

10-11-2025

**STRUCTURAL STABILITY CERTIFICATE**

To be furnished while filling application for resignation of the building

The detailed engineering and structure design of the Proposed Residential Building comprising of Stilt Floor (For Parking Use) + 13 Floors With 52 Dwelling Units (With Height 42m New Door No.231 & 232, Old Door No. 293 & 294 abutting thiruvottiyur High Road Comprised In T.S. No. 3659/1 (Part) & 3661/1 (Part), Block No.54 of Tondiarpet Village, Tondiarpet Taluk Within The Limits Of Greater Chennai Corporation, has been done based on the report of geotechnical investigation (soil test) done by Geo Foundations & Structures Pvt Ltd Report No: 1770 dated: 19.09.2024 and considering the functional requirement of the building.

- 2 It is certified that among other factors, the proposed building has been designed to resist earthquake. I have checked various parameters and found that the proposed building would be safe.
3. I/we further certify that:
  - (i) The minimum grade of concrete is M25
  - (ii) The design and analysis has been done using the code of practice for plain and reinforced concrete as per IS 456, design loads as per IS-875 Part I to III and design of earthquake resistant structure as per one code IS 1893, is carried out.
4. The building will be safe and sound when used for the purpose for which it is designed.

Encl: structural design calculation

Stamp and signature  
**C. KANNAN**, B.E., M.E., (Structure)  
Structural Engineer,  
CMDA Reg. No: SE/I/2024/2/0047  
Door No: 21, 4th Main Road,  
Indira Nagar, Chennai-600 020.

**PROPOSED RESIDENTIAL BUILDING AT NEW DOOR NO.231 & 232, OLD DOOR NO. 293 & 294  
ABUTTING THIRUVOTTIYUR HIGH ROAD COMPRISED IN T.S. NO. 3659/1 (PART) & 3661/1  
(PART), BLOCK NO.54 OF TONDIARPET VILLAGE, TONDIARPET TALUK WITHIN THE LIMITS  
OF GREATER CHENNAI CORPORATION.**

**GENERAL NOTE ON STRUCTURAL DESIGN**

**1.0 GENERAL**

**1.1 DESIGN BASIS**

The proposed residential building consists of Stilt plus Thirteen 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 <sup>2</sup> |
| Floor finish        | = | 2.0kN/m <sup>2</sup>  |
| Live load           | = | 2.0kN/m <sup>2</sup>  |
|                     |   | -----                 |
|                     |   | 7.25kN/m <sup>2</sup> |
|                     |   | -----                 |

  
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### 3.0 SOIL DETAILS

Based on soil test report Pile 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<br>Or<br>DL+LL+EL | 1.2DL+1.2LL+1.2WL<br>Or<br>1.2DL+1.2LL+1.2EL | DL+LL+WL<br>or<br>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,  
Indira Nagar, Chennai - 600 020.

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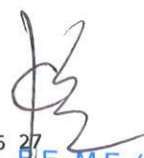
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*
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*          Version 22.12.00.142
*          Proprietary Program of
*          Bentley Systems, Inc.
*          Date= NOV 11, 2025
*          Time= 11:27:39
*
* Licensed to: C.Kannan
*****

