Span Moment | Support Moment |
|---|---|---|
| Mu/bd² | 3.93 | 3.56 |
| xumax | 220 | 220 |
| Mulim | 213 | 213 |
| Mulim/bd² | 3.99 | 3.99 |

| | | |
|---|---|---|
| **Span Moment** | 210 KN-m | |
| **Support Moment** | 190 KN-m | 190 KN-m |
| | | 0 KN-m |

**Span Reinforcement**
Beam is designed as Singly Reinforced Beam

| **Area of Steel** | Tension (Ast) | Compr (Asc) |
|---|---|---|
| Percentage | 1.110 % | ------ |
| Area of Steel | 1230 sqmm | |

*Refer Table 2 SP 16 pg 48*

400 KN-m

**Tension Reinforcement**

| Type | Bar dia | Nos | Area of Steel |
|---|---|---|---|
| Layer 1 | 20 mm | 3 | 942 sqmm |
| Layer 2 | 20 mm | 3 | 942 sqmm |
| Layer 3 | - | | |
| | Total Steel Provided | | 1885 sqmm |

2014 sqmm

1.700 %

Provided Steel OK

**Compression Reinforcement**

| Type | Bar dia | Nos | Area of Steel |
|---|---|---|---|
| Layer 1 | - | | |

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| | | | |
|---|---|---|---|
| Layer 2 | - | | |
| Layer 3 | | | |
| Total Steel Provided | | | #VALUE! |

**Support Reinforcement**
Beam is designed as Singly Reinforced Beam

| **Area of Steel** | Tension (Ast) | Compr (Asc) | |
|---|---|---|---|
| Percentage | 0.977 % | ------- | *Refer Table 2 SP 16 pg 48* |
| Area of Steel | 1084 sqmm | | |

4.35702571251516
-1.546985529821000
0.132294005725571

**Tension Reinforcement**

| Type | Bar dia | Nos | Area of Steel | |
|---|---|---|---|---|
| Layer 1 | **25 mm** | **3** | 1473 sqmm | |
| Layer 2 | **25 mm** | **3** | 1473 sqmm | |
| Layer 3 | - | | | |
| Total Steel Provided | | | 2945 sqmm | 2.657 % |
| Provided Steel OK | | | | 1804 sqmm |
| | | | | 1445 sqmm |

**Compression Reinforcement** 2486 sqmm

| Type | Bar dia | Nos | Area of Steel | |
|---|---|---|---|---|
| Layer 1 | - | | | |
| Layer 2 | - | | | |
| Layer 3 | | | | |
| Total Steel Provided | | | | #VALUE! |

| | | | |
|---|---|---|---|
| **Shear Force (Vu)** | **112 KN** | | |
| **ζv** | 1.010 | *.=Vu / (b * d)* | |
| **ζc** | 0.797 | *Refer Table 61 SP 16 pg 179* | *or =(0.85*√(0.8*fck)*√(1+5β)-1)) / (6β)* |
| **ζcmax** | 3.5 | *Refer Table J SP 16 pg 175* | |

| Type | Bar Dia | Nos | Area of Steel |
|---|---|---|---|
| Layer 1 | **12 mm** | **0** | 0 sqmm |
| Layer 2 | **25 mm** | **0** | 0 sqmm |
| Layer 3 | **20 mm** | **0** | 0 sqmm |

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| | | | |
|---|---|---|---|
| | 0 sqmm | 0.000 % | |

Sectional Dimensions OK
Shear Reinforcements required

| | | | | |
|---|---|---|---|---|
| **Steel** | **415 MPa** | Vus/d | 0.490 kN/cm | 1.458 |
| **Type of stirrup** | **2 legged** | | | |
| **Stirrup diameter** | **8 mm** | | | |
| **Spacing** | 300 c/c | Safe | | |

## 3.4 TWO WAY SLAB DESIGN

### Slab Design

| | | |
|---|---|---|
| Slab thickness | t | 125 mm |
| Concrete | fck | 30 MPa |
| Steel | fy | 500 MPa |

Sunken Depth: 0 mm

**Loading**

Slab Load

| | | |
|---|---|---|
| Dead Load | DL | 3.125 KN/m |
| Live Load | LL | 2.000 KN/m |
| Finishes Load | WL | 1.000 KN/m |
| Total Load | Ws | 6.125 KN/m |
| Factored Load | Wsu | 9 KN/m |

Sunken Slab Load

| | | |
|---|---|---|
| Dead Load | DL | 3.125 KN/m |
| Filler Load | FL | 0 KN/m |
| Live Load | LL | 3.0 KN/m |
| Finishes Load | WL | 1.0 KN/m |
| Total Load | Wsk | 7.13 KN/m |
| Factored Load | Wsku | 11 KN/m |

Slab Data

| | |
|---|---|
| Slab Type | Regular |
| Load | 9 KN/m |
| Longer Span (ly) | 4.40 m |
| Shorter Span (lx) | 3.23 m |

| | |
|---|---|
| ly/lx ratio | 1.36 |
| Slab type | ± |

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**A.K .CONSULTANT**
**STRUCTURAL DESIGN CONSULTANT.**
No.24, Ground Floor,
CRR Puram Phase-3,
Manapakkam,
Chennai – 600 125

Phone: **044-43512027,9584423058**

E-mail: akconsultant.str@yahoo.com

| Loading on edges | | one way | two way |
|---|---|---|---|
| $W_{longer}$ | **12 KN/m** | .=w*lx/2 | .=(w*lx/2) + (1-(1/3)*(lx/ly)$^2$) |
| $W_{shorter}$ | **10 KN/m** | | .=w*lx/3 |

| Moments | | one way | two way |
|---|---|---|---|
| Mx | 8 KN-m | .=w*lx$^2$/ 8 | .=αx * w*lx$^2$ |
| My | 5 KN-m | | .=αy * w*lx$^2$ |

| | | |
|---|---|---|
| Thickness Check | OK | .=Mulim > Mux or Muy |
| Deflection | 10 mm | .= 5*W*l$^4$/(384EI) |

