



CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY

Thalamuthu Natarajan Building, No.1, Gandhi Irwin Road, Egmore,

Chennai - 600 008

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Web site: www.cmdachennai.gov.in.

PROFESSIONAL REGISTRATION CERTIFICATE

This is to certify that the Thiru / Tmt. / M/s. **C.KANNAN** has enrolled as **Registered Structural Engineer Grade-I(SE)** with Chennai Metropolitan Development Authority (CMDA) who has the qualification of **M.E Structures** and experience in the relevant field for **15** years.

He/She has been given the Registration No. **SE//2024/2/0047** on **28-Feb-2024** He/She 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 **27-Feb-2029**.

Signature valid

Name : A. Meganathan
Designation : Superintendent
Date : 02/28/2024 12:50:37 PM



A Meganathan

Superintendent

**PROPOSED RESIDENTIAL BUILDING AT KONNUR HIGH ROAD, AYANAVARAM,
CHENNAI- 600 023. COMPRISED IN T. S. NOS. 4/2, 4/4, 5/2 TO 5/11 BLOCK NO. 23 OF
AYANAVARAM VILLAGE, AYANAVARAM TALUK, CHENNAI DISTRICT, GREATER
CHENNAI CORPORATION, DIVISION NO. 96, ZONE- 8**

GENERAL NOTE ON STRUCTURAL DESIGN.

1.0 GENERAL.

1.1 DESIGN BASIS

The proposed residential building consists of Stilt plus Five upper floors.

The design of this building is carried out based on frame analysis using STAAD CONNECT.

1.2 CODES AND STANDARDS

All structural design is carried out conforming to the provisions of National Building Code of India and other relevant Indian Codes and Standards.

1. I.S. 456 - 2000
2. I.S. 875 - Part I to III
3. I.S.1893 - 2016

2.0 BASIC CIVIL DESIGN LOADS

2.1 DEAD LOADS & LIVE LOADS

Typical slab dead load is calculated as follows

Self weight of slab	=	3.25kN/m ²
Floor finish	=	2.0kN/m ²
Live load	=	2.0kN/m ²

		7.25kN/m ²



C. KANNAN, B.E., M.E., (Structure)
Structural Engineer,
CMDA Reg. No: SE/GR-I/19/02/002.
Door No: 21, 4th Main Road,
Indira Nagar, Chennai-600 020.

3.0 SOIL DETAILS

Based on soil test report Shallow Foundation is adopted.

DESIGN METHODS

General design and detailing of concrete members/elements are done conforming to the provisions of I.S: 456 and other relevant I.S codes. Limit State method is followed for the design.

Seismic Zone III load is taken into account for the analysis. The predominant direction of vibration is horizontal. Relevant combination of forces has been taken into account.

4.1

Load Combination	Ultimate Limit Load	Serviceability Limit State
DL+LL+WL Or DL+LL+EL	1.2DL+1.2LL+1.2WL Or 1.2DL+1.2LL+1.2EL	DL+LL+WL or DL+LL+EL

4.3 MINIMUM COVER

Slab	15 mm
Beam	25 mm
Columns	40 mm
Foundations	50 mm

The Structure is safe and sound when used for the purpose for which it is designed.


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Door No: 21, 4th Main Road,
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*****
*
*      STAAD.Pro CONNECT Edition
*      Version 22.12.00.142
*      Proprietary Program of
*      Bentley Systems, Inc.
*      Date= FEB 10, 2024
*      Time= 10:29: 1
*
*      Licensed to: C.Kannan
*****