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1. STAAD SPACE
INPUT FILE: D:\AGAN\4.STABILITY\VOORA-AGASTYAR TRUST TONDIARPET\Staad\V.. .STD
2. START JOB INFORMATION
3. ENGINEER DATE 11/10/2025
4. JOB NAME PROPOSED RESIDENTIAL BUILDING COMPRISING OF STILT FLOOR (FOR -
5. PARKING USE) + 13 FLOORS WITH 52 DWELLING UNITS (WITH HEIGHT 42M NEW DOOR -
6. NO.231 & 232, OLD DOOR NO. 293 & 294 ABUTTING THIRUVOTTIYUR HIGH ROAD -
7. COMPRISED IN T.S. NO. 3659/1 (PART) & 3661/1 (PART), BLOCK NO.54 OF -
8. TONDIARPET VILLAGE, TONDIARPET TALUK WITHIN THE LIMITS OF GREATER CHENNAI -
9. CORPORATION
10. ENGINEER NAME KANNAN
11. CHECKER NAME KANNAN
12. APPROVED NAME KANNAN
13. CHECKER DATE 11/10/2025
14. APPROVED DATE 11/10/2025
15. END JOB INFORMATION
16. INPUT WIDTH 79
17. SET NL 250
18. UNIT MMS KN
19. JOINT COORDINATES
20. 1 0 0 0; 2 3700.2 0 0; 3 7100.1 8.4E-15 0; 4 11050.3 0 0; 5 0 -2000 0
21. 6 3700.2 -2000 0; 7 7100.1 -2000 0; 8 11050.3 -2000 0; 9 0 3000 0
22. 10 3700.2 3000 0; 11 7100.1 3000 0; 12 11050.3 3000 0; 13 0 6000 0
23. 14 3700.2 6000 0; 15 7100.1 6000 0; 16 11050.3 6000 0; 17 0 9000 0
24. 18 3700.2 9000 0; 19 7100.1 9000 0; 20 11050.3 9000 0; 21 0 12000 0
25. 22 3700.2 12000 0; 23 7100.1 12000 0; 24 11050.3 12000 0; 25 0 15000 0
26. 26 3700.2 15000 0; 27 7100.1 15000 0; 28 11050.3 15000 0; 29 0 18000 0
27. 30 3700.2 18000 0; 31 7100.1 18000 0; 32 11050.3 18000 0; 33 0 21000 0
28. 34 3700.2 21000 0; 35 7100.1 21000 0; 36 11050.3 21000 0; 37 0 24000 0
29. 38 3700.2 24000 0; 39 7100.1 24000 0; 40 11050.3 24000 0; 41 0 27000 0
30. 42 3700.2 27000 0; 43 7100.1 27000 0; 44 11050.3 27000 0; 45 0 30000 0
31. 46 3700.2 30000 0; 47 7100.1 30000 0; 48 11050.3 30000 0; 49 0 33000 0
32. 50 3700.2 33000 0; 51 7100.1 33000 0; 52 11050.3 33000 0; 53 0 36000 0
33. 54 3700.2 36000 0; 55 7100.1 36000 0; 56 11050.3 36000 0; 57 0 39000 0
34. 58 3700.2 39000 0; 59 7100.1 39000 0; 60 11050.3 39000 0; 61 0 42000 0
35. 62 3700.2 42000 0; 63 7100.1 42000 0; 64 11050.3 42000 0
36. MEMBER INCIDENCES
37. 1 1 2; 2 2 3; 3 3 4; 4 9 10; 5 10 11; 6 11 12; 7 13 14; 8 14 15; 9 15 16
38. 10 17 18; 11 18 19; 12 19 20; 13 21 22; 14 22 23; 15 23 24; 16 25 26; 17 26 27

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**G. KANNAN, B.E., M.E. (Structure)**  
 Structural Engineer,  
 CMDA Reg. No: SE/I/2024/2/0047  
 Door No: 21, 4th Main Road,  
 Indira Nagar, Chennai-600 020.