| Area of Steel | Astx | Asty |
|---|---|---|
| | **178 sqmm** | **150 sqmm** |

*Refer Chart 4 SP 16 pg 21*
*Refer Table 5-44 SP 16 pg 51-80*

*or*

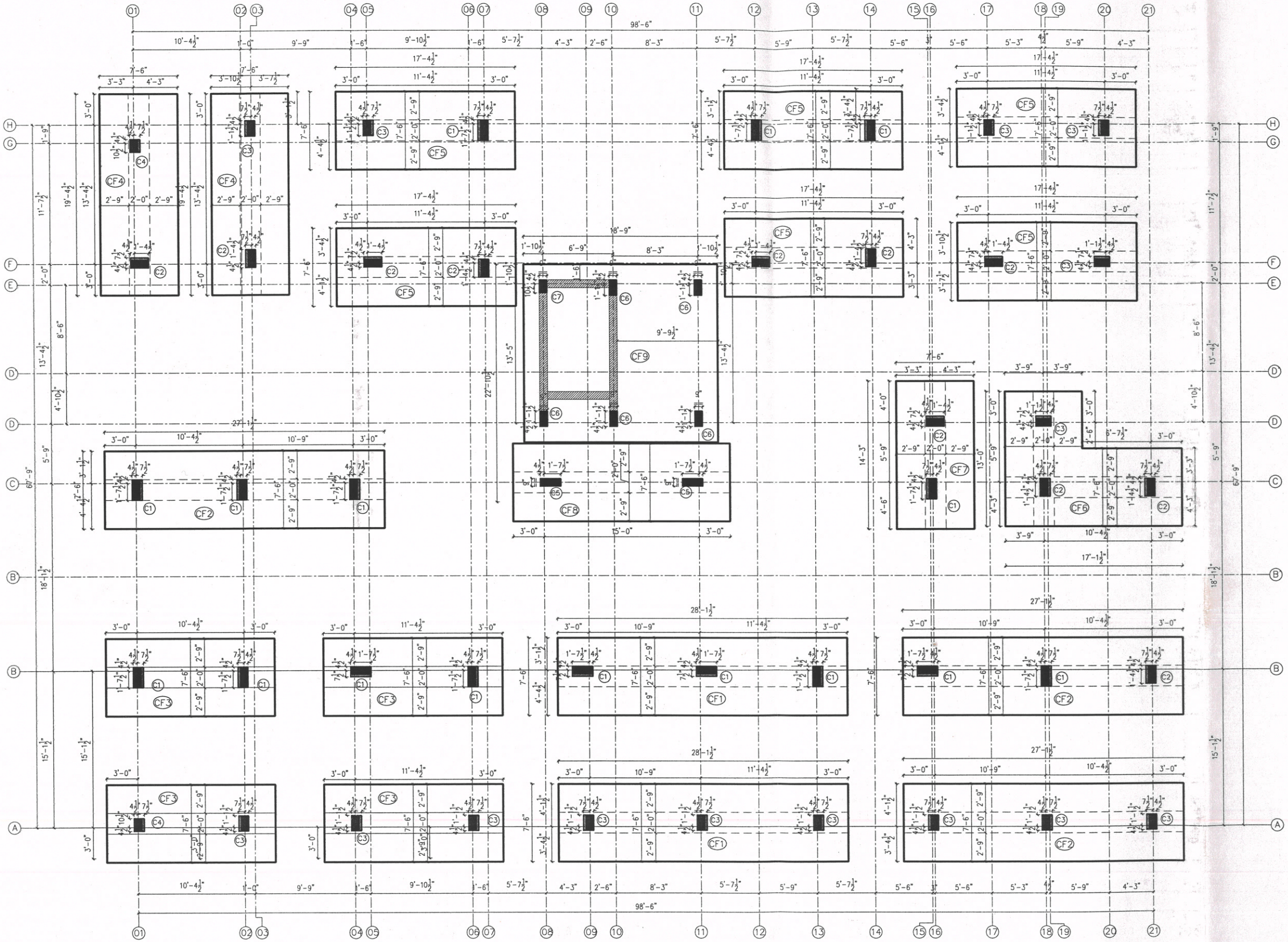
**Spacing required in mm**

| 8# | | 10# | | 12# | | 16# | |
|---|---|---|---|---|---|---|---|
| x | y | x | y | x | y | x | x |
| **282 c/c** | **335 c/c** | **440 c/c** | **524 c/c** | **634 c/c** | **754 c/c** | **#######** | **1340 c/c** |

*.=ast of bar*1000/ast req*

| **Final Ast provided** | x | y |
|---|---|---|
| | **8# @ 150c/c** | **10# @ 150c/c** |

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Manapakkam, Chennai - 600 125.




FOUNDATION LAYOUT–(BLOCK–1)

NOTES:

1. All dimensions are in inches
2. This drg shall be read in conjunction with relevant architectural drawings
3. All dimensions shall be checked and verified before execution of works.
4. Concrete mix :–
   For columns : M30.
   (Cement Content –360 kg/m3)
   * Contractor / Client shall send us cube test results to substantiate the concrete mix grade.
   * If ready mixed concrete is being used, client/contractor shall cast concrete cubes independently at site and send cube results thus obtained to us.
5. Maximum water cement ratio :
   for 1:2:4 – 0.50
   for 1:1 1/2:3 – 0.45
6. REINFORCEMENT :
   TOR STEEL for ø8mm & above conforming to IS 1786 (latest revision)
7. Clear concrete cover to main bars :
   For columns : 40mm ,For PB : 25mm,Lift rc wall :25mm
   For Raft Beam : 75mm.For Raft slab : 50mm
   For Footing : 50mm, For Lift base slab–50mm,
8. Use stone aggregates and sand conforming to IS 383 (latest revision)
   Stone aggregates size – 20mm and down grade
9. Use good water for concrete mixing and curing conforming to IS 456 (latest revision)
10. Use ordinary portland cement conforming to IS 8112 (latest revision) for 43 grade cement & IS 12269 for 53 grade cement.
11. S.B.C of soil is assumed as –t/sq.m
12. Foundation is designed for Ground+5Floors.
13. The centering and shuttering to support structural concrete must be sufficiently strong and rigidly braced.Horizontal ties shall be provided at every 1.5m height.
14. The stability of supports and strength of the centering and formwork should be ensured by the Contractor and Site Engineer before placing concrete.