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1. STAAD SPACE
INPUT FILE: D:\LOGESH\STABILITY CERTIFICATE\PUSHKAR\AYANAVARAM\PUSHKAR-.. .STD
2. START JOB INFORMATION
3. ENGINEER DATE 10-FEB-24
4. JOB NAME PROPOSED RESIDENTIAL BUILDING AT KONNUR HIGH ROAD, AYANAVARAM, -
5. CHENNAI- 600 023. COMPRISED IN T. S. NOS. 4/2, 4/4, 5/2 TO 5/11 BLOCK NO. 23 -
6. OF AYANAVARAM VILLAGE, AYANAVARAM TALUK, CHENNAI DISTRICT, GREATER CHENNAI -
7. CORPORATION, DIVISION NO. 96, ZONE- 8
8. ENGINEER NAME KANNAN
9. CHECKER NAME KANNAN
10. APPROVED NAME KANNAN
11. CHECKER DATE 2/10/2024
12. APPROVED DATE 2/10/2024
13. END JOB INFORMATION
14. INPUT WIDTH 79
15. UNIT MMS KN
16. JOINT COORDINATES
17. 1 0 0 0; 2 3305.2 0 0; 3 7010.4 0 0; 4 12093.6 0 0; 5 0 3000 0
18. 6 3305.2 3000 0; 7 7010.4 3000 0; 8 12093.6 3000 0; 9 0 6000 0
19. 10 3305.2 6000 0; 11 7010.4 6000 0; 12 12093.6 6000 0; 13 0 9000 0
20. 14 3305.2 9000 0; 15 7010.4 9000 0; 16 12093.6 9000 0; 17 0 12000 0
21. 18 3305.2 12000 0; 19 7010.4 12000 0; 20 12093.6 12000 0; 21 0 15000 0
22. 22 3305.2 15000 0; 23 7010.4 15000 0; 24 12093.6 15000 0; 25 0 -3000 0
23. 26 3305.2 -3000 0; 27 7010.4 -3000 0; 28 12093.6 -3000 0
24. MEMBER INCIDENCES
25. 1 1 2; 2 2 3; 3 3 4; 4 1 5; 5 2 6; 6 3 7; 7 4 8; 8 5 6; 9 6 7; 10 7 8; 11 5 9
26. 12 6 10; 13 7 11; 14 8 12; 15 9 10; 16 10 11; 17 11 12; 18 9 13; 19 10 14
27. 20 11 15; 21 12 16; 22 13 14; 23 14 15; 24 15 16; 25 13 17; 26 14 18; 27 15 19
28. 28 16 20; 29 17 18; 30 18 19; 31 19 20; 32 17 21; 33 18 22; 34 19 23; 35 20 24
29. 36 21 22; 37 22 23; 38 23 24; 39 25 1; 40 26 2; 41 27 3; 42 28 4
30. DEFINE MATERIAL START
31. ISOTROPIC CONCRETE
32. E 21.7185