STAAD SPACE

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39. 18 27 28; 19 29 30; 20 30 31; 21 31 32; 22 33 34; 23 34 35; 24 35 36; 25 37 38
40. 26 38 39; 27 39 40; 28 41 42; 29 42 43; 30 43 44; 31 45 46; 32 46 47; 33 47 48
41. 34 49 50; 35 50 51; 36 51 52; 37 53 54; 38 54 55; 39 55 56; 40 57 58; 41 58 59
42. 42 59 60; 43 61 62; 44 62 63; 45 63 64; 46 5 1; 47 1 9; 48 9 13; 49 13 17
43. 50 17 21; 51 21 25; 52 25 29; 53 29 33; 54 33 37; 55 37 41; 56 41 45; 57 45 49
44. 58 49 53; 59 53 57; 60 57 61; 61 6 2; 62 2 10; 63 10 14; 64 14 18; 65 18 22
45. 66 22 26; 67 26 30; 68 30 34; 69 34 38; 70 38 42; 71 42 46; 72 46 50; 73 50 54
46. 74 54 58; 75 58 62; 76 7 3; 77 3 11; 78 11 15; 79 15 19; 80 19 23; 81 23 27
47. 82 27 31; 83 31 35; 84 35 39; 85 39 43; 86 43 47; 87 47 51; 88 51 55; 89 55 59
48. 90 59 63; 91 8 4; 92 4 12; 93 12 16; 94 16 20; 95 20 24; 96 24 28; 97 28 32
49. 98 32 36; 99 36 40; 100 40 44; 101 44 48; 102 48 52; 103 52 56; 104 56 60
50. 105 60 64
51. UNIT METER KN
52. DEFINE MATERIAL START
53. ISOTROPIC CONCRETE
54. E 2.17185E+07
55. POISSON 0.17
56. DENSITY 23.5616
57. ALPHA 1E-05
58. DAMP 0.05
59. G 9.28139E+06
60. TYPE CONCRETE
61. STRENGTH FCU 27579
62. END DEFINE MATERIAL
63. MEMBER PROPERTY
64. 46 TO 105 PRIS YD 0.6 ZD 0.2
65. 1 TO 45 PRIS YD 0.6 ZD 0.2
66. CONSTANTS
67. MATERIAL CONCRETE ALL
68. UNIT MMS KN
69. SUPPORTS
70. 5 TO 8 FIXED
71. UNIT METER KN
72. 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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73. TYPE 1 WIND 1
74. <! STAAD PRO GENERATED DATA DO NOT MODIFY !!!
75. CUSTOM:PARAMS
76. !> END GENERATED DATA BLOCK
77. INT 1.22 1.35 1.48 1.51 1.64 1.77 1.8 1.83 HEIG 10 15 20 25 30 35 40 42
78. EXP 1 JOINT 1 TO 64
79. DEFINE IS1893 2016 LOAD
80. ZONE 0.16 RF 5 I 1.2 SS 1 ST 1 DM 0.05 DT 2
81. SELFWEIGHT 1
82. MEMBER WEIGHT
83. 1 TO 45 UNI 12 0 0
84. 1 TO 45 UNI 25 0 0
85. LOAD 1 LOADTYPE SEISMIC-H TITLE EQX
86. 1893 LOAD X 1

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STAAD SPACE

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87. LOAD 2 LOADTYPE SEISMIC-H TITLE EQX  
88. 1893 LOAD X -1.  
89. LOAD 3 LOADTYPE SEISMIC-V TITLE EQZ  
90. 1893 LOAD Z 1  
91. LOAD 4 LOADTYPE SEISMIC-V TITLE EQZ  
92. 1893 LOAD Z -1.  
93. LOAD 5 LOADTYPE WIND TITLE WIND +X  
94. WIND LOAD X 1 TYPE 1  
\*WARNING- NO MEMBERS LOADED FOR A WIND LOAD GENERATION.  
95. LOAD 6 LOADTYPE WIND TITLE WIND -X  
96. WIND LOAD -X 1 TYPE 1  
\*WARNING- NO MEMBERS LOADED FOR A WIND LOAD GENERATION.  
97. LOAD 7 LOADTYPE WIND TITLE WIND +Z  
98. WIND LOAD Z 1 TYPE 1  
99. LOAD 8 LOADTYPE WIND TITLE WIND -Z  
100. WIND LOAD -Z 1 TYPE 1  
101. LOAD 9 LOADTYPE LIVE TITLE L.L  
102. MEMBER LOAD  
103. 1 TO 45 UNI GY -12  
104. LOAD 10 LOADTYPE DEAD TITLE D.L  
105. SELFWEIGHT Y -1 LIST ALL  
106. MEMBER LOAD  
107. 1 TO 45 UNI GY -25  
108. LOAD COMB 11 1.5(DL+IL)  
109. 9 1.5 10 1.5  
110. LOAD COMB 12 1.2(DL+IL+ELX)  
111. 9 1.5 10 1.2 1 1.2  
112. LOAD COMB 13 1.2(DL+IL-ELX)  
113. 9 1.2 10 1.2 2 1.2  
114. LOAD COMB 14 1.2(DL+IL+ELZ)  
115. 9 1.2 10 1.2 3 1.2  
116. LOAD COMB 15 1.2(DL+IL-ELZ)  
117. 9 1.2 10 1.2 4 1.2  
118. LOAD COMB 16 1.2(DL+IL+WLX)  
119. 9 1.2 10 1.2 5 1.2