| REV. | DATE | REVISION NOTE NO | SIGN | CHKD |
|---|---|---|---|---|
| - | - | - | - | - |

**FOUNDATION LAYOUT (BLOCK-1)**

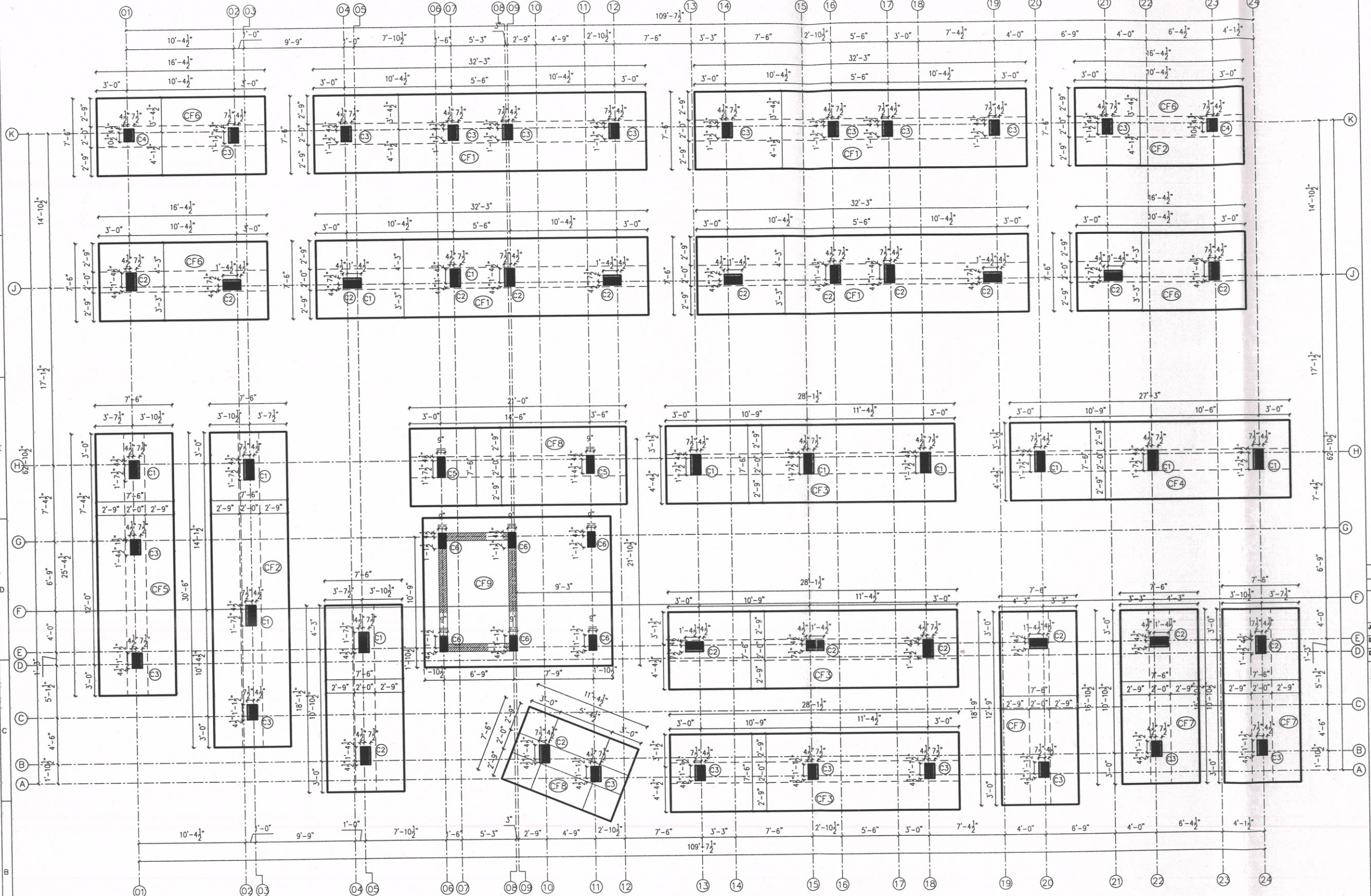
| | |
|---|---|
| JOB NO : - | DRAWN : - |
| DRG.NO: S-01 | DESIGNED : - |
| DATE : - | |

**PROJECT :**

The Planning Permission Application for the proposed construction of Group Development Residential building consisting 2 Blocks, Block A - Stilt Floor + 5 Floors(Height - 18.30m) with 25 dwelling units, Block B - Stilt Floor + 5 Floors (Height - 18.30m) with 30 dwelling units totally 55 dwelling units with availing premium FSI at T Ponnambalam Salai, Kulapakkam, Chennai comprised inS.No. 116/2 of Kulapakkam village within the limits of Kundrathur Panchayat Union

**STRUCTURAL CONSULTANT**

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FOUNDATION LAYOUT (BLOCK–2)

NOTES:

1. All dimensions are in inches
2. This drg shall be read in conjunction with relevant architectural drawings
3. All dimensions shall be checked and verified before execution of works.
4. Concrete mix :–
   For columns : M30.
   (Cement Content –360 kg/m3)
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5. Maximum water cement ratio :
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   for 1:1 1/2:3 – 0.45
6. REINFORCEMENT :
   TOR STEEL for ø8mm & above conforming to IS 1786 (latest revision)
7. Clear concrete cover to main bars :
   For columns : 40mm ,For PB : 25mm,Lift rc wall : 25mm
   For Raft Beam : 75mm, For Raft slab : 50mm
   For Footing : 50mm, For Lift base slab–50mm,
8. Use stone aggregates and sand conforming to IS 383 (latest revision)
   Stone aggregates size – 20mm and down grade
9. Use good water for concrete mixing and curing conforming to IS 456 (latest revision)
10. Use ordinary portland cement conforming to IS 8112 (latest revision) for 43 grade cement & IS 12269 for 53 grade cement.
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13. The centering and shuttering to support structural concrete must be sufficiently strong and rigidly braced.Horizontal ties shall be provided at every 1.5m height.
14. The stability of supports and strength of the centering and formwork should be ensured by the Contractor and Site Engineer before placing concrete.

| REV. | DATE | REVISION NOTE NO | SIGN | CHKD |
|---|---|---|---|---|
| - | - | - | - | - |

**FOUNDATION LAYOUT (BLOCK-2)**

| | | | |
|---|---|---|---|
| JOB NO : | - | DRAWN : | - |
| DRG.NO: | S-02 | DESIGNED : | - |
| DATE : | - | | |

**PROJECT :**

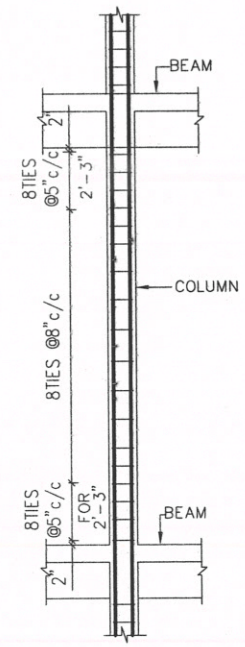
The Planning Permission Application for the proposed construction of Group Development Residential building consisting 2 Blocks, Block A - Stilt Floor + 5 Floors(Height - 18.30m) with 25 dwelling units, Block B - Stilt Floor + 5 Floors (Height - 18.30m) with 30 dwelling units totally 55 dwelling units with availing premium FSI at T Ponnambalam Salai, Kulapakkam, Chennai comprised inS.No. 116/2 of Kulapakkam village within the limits of Kundrathur Panchayat Union

**STRUCTURAL CONSULTANT**

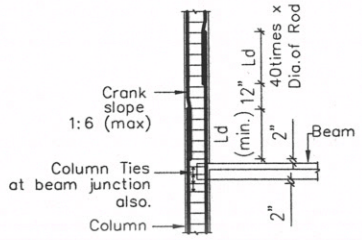
Er. P. RAMAN, B.E (Civil), M.E (Struct)., MIE., C.Eng.,
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CMDA Reg. No.: SE/GR-1/2024/02/006
No.24, Ground Floor, CRR Puram Phase-3,
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## SCHEDULE OF COLUMNS (MIX: 30)