33. POISSON 0.17
34. DENSITY 2.35616E-08
35. ALPHA 1E-05
36. DAMP 0.05
37. G 9.28139
38. TYPE CONCRETE

```


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 Structural Engineer,
 CMDA Reg. No: SE/GR-I/19/02/002.
 Door No: 21, 4th Main Road,
 Indira Nagar, Chennai-600 020.

STAAD SPACE

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39. STRENGTH FCU 0.027579
40. END DEFINE MATERIAL
41. MEMBER PROPERTY
42. 1 TO 3 8 TO 10 15 TO 17 22 TO 24 29 TO 31 36 TO 38 PRIS YD 500 ZD 200
43. 4 TO 7 11 TO 14 18 TO 21 25 TO 28 32 TO 35 39 TO 42 PRIS YD 500 ZD 200
44. CONSTANTS
45. MATERIAL CONCRETE ALL
46. SUPPORTS
47. 25 TO 28 FIXED
48. UNIT METER KN
49. DEFINE IS1893 2016 LOAD
50. ZONE 0.16 RF 5 I 1.2 SS 1 ST 1 DM 0.05 DT 3
51. SELFWEIGHT 1
52. MEMBER WEIGHT
53. 1 TO 3 8 TO 10 15 TO 17 22 TO 24 29 TO 31 36 TO 38 UNI 12 0 0
54. 1 TO 3 8 TO 10 15 TO 17 22 TO 24 29 TO 31 36 TO 38 UNI 35 0 0
55. DEFINE WIND LOAD

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*** NOTE: If any floor diaphragm is present in the model Wind Load definition should be defined after Floor Diaphragm definition. Otherwise wind load generation may be unsuccessful during analysis.

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56. TYPE 1 WIND 1
57. <! STAAD PRO GENERATED DATA DO NOT MODIFY !!!
58. CUSTOM:PARAMS
59. !> END GENERATED DATA BLOCK
60. INT 1.35 1.48 1.63 HEIG 10 15 18
61. EXP 1 JOINT 1 TO 28
62. LOAD 1 LOADTYPE SEISMIC-H TITLE EQ +X
63. 1893 LOAD X 1
64. LOAD 2 LOADTYPE SEISMIC-H TITLE EQ -X
65. 1893 LOAD X -1.
66. LOAD 3 LOADTYPE SEISMIC-H TITLE EQ +Z
67. 1893 LOAD Z 1
68. LOAD 4 LOADTYPE SEISMIC-H TITLE EQ -Z
69. 1893 LOAD Z -1.