STAAD SPACE

-- PAGE NO. 4

120. LOAD COMB 17 1.2(DL+IL-WLX)  
 121. 10 1.2 6 1.2  
 122. LOAD COMB 18 1.2(DL+IL+WLZ)  
 123. 9 1.2 10 1.2 7 1.2  
 124. LOAD COMB 19 1.2(DL+IL-WLZ)  
 125. 9 1.2 10 1.2 8 1.2  
 126. LOAD COMB 20 1.5(DL+ELX)  
 127. 9 1.5 10 1.5 1 1.5  
 128. LOAD COMB 21 1.5(DL-ELX)  
 129. 9 1.5 10 1.5 2 1.5  
 130. LOAD COMB 22 1.5(DL+ELZ)  
 131. 9 1.5 10 1.5 3 1.5  
 132. LOAD COMB 23 1.5(DL-ELZ)  
 133. 10 1.5 4 1.5  
 134. LOAD COMB 24 1.5(DL+WLX)  
 135. 10 1.5 5 1.5  
 136. LOAD COMB 25 1.5(DL-WLX)  
 137. 10 1.5 6 1.5  
 138. LOAD COMB 26 1.5(DL+WLZ)  
 139. 10 1.5 7 1.5  
 140. LOAD COMB 27 1.5(DL-WLZ)  
 141. 10 1.5 8 1.5  
 142. LOAD COMB 28 0.9 DL+ELX  
 143. 10 0.9 1 1.5  
 144. LOAD COMB 29 0.9 DL-ELX  
 145. 10 0.9 2 1.5  
 146. LOAD COMB 30 0.9 DL+ELZ  
 147. 10 0.9 3 1.5  
 148. LOAD COMB 31 0.9 DL-ELZ  
 149. 10 0.9 4 1.5  
 150. LOAD COMB 32 0.9 DL+WLX  
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 152. LOAD COMB 33 0.9 DL-WLX  
 153. 10 0.9 6 1.5  
 154. LOAD COMB 34 0.9 DL+WLZ  
 155. 10 0.9 7 1.5  
 156. LOAD COMB 35 0.9 DL-WLZ  
 157. 10 0.9 8 1.5  
 158. PERFORM ANALYSIS PRINT ALL

# PROBLEM STATISTICS

|                    |    |                    |     |
|--------------------|----|--------------------|-----|
| NUMBER OF JOINTS   | 64 | NUMBER OF MEMBERS  | 105 |
| 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

  
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 Door No: 21, 4th Main Road,  
 Indira Nagar, Chennai-600 020.

Y  
Z-X



Load 1

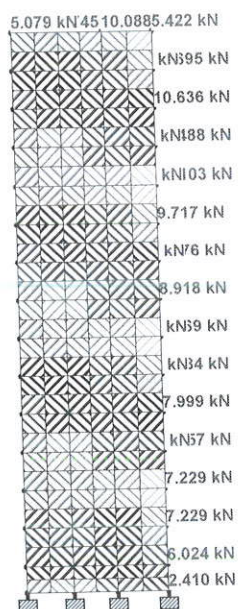
  
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Indira Nagar, Chennai-600 020.

|                        |                             |            |
|------------------------|-----------------------------|------------|
| Job No                 | Sheet No<br><b>1</b>        | Rev        |
| Part                   |                             |            |
| Ref                    |                             |            |
| By Kannan              | Date 11/10/2025             | Chd Kannan |
| File VOORA-AGASTYAR TR | Date/Time 11-Nov-2025 11:27 |            |

Job Title **Proposed Residential Building comprising of Stilt Floor (For Parking Use) + 13 Floors With 52 Dwelling Units (With Height 42m New Door No.231 & 232, Old**

Client

Y  
Z-X

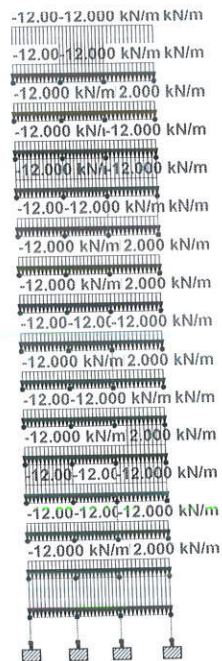


Load 7

Job Title Proposed Residential Building comprising of Stilt Floor (For Parking Use) + 13 Floors With 52 Dwelling Units (With Height 42m New Door No.231 & 232, Old

Client

Y  
Z-X



Load 9



Print Run 1 of 1