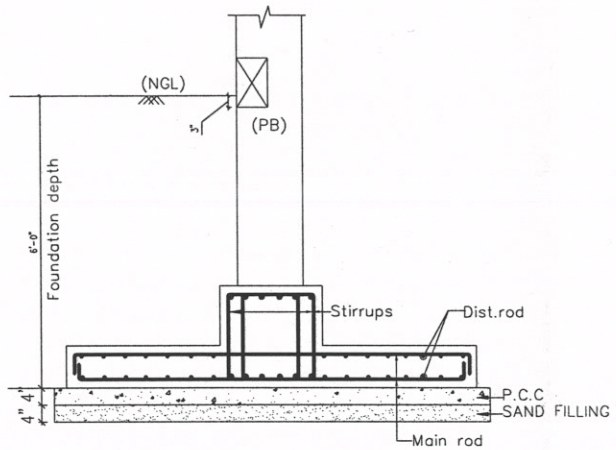
| TYPE | FOOTING SIZE | DEPTH | | FOOTING REINFORCEMENT | | COLUMN REINFORCEMENT | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | h1 | h2 | L | B | GROUND FLOOR | FIRST FLOOR | SECOND FLOOR | THIRD FLOOR | FOURTH FLOOR | FIFTH FLOOR | STIRRUPS |
| C1 | LIFT & COMBINE FOOTING | | | | | 8-ø20+4-ø16 12" 24" | 8-ø20+4-ø16 9" 24" | 12-ø16 9" 24" | 12-ø16 9" 24" | 12-ø16 9" 24" | 12-ø16 9" 24" | ø8Tor |
| C2 | | | | | | 8-ø20+2-ø16 12" 21" | 8-ø20+2-ø16 9" 21" | 10-ø16 9" 21" | 10-ø16 9" 21" | 10-ø16 9" 21" | 10-ø16 9" 21" | ø8Tor |
| C3 | | | | | | 8-ø16 12" 18" | 8-ø16 9" 18" | 4-ø16+4-ø12 9" 18" | 4-ø16+4-ø12 9" 18" | 4-ø16+4-ø12 9" 18" | 4-ø16+4-ø12 9" 18" | ø8Tor |
| C4 | | | | | | 4-ø16+4-ø12 12" 15" | 4-ø16+4-ø12 9" 15" | 4-ø16+4-ø12 9" 15" | 4-ø16+4-ø12 9" 15" | 4-ø16+4-ø12 9" 15" | 4-ø16+4-ø12 9" 15" | ø8Tor |
| C5 | | | | | | 8-ø20+4-ø16 9" 24" | 8-ø20+4-ø16 9" 24" | 12-ø16 9" 24" | 12-ø16 9" 24" | 12-ø16 9" 24" | 12-ø16 9" 24" | ø8Tor |
| C6 | | | | | | 8-ø16 9" 18" | 8-ø16 9" 18" | 4-ø16+4-ø12 9" 18" | 4-ø16+4-ø12 9" 18" | 4-ø16+4-ø12 9" 18" | 4-ø16+4-ø12 9" 18" | ø8Tor |
| C7 | | | | | | 4-ø16+4-ø12 9" 15" | 4-ø16+4-ø12 9" 15" | 4-ø16+4-ø12 9" 15" | 4-ø16+4-ø12 9" 15" | 4-ø16+4-ø12 9" 15" | 4-ø16+4-ø12 9" 15" | ø8Tor |



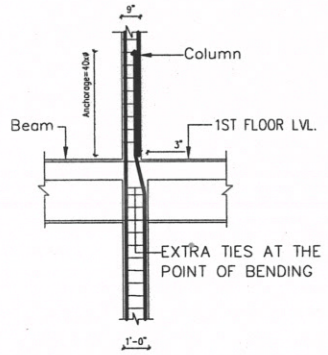

TYPICAL TIES ARRANGEMENT IN COLUMN

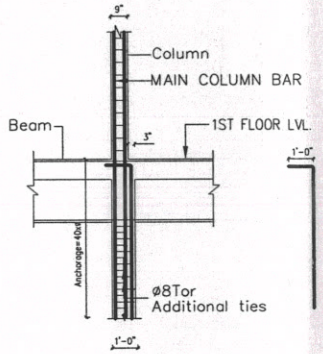



SPLICE WITH UPPER BARS CRANKED INTO POSITION INSIDE LOWER BARS

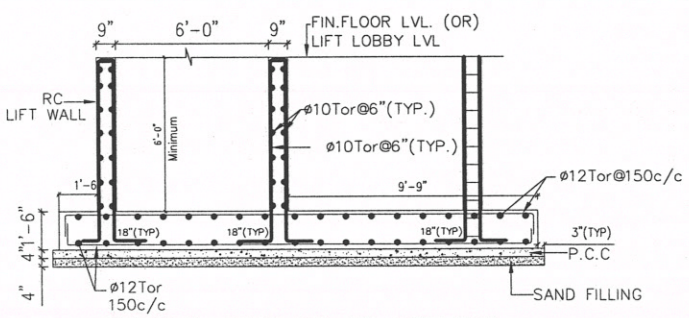



TYPICAL VERTICAL SECTION (COMBINED FOOTING)

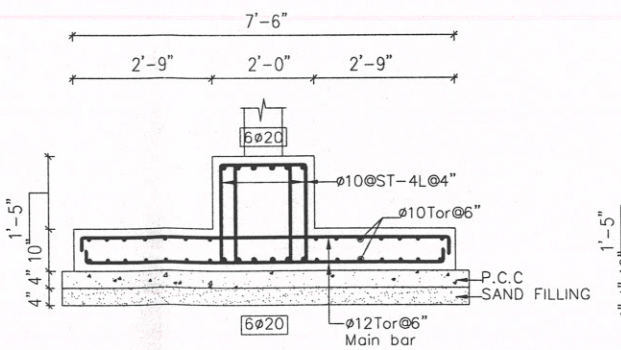



ANCHORAGE DETAIL FOR REDUCTION IN SIZE OF COLUMN AT 1ST FLOOR LEVEL

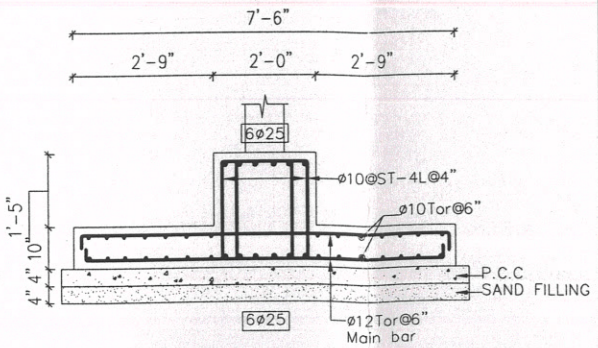



TYPICAL DETAILS OF LIFT PIT COMBINED FOOTING–CF9




C.S OF COMBINED FOOTING–CF1

SAME STEEL DETAILS FOLLOW – CF2,CF3,CF4,CF5,CF6&CF7




C.S OF COMBINED FOOTING–CF8

NOTES:

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   For Raft Beam : 75mm,For Raft slab : 50mm
   For Footing : 50mm, For Lift base slab–50mm,
8. Use stone aggregates and sand conforming to IS 383 (latest revision)
   Stone aggregates size – 20mm and down grade
9. Use good water for concrete mixing and curing conforming to IS 456 (latest revision)
10. Use ordinary portland cement conforming to IS 8112 (latest revision) for 43 grade cement & IS 12269 for 53 grade cement.
11. S.B.C of soil is assumed as 10t/sq.m
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13. The centering and shuttering to support structural concrete must be sufficiently strong and rigidly braced.Horizontal ties shall be provided at every 1.5m height.
14. The stability of supports and strength of the centering and formwork should be ensured by the Contractor and Site Engineer before placing concrete.

| REV. | DATE | REVISION NOTE NO | SIGN | CHKD |
|---|---|---|---|---|
| - | - | - | - | - |

**COLUMN SCHEDULE AND FOOTING DETAILS. (BLOCK-1&2)**

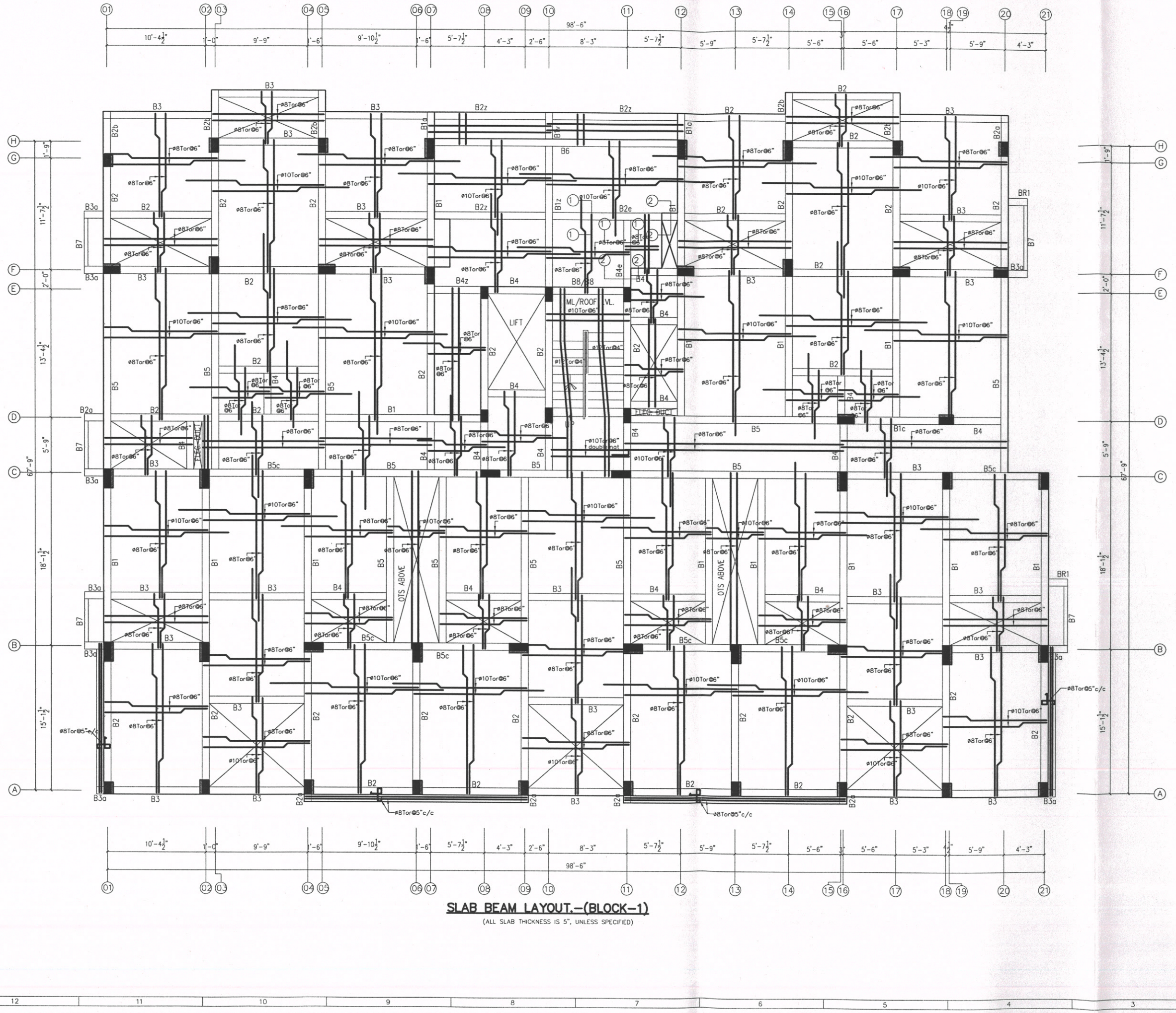
| | |
|---|---|
| JOB NO : - | DRAWN : - |
| DRG.NO: S-03 | DESIGNED : - |
| DATE : - | |

**PROJECT :**

The Planning Permission Application for the proposed construction of Group Development Residential building consisting 2 Blocks, Block A - Stilt Floor + 5 Floors(Height - 18.30m) with 25 dwelling units, Block B - Stilt Floor + 5 Floors (Height - 18.30m) with 30 dwelling units totally 55 dwelling units with availing premium FSI at T Ponnambalam Salai, Kulapakkam, Chennai comprised inS.No. 116/2 of Kulapakkam village within the limits of Kundrathur Panchayat Union

**STRUCTURAL CONSULTANT**


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No.24, Ground Floor, CRR Puram Phase-3,
Manapakkam, Chennai - 600 125.