70. LOAD 5 LOADTYPE WIND TITLE WIND +X
71. WIND LOAD X 1 TYPE 1
*WARNING- NO MEMBERS LOADED FOR A WIND LOAD GENERATION.
72. LOAD 6 LOADTYPE WIND TITLE WIND -X
73. WIND LOAD -X 1 TYPE 1

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STAAD SPACE

-- PAGE NO. 3

*WARNING- NO MEMBERS LOADED FOR A WIND LOAD GENERATION.

74. LOAD 7 LOADTYPE WIND TITLE WIND +Z
75. WIND LOAD Z 1 TYPE 1
76. LOAD 8 LOADTYPE WIND TITLE WIND -Z
77. WIND LOAD -Z 1 TYPE 1
78. LOAD 9 LOADTYPE LIVE TITLE LIVE LOAD
79. MEMBER LOAD
80. 1 TO 3 8 TO 10 15 TO 17 22 TO 24 29 TO 31 36 TO 38 UNI GY -12
81. LOAD 10 LOADTYPE DEAD TITLE DEAD LOAD
82. SELFWEIGHT Y -1
83. MEMBER LOAD
84. 1 TO 3 8 TO 10 15 TO 17 22 TO 24 29 TO 31 36 TO 38 UNI GY -35
85. LOAD COMB 11 1.5(DL+IL)
86. 9 1.5 10 1.5
87. LOAD COMB 12 1.2(DL+IL+ELX)
88. 9 1.5 10 1.2 1 1.2
89. LOAD COMB 13 1.2(DL+IL-ELX)
90. 9 1.2 10 1.2 2 1.2
91. LOAD COMB 14 1.2(DL+IL+ELZ)
92. 9 1.2 10 1.2 3 1.2
93. LOAD COMB 15 1.2(DL+IL-ELZ)
94. 9 1.2 10 1.2 4 1.2
95. LOAD COMB 16 1.2(DL+IL+WLX)
96. 9 1.2 10 1.2 5 1.2
97. LOAD COMB 17 1.2(DL+IL-WLX)
98. 10 1.2 6 1.2
99. LOAD COMB 18 1.2(DL+IL+WLZ)
100. 9 1.2 10 1.2 7 1.2
101. LOAD COMB 19 1.2(DL+IL-WLZ)
102. 9 1.2 10 1.2 8 1.2
103. LOAD COMB 20 1.5(DL+ELX)
104. 9 1.5 10 1.5 1 1.5
105. LOAD COMB 21 1.5(DL-ELX)
106. 9 1.5 10 1.5 2 1.5
107. LOAD COMB 22 1.5(DL+ELZ)
108. 9 1.5 10 1.5 3 1.5
109. LOAD COMB 23 1.5(DL-ELZ)
110. 10 1.5 4 1.5
111. LOAD COMB 24 1.5(DL+WLX)
112. 10 1.5 5 1.5
113. LOAD COMB 25 1.5(DL-WLX)
114. 10 1.5 6 1.5
115. LOAD COMB 26 1.5(DL+WLZ)
116. 10 1.5 7 1.5
117. LOAD COMB 27 1.5(DL-WLZ)
118. 10 1.5 8 1.5
119. LOAD COMB 28 0.9 DL+ELX

STAAD SPACE

