

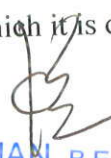
10-11-2025

STRUCTURAL STABILITY CERTIFICATE

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 thiruvottiur 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.

1. 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.
2. I 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.

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


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 ²
Floor finish	=	2.0kN/m ²
Live load	=	2.0kN/m ²

		7.25kN/m ²


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*****
*
*          STAAD.Pro CONNECT Edition
*          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.

```

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

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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
 151. 10 0.9 5 1.5
 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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 Structural Engineer,
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 Door No: 21, 4th Main Road,
 Indira Nagar, Chennai-600 020.

Bentley

Software licensed to C.Kannan
CONNECTED User: Kannan Chinnasamy

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

Job No

Sheet No

1

Rev

Part

Ref

By Kannan

Date 11/10/2025

Chd Kannan

File VOORA-AGASTYAR TRI

Date/Time 11-Nov-2025 11:27

Y
Z X



Load 1

C. KANNAN, B.E., M.E. (Structure)
Structural Engineer,
CMDA Reg. No: SE/I/2024/2/0047
Door No: 21, 4th Main Road,
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