NOTES:

1. All dimensions are in inches
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3. All dimensions shall be checked and verified before execution of works.
4. Concrete mix :-
   For columns : M30.
   (Cement Content -360 kg/m3)
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   for 1:1 1/2:3 - 0.45
6. REINFORCEMENT :
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7. Clear concrete cover to main bars :
   For columns : 40mm ,For BEAM : 25mm,SLAB : 20mm
8. Use stone aggregates and sand conforming to IS 383 (latest revision)
   Stone aggregates size - 20mm and down grade
9. Use good water for concrete mixing and curing conforming to IS 456 (latest revision)
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| REV. | DATE | REVISION NOTE NO | SIGN | CHKD |
|---|---|---|---|---|
| - | - | - | - | - |

**SLAB BEAM LAYOUT.(BLOCK-1)**

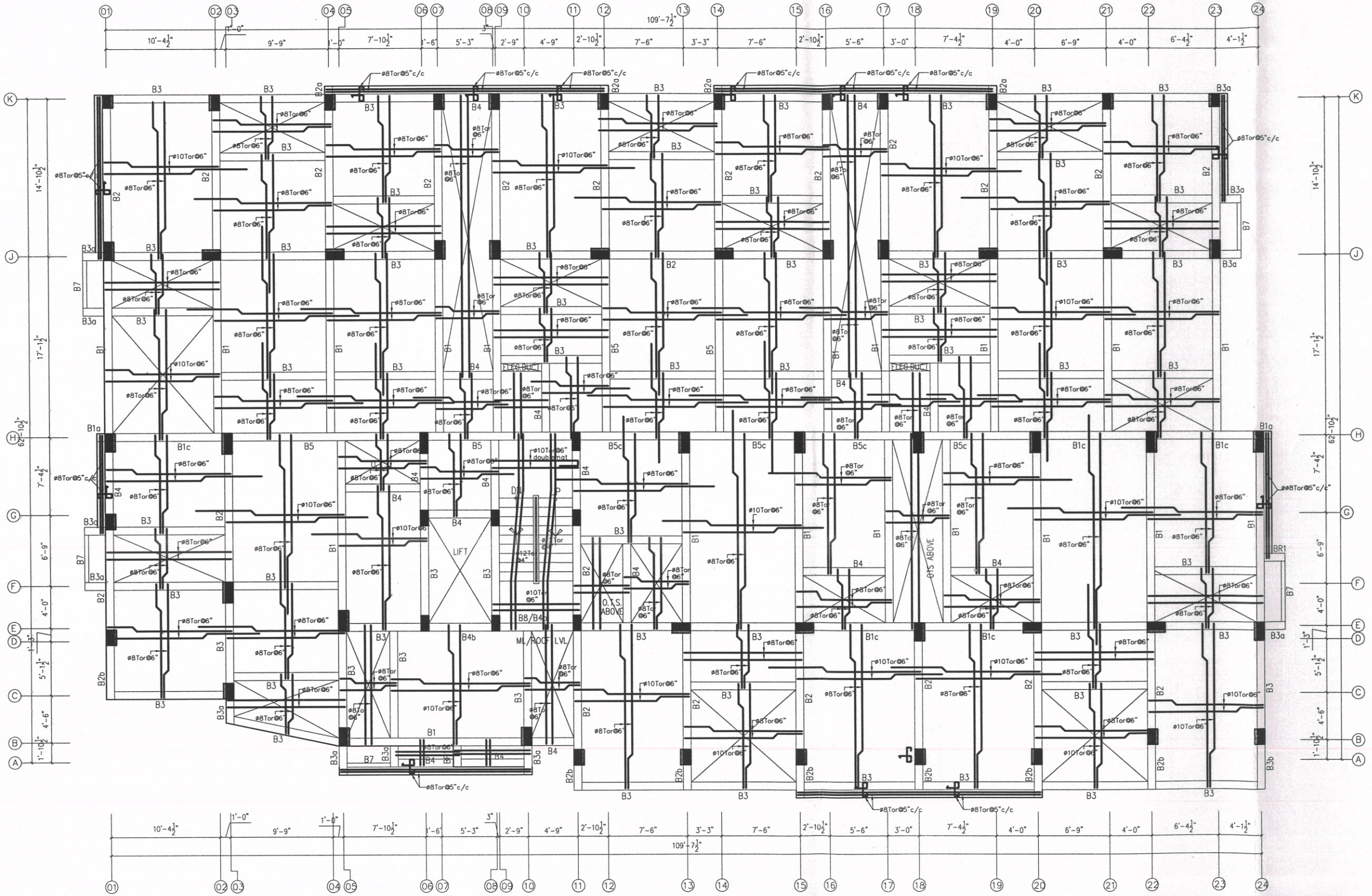
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|---|---|
| JOB NO : - | DRAWN : - |
| DRG.NO: S-04 | DESIGNED : - |
| DATE : - | |

**PROJECT :**

The Planning Permission Application for the proposed construction of Group Development Residential building consisting 2 Blocks, Block A - Stilt Floor + 5 Floors(Height - 18.30m) with 25 dwelling units, Block B - Stilt Floor + 5 Floors (Height - 18.30m) with 30 dwelling units totally 55 dwelling units with availing premium FSI at T Ponnambalam Salai, Kulapakkam, Chennai comprised inS.No. 116/2 of Kulapakkam village within the limits of Kundrathur Panchayat Union

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No.24, Ground Floor, CRR Puram Phase-3,
Manapakkam, Chennai - 600 125.




## SLAB BEAM LAYOUT. (BLOCK–2)

(ALL SLAB THICKNESS IS 5", UNLESS SPECIFIED)

NOTES:

1. All dimensions are in inches
2. This drg shall be read in conjunction with relevant architectural drawings
3. All dimensions shall be checked and verified before execution of works.
4. Concrete mix :–
   For columns : M30.
   (Cement Content –360 kg/m3)
   * Contractor / Client shall send us cube test results to substantiate the concrete mix grade.
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   for 1:2:4 – 0.50
   for 1:1 1/2:3 – 0.45
6. REINFORCEMENT :
   TOR STEEL for ø8mm & above conforming to IS 1786 (latest revision)
7. Clear concrete cover to main bars :
   For columns : 40mm ,For BEAM : 25mm,SLAB : 20mm
8. Use stone aggregates and sand conforming to IS 383 (latest revision)
   Stone aggregates size – 20mm and down grade
9. Use good water for concrete mixing and curing conforming to IS 456 (latest revision)
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| REV. | DATE | REVISION NOTE NO | SIGN | CHKD |
|---|---|---|---|---|
| - | - | - | - | - |

**SLAB BEAM LAYOUT.(BLOCK-2)**

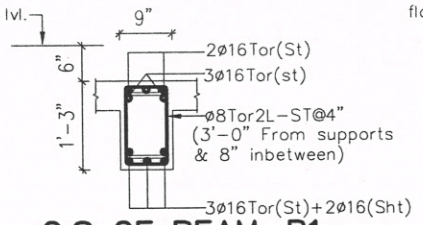
| | | | |
|---|---|---|---|
| JOB NO : | - | DRAWN : | - |
| DRG.NO: | S-05 | DESIGNED : | - |
| DATE : | - | | |

**PROJECT :**

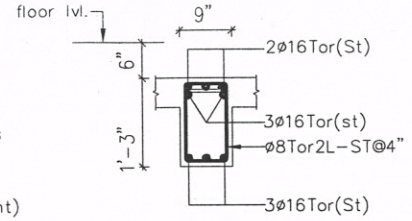
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**STRUCTURAL CONSULTANT**

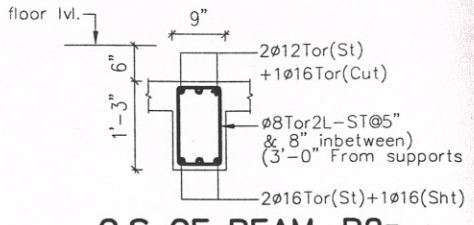
Er. P. RAMAN, B.E.(Civil)., M.E (Struct)., MIE., C.Engg.,
Registered Structural Engineer Grade-1(SE)
CMDA Reg. No.: SE/GR-1/2024/02/006
No.24, Ground Floor, CRR Puram Phase-3,
Manapakkam, Chennai - 600 125.