-- PAGE NO. 4

120. 10 0.9 1 1.5
 121. LOAD COMB 29 0.9 DL-ELX
 122. 10 0.9 2 1.5
 123. LOAD COMB 30 0.9 DL+ELZ
 124. 10 0.9 3 1.5
 125. LOAD COMB 31 0.9 DL-ELZ
 126. 10 0.9 4 1.5
 127. LOAD COMB 32 0.9 DL+WLX
 128. 10 0.9 5 1.5
 129. LOAD COMB 33 0.9 DL-WLX
 130. 10 0.9 6 1.5
 131. LOAD COMB 34 0.9 DL+WLZ
 132. 10 0.9 7 1.5
 133. LOAD COMB 35 0.9 DL-WLZ
 134. 10 0.9 8 1.5
 135. PERFORM ANALYSIS PRINT ALL

P R O B L E M S T A T I S T I C S

NUMBER OF JOINTS	28	NUMBER OF MEMBERS	42
NUMBER OF PLATES	0	NUMBER OF SOLIDS	0
NUMBER OF SURFACES	0	NUMBER OF SUPPORTS	4

Using 64-bit analysis engine.

SOLVER USED IS THE IN-CORE ADVANCED MATH SOLVER

TOTAL PRIMARY LOAD CASES = 10, TOTAL DEGREES OF FREEDOM = 144
 TOTAL LOAD COMBINATION CASES = 25 SO FAR.


 C. K. Narayanan, (Structure)
 Structural Engineer,
 CMDA Reg. No: SE/GR-I/19/02/002.
 Door No: 21, 4th Main Road,
 Indira Nagar, Chennai-600 020.

Bentley

Software licensed to C Kannan
CONNECTED User: Kannan Chinnasamy

Job No

Sheet No

1

Rev

Part

Job Title: Proposed Residential Building at Konnur High Road, Ayanavaram, Chennai- 600 023. Comprised in T. S. Nos. 4/2, 4/4, 5/2 to 5/11 Block No. 23 Of Ayanavaram

Ref

By Kannan

Date: 10-Feb-24

Chd: Kannan

Client

File: PUSHKAR-AYANAVARAM

Date/Time: 10-Feb-2024 10:28

Y
Z X



Load 1


C. KANNAN, B.E., M.E., (Structure)
Structural Engineer,
CMDA Reg. No: SE/GR-I/19/02/002.
Door No: 21, 4th Main Road,
Indira Nagar, Chennai-600 020.

Job Title Proposed Residential Building at Konnur High Road, Ayanavaram, Chennai- 600 023. Comprised in T. S. Nos. 4/2, 4/4, 5/2 to 5/11 Block No. 23 Of Ayanavaram

Ref

By Kannan

Date 10-Feb-24