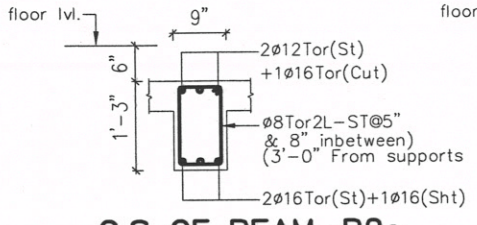

C.S OF BEAM-B1z



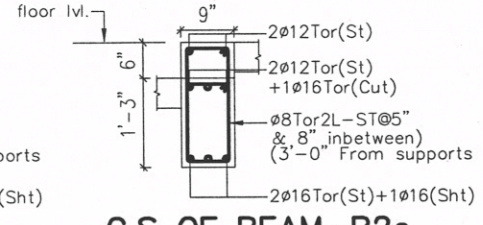

C.S OF BEAM-B1v



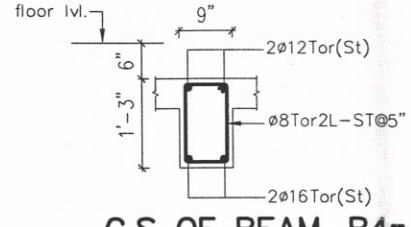

C.S OF BEAM-B2z



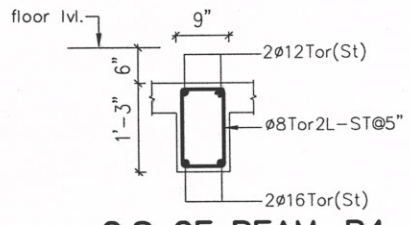

C.S OF BEAM-B2e
section on 1-1



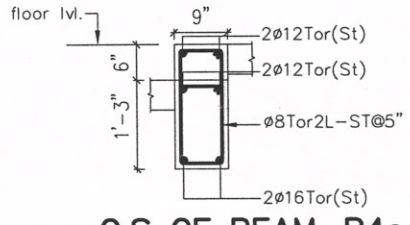

C.S OF BEAM-B2e
section on 2-2



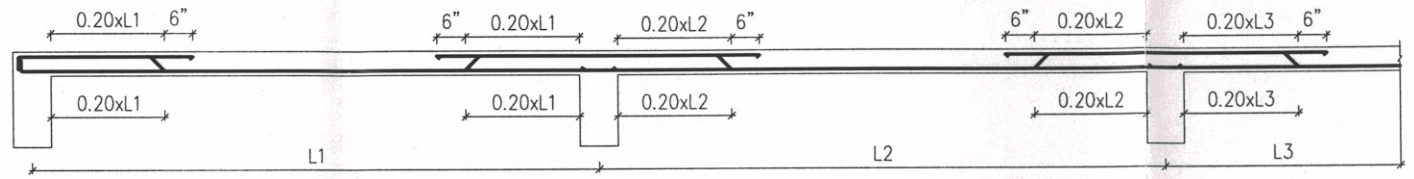

C.S OF BEAM-B4z



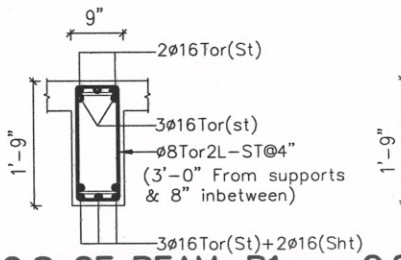

C.S OF BEAM-B4e
section on 1-1



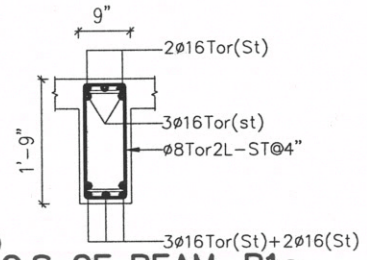

C.S OF BEAM-B4e
section on 2-2



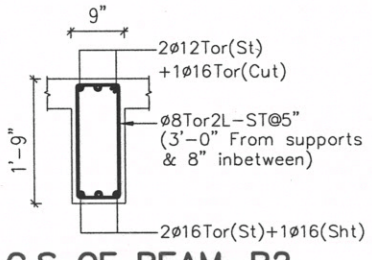

TYPICAL SLAB ROD BENDING DETAILS.



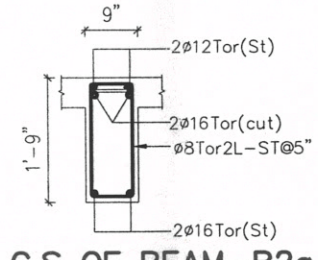

C.S OF BEAM-B1



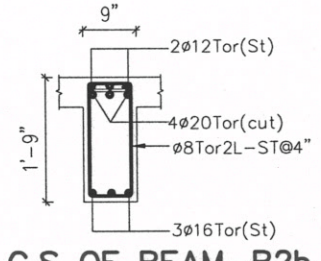

C.S OF BEAM-B1c



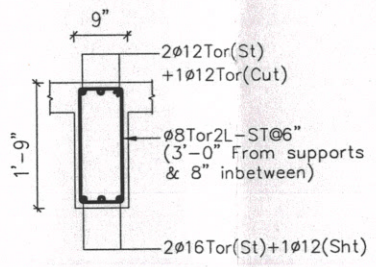

C.S OF BEAM-B2



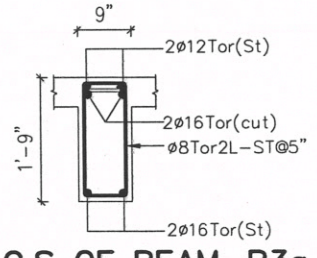

C.S OF BEAM-B2a



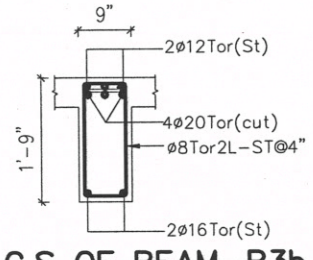

C.S OF BEAM-B2b



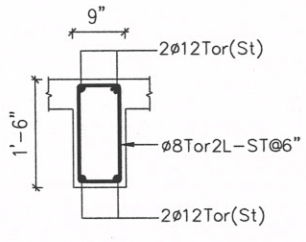

C.S OF BEAM-B3



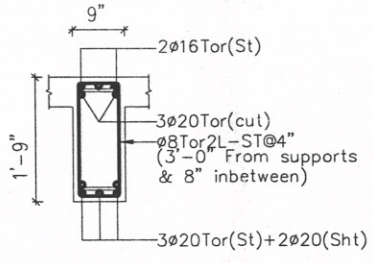

C.S OF BEAM-B3a



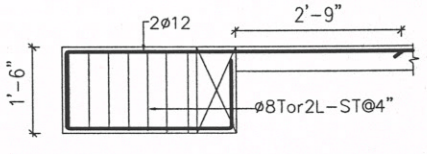

C.S OF BEAM-B3b



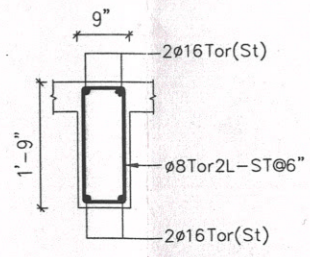

C.S OF BEAM-B4



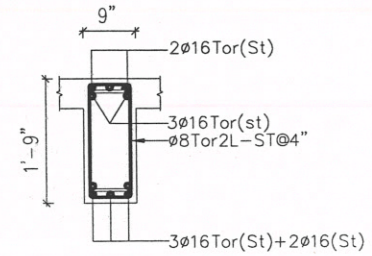

C.S OF BEAM-B5



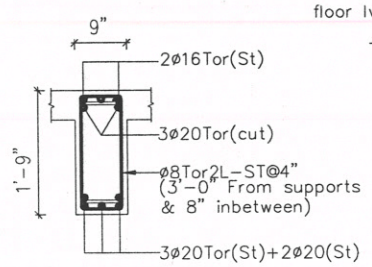

L.S OF BRACKET BEAM-BR1



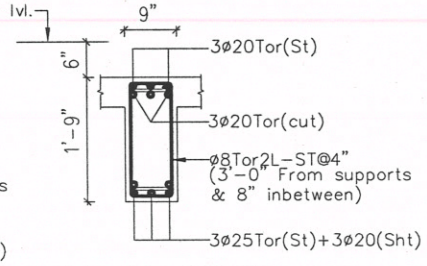

C.S OF BEAM-B4b



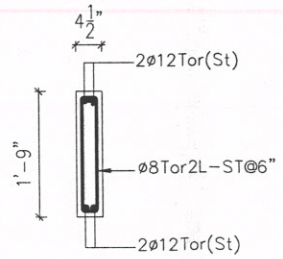

C.S OF BEAM-B1a



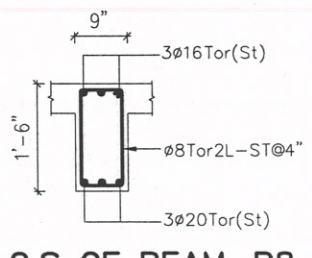

C.S OF BEAM-B5c



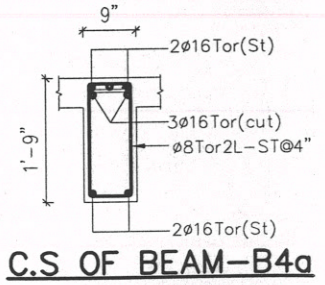

C.S OF BEAM-B6




C.S OF BEAM-B7




C.S OF BEAM-B8




C.S OF BEAM-B4a

| - | - | - | - | - |
|---|---|---|---|---|
| REV. | DATE | REVISION NOTE NO | SIGN | CHKD |

**RCC DETAILS OF BEAM. (BLOCK-1&2)**

| | |
|---|---|
| JOB NO : - | DRAWN : - |
| DRG.NO: B-08 | DESIGNED : - |
| DATE : - | |

**PROJECT :**

The Planning Permission Application for the proposed construction of Group Development Residential building consisting 2 Blocks, Block A - Stilt Floor + 5 Floors(Height - 18.30m) with 25 dwelling units, Block B - Stilt Floor + 5 Floors (Height - 18.30m) with 30 dwelling units totally 55 dwelling units with availing premium FSI at T Ponnambalam Salai, Kulapakkam, Chennai comprised inS.No. 116/2 of Kulapakkam village within the limits of Kundrathur Panchayat Union

**STRUCTURAL CONSULTANT**

Er. P. RAMAN, B.E (Civil)., M.E (Struct)., MIE., C.Eng.,
Registered Structural Engineer Grade-1(SE)
CMDA Reg. No.: SE/ GR-1/2024/02/006
No.24, Ground Floor, CRR Puram Phase-3,
Manapakkam, Chennai - 600 125.

THE LANDLENS SUITE

# Eight ways to know a piece of land before you pay for it.

This report covers one part of the picture. These cover the rest, drawn from the same government records, for any property in Tamil Nadu.

### LandLens One
Ask anything about a property and get an answer grounded in live government records, with the sources shown.
**/landlens/one**

### Verify My Land
Every record check run on one property and returned as a single report.
**/landlens/verify-my-land**

### Legal Opinion
An advocate's written opinion on the title, built on the records we pull for it.
**/landlens**

### One Map
Every layer on one map: the parcel, its boundary, zoning, water bodies and what sits around it.
**/landlens/one/map**

### PriceMap
What land actually changed hands for around this plot, taken from the registered deeds.
**/landlens/pricemap**

### Build Scope
What you are allowed to build here: floor space, height, coverage and setbacks.
**/landlens/build-scope**

### Property Tracker
Watch a property and hear about it when something new is registered against it.
**/landlens/property-tracker**

### Deal Room
Run the transaction in one place: documents, stamping, signatures and the parties.
**/landlens/deal-room**

FREE TOOLS · NO ACCOUNT NEEDED

# Twenty-four checks you can run yourself, at no cost.

## Records and verification

The registers themselves, read for you.

- Encumbrance Certificate
- Patta and Chitta
- Field Measurement Sketch
- EC Analyzer
- Bank charge check
- Court case search
- Seller background check
- Approval check by survey

## Value and duty

What it is worth and what it costs to register.

- Guideline value by street
- Guideline value by survey
- Stamp duty and registration fees
- Capital gains
- Floor space index
- Area unit converter

## Zoning and land use

What the plan says can happen on this land.

- Land use zone finder
- CMDA land use check
- Coastal regulation zone
- Master plan check
- Water bodies finder
- Airport height clearance

## Registers and directories

Who holds it, and which office keeps the record.

- Find your registering office
- Temple property check
- Waqf property check
- RERA register

**Every free tool**
/tools

**Services we run for you**
/services

**The LandLens suite**
/landlens/one

Verified RealEstate™

# Every claim in this document traces back to a government record.

- Legal opinions, due diligence and title verification
- Building plan, layout and sub-division approvals
- Completion and occupancy certificates, regularisation
- Escrow, negotiation and NRI property management
- Land survey, soil testing, architecture and construction

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+91 9996 12 9996

Prepared from the registers named on the page each finding sits on. Where a register could not be read, this document says so in its place rather than leaving the gap to be read as a clean result.