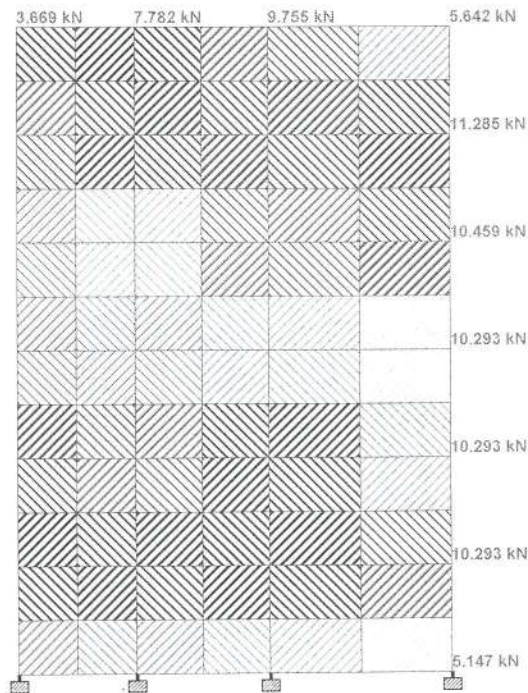
Chd Kannan

Client

File PUSHKAR-AYANAVARA

Date/Time 10-Feb-2024 10:28

Y
Z X



Load 7



Software licensed to C Kannan
CONNECTED User: Kannan Chinnasamy

Job No

Sheet No

1

Rev

Part

Job Title Proposed Residential Building at Konnur High Road, Ayanavaram, Chennai- 600 023. Comprised in T. S. Nos. 4/2, 4/4, 5/2 to 5/11 Block No. 23 Of Ayanavaram

Ref

By Kannan

Date 10-Feb-24

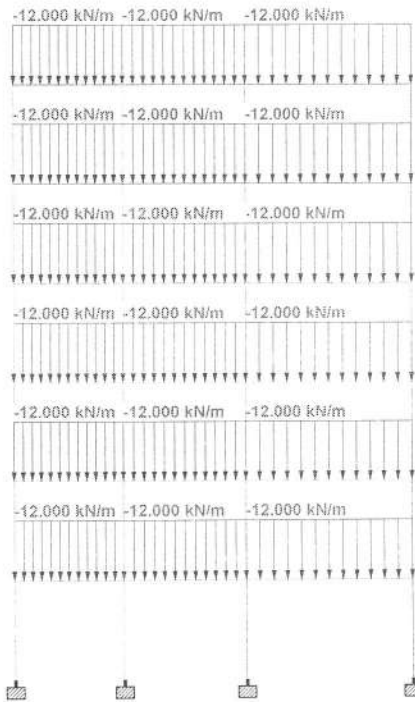
Chd Kannan

Client

File PUSHKAR-AYANAVARA

Date/Time 10-Feb-2024 10:28

Y
Z X



Load 9

Bentley

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CONNECTED User: Kannan Chinnasamy

Job No

Sheet No

1

Rev

Part

Job Title Proposed Residential Building at Konnur High Road, Ayanavaram, Chennai- 600 023. Comprised in T. S. Nos. 4/2, 4/4, 5/2 to 5/11 Block No. 23 Of Ayanavaram

Ref

By Kannan

Date 10-Feb-24

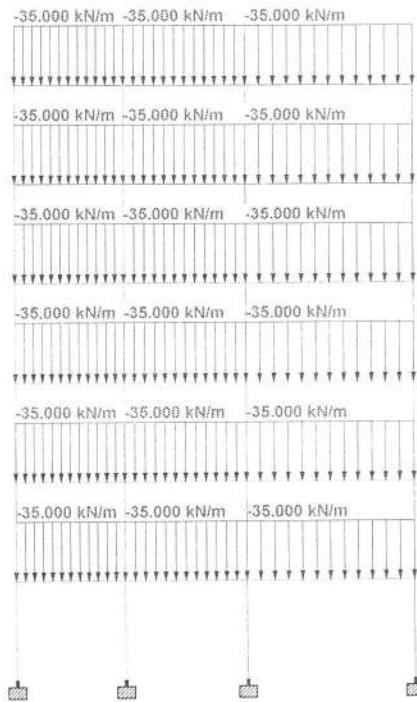
Chd Kannan

Client

File PUSHKAR-AYANAVARA

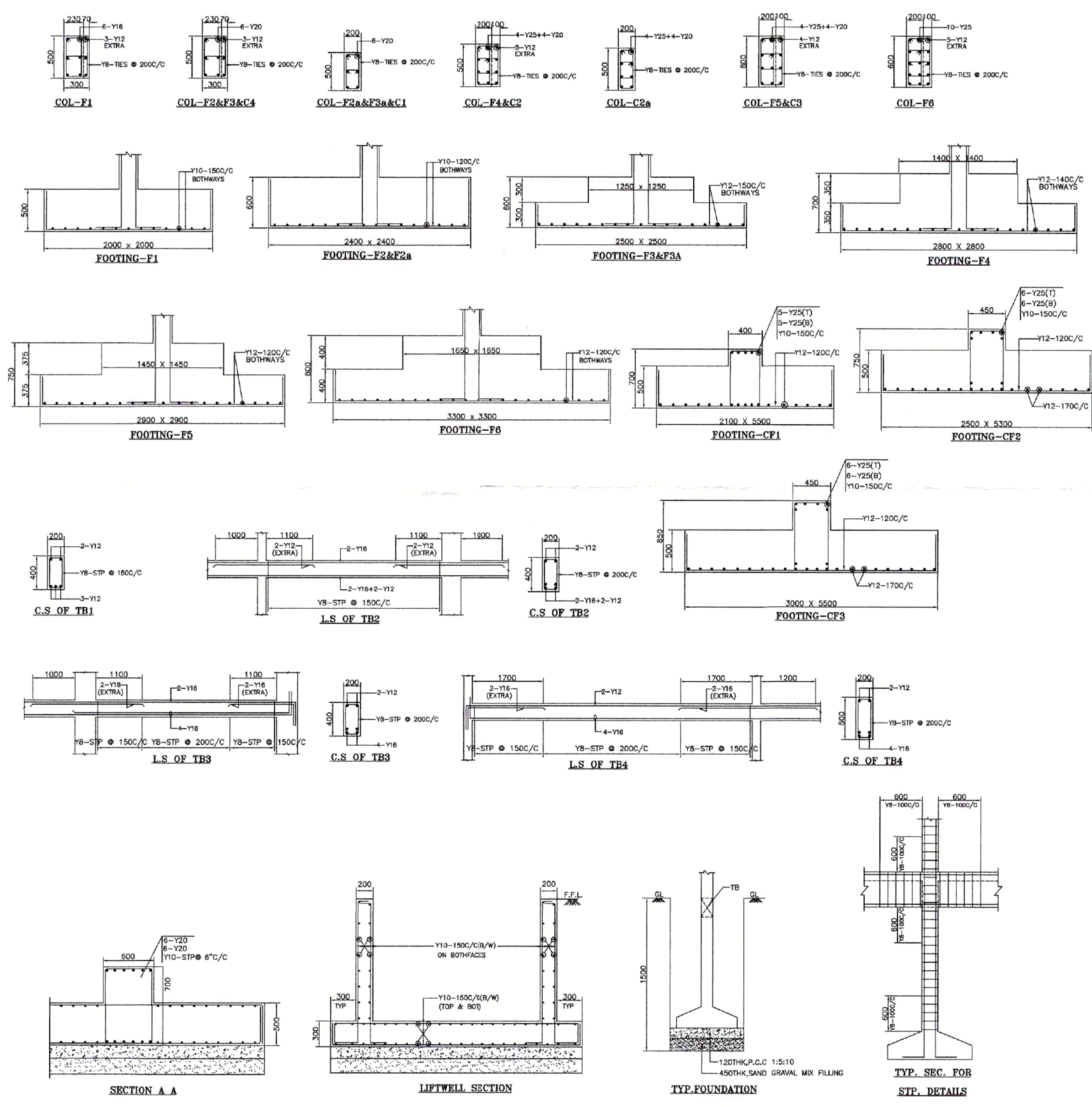
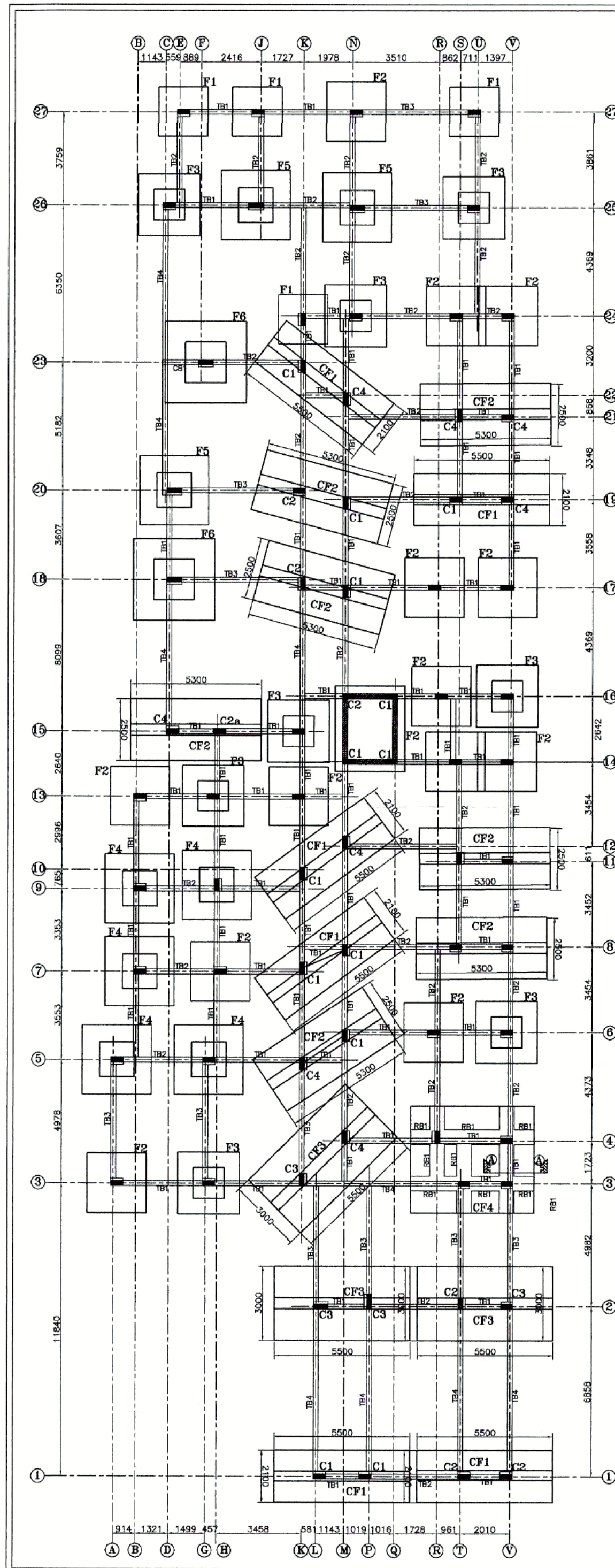
Date/Time 10-Feb-2024 10:28

Y
Z X



Load 10


C. KANNAN, B.E., M.E., (Structure)
Structural Engineer,
CMDA Reg. No: SE/GR-I/19/02/002.
Door No: 21, 4th Main Road,
Indira Nagar, Chennai-600 020.



- Notes:-**
- This drawing should be read along with architectural drawings.
 - Grade of R.C.C. items shall be M30 for column & M25 for all other R.C.C. works.
 - Y Denotes TOR40 Steel conforming to I.S. 1786 - 2008, Grade - Fe 500.
 - Clear cover to the main steel:
50 for Footings, Raft Slabs & Raft Beams.
40 for Columns.
25 for Lintel & Beams.
20 for Sunshade & Slab.
 - Lap length shall be 50 d (Max. dia) for all bars.
 - Bottom Reinforcement
 - Top Reinforcement
 - Provide Continuous Chairs to keep the top reinforcement in position.
 - Provide Y 8 at 200 as Distribution steel for all top Reinforcement.
 - Spacer Bar to be Provided in Between Two Layers Of Reinforcement of Same Dia at Every 1000 C/C.
 - Not more than 40% of Reinforcement shall be Lapped at any particular junction.
 - Cantilever props should not be released until the roof is concreted.
 - Foundation is designed for Stilt plus five upper floor only.
 - For Earthquake analysis Zone III is taken as per IS : 1893-2016 code.
 - Removal of formworks :
i) For Slabs :
a. Slabs spanning upto 4.5 m (15'-0") - 7 days
b. Slabs spanning over 4.5 m (15'-0") - 14 days
ii) For Beams and Arches :
c. Beams and Arches spanning upto 6 m (20'-0") - 14days
d. Beams and Arches spanning over 6 m (20'-0") - 21days

R.NO	DATE	DESCRIPTION

PROJECT
PROPOSED RESIDENTIAL BUILDING AT KONNUR HIGH ROAD, AYANAVARAM, CHENNAI- 600 023. COMPRISED IN T. S. NOS. 4/2, 4/4, 5/2 TO 5/11 BLOCK NO. 23 OF AYANAVARAM VILLAGE, AYANAVARAM TALUK, CHENNAI DISTRICT, GREATER CHENNAI CORPORATION, DIVISION NO. 96, ZONE-8

FOUNDATION DETAIL

DESIGNED	KANNAN	SCALE	1 : 100
DRAWN	NASURTHEEN	DATE	10-02-2024

STRUCTURAL CONSULTANTS:
C. KANNAN, B.E., M.E., (Structure)
 Structural Engineer,
 CMDA Reg. No: SE/GR-1/19/02/002.
 Door No: 21, 4th Main Road,
 Indira Nagar, Chennai-600 020.
 DOOR NO:21, PLOT NO:257-W,
 FLAT NO:2B, "UTOPIA APARTMENTS",
 2nd FLOOR, 4th MAIN ROAD,
 INDIRA NAGAR, CHENNAI-20.
 MOBILE NO: 098412 49815.
 E-MAIL:kannankds2007@gmail.com
 FILE NAME | D/NASURTHEEN/DEC/ABIDS-RESTAURANT

