Dr. ALEX JACOB
B.E.,M.Tech (Str).,Ph.D (Hon).,Dip. Bdg.Sc (Aust)., M.I.E (Aust), M.I.E (Ind)
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alexjacobuc@gmail.com
www.unitedconsultants.in

27.12.2025

STABILITY CERTIFICATE

The detailed engineering and structure design of the Proposed Construction of Stilt floor + 10 floors Residential Building with 10 Dwelling units at Plot No.24, New Door No.16 and Old Door No.92, Poes Garden, Chennai – 600 086 and Comprised in R.S.No.1567 and as per Patta R.S.No.1567/30, Block No.31 of Mylapore Village (as per patta mylapore (part 1) town) (as per registration department Teynampet Village), Mylapore Taluk and within the limits of Greater Chennai Corporation. Cone : IX, Division : 118 has been done by me based on the report of geotechnical investigation (soil test) done by **GEO FOUNDATIONS & STRUCTURES PVT LTD.,** Report No. **1765** dated **24.07.2024** 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 further certify that:

(i) The minimum grade of concrete is M 25.

(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 Codes No 875 part I to part V and design of earthquake resistant structure as per IS Code No 1896 are carried out.

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

(Dr. ALEX JACOB)

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REG No. RSE100392025

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. ALEX JAOB** has enrolled as **Registered Structural Engineer Grade-I (SE)** with Chennai Metropolitan Development Authority (CMDA) who has the qualification of **M.Tech.,(Structural Engg.)** and experience in the relevant field for **52 years**.

He has been given the Registration No.**SE/GR-I/2024/02/001** on **11.02.2024.** 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 **10.02.2029**.

11/2/2024

(A. MEGANATHAN)
Superintendent

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**************************************************
*                                                *
*          STAAD.Pro CONNECT Edition             *
*          Version  22.12.00.142                 *
*          Proprietary Program of                *
*          Bentley Systems, Inc.                 *
*          Date=    DEC 26, 2025                 *
*          Time=    12:28:32                     *
*                                                *
*  Licensed to: United Consultanta               *
**************************************************

     1. STAAD SPACE
INPUT FILE: D:\MARIKRISHNAN\PROJECTS\STABILITY CERTIFICATE\POES GARDEN\POES GARDEN- VISHRANTHI HOMES-2.. .STD
     2. START JOB INFORMATION
     3. JOB NAME THE PROPOSED CONSTRUCTION OF STILT FLOOR + 10 FLOORS RESIDENTIAL -
     4. BUILDING WITH 10 DWELLING UNITS AT PLOT NO.24, NEW DOOR NO.16 AND OLD DOOR -
     5. NO.92, POES GARDEN, CHENNAI - 600 086 AND COMPRISED IN R.S.NO.1567 AND AS -
     6. PER PATTA R.S.NO.1567/30, BLOCK NO.31 OF MYLAPORE VILLAGE (AS PER PATTA -
     7. MYLAPORE (PART 1) TOWN) (AS PER REGISTRATION DEPARTMENT TEYNAMPET VILLAGE), -
     8. MYLAPORE TALUK AND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION. ZONE : -
     9. IX, DIVISION : 118
    10. ENGINEER NAME ALEX JACOB
    11. ENGINEER DATE 12/26/2025
    12. END JOB INFORMATION
    13. INPUT WIDTH 79
    14. SET NL 500
    15. UNIT METER KN
    16. JOINT COORDINATES
    17. 1 0 0 0; 2 3.187 0 0; 3 8.187 0 0; 4 9.9 0 0; 6 0 3.05 0; 7 3.187 3.05 0
    18. 8 8.187 3.05 0; 9 9.9 3.05 0; 11 0 6.1 0; 12 3.187 6.1 0; 13 8.187 6.1 0
    19. 14 9.9 6.1 0; 16 0 9.15 0; 17 3.187 9.15 0; 18 8.187 9.15 0; 19 9.9 9.15 0
    20. 21 0 12.2 0; 22 3.187 12.2 0; 23 8.187 12.2 0; 24 9.9 12.2 0; 26 0 15.25 0
    21. 27 3.187 15.25 0; 28 8.187 15.25 0; 29 9.9 15.25 0; 30 0 18.3 0
    22. 31 3.187 18.3 0; 32 8.187 18.3 0; 33 9.9 18.3 0; 34 0 21.35 0
    23. 35 3.187 21.35 0; 36 8.187 21.35 0; 37 9.9 21.35 0; 38 0 24.4 0
    24. 39 3.187 24.4 0; 40 8.187 24.4 0; 41 9.9 24.4 0; 42 0 27.45 0
    25. 43 3.187 27.45 0; 44 8.187 27.45 0; 45 9.9 27.45 0; 46 0 30.5 0
    26. 47 3.187 30.5 0; 48 8.187 30.5 0; 49 9.9 30.5 0; 50 0 33.55 0
    27. 51 3.187 33.55 0; 52 8.187 33.55 0; 53 9.9 33.55 0; 54 0 36.6 0
    28. 55 3.187 36.6 0; 56 8.187 36.6 0; 57 9.9 36.6 0
    29. MEMBER INCIDENCES
    30. 5 1 6; 6 2 7; 7 3 8; 8 4 9; 10 6 7; 11 7 8; 12 8 9; 14 6 11; 15 7 12; 16 8 13
    31. 17 9 14; 19 11 12; 20 12 13; 21 13 14; 23 11 16; 24 12 17; 25 13 18; 26 14 19
    32. 28 16 17; 29 17 18; 30 18 19; 32 16 21; 33 17 22; 34 18 23; 35 19 24; 37 21 22
    33. 38 22 23; 39 23 24; 41 21 26; 42 22 27; 43 23 28; 44 24 29; 46 26 27; 47 27 28
    34. 48 28 29; 49 26 30; 50 27 31; 51 28 32; 52 29 33; 53 30 31; 54 31 32; 55 32 33
    35. 56 30 34; 57 31 35; 58 32 36; 59 33 37; 60 34 35; 61 35 36; 62 36 37; 63 34 38
    36. 64 35 39; 65 36 40; 66 37 41; 67 38 39; 68 39 40; 69 40 41; 70 38 42; 71 39 43
    37. 72 40 44; 73 41 45; 74 42 43; 75 43 44; 76 44 45; 77 42 46; 78 43 47; 79 44 48
    38. 80 45 49; 81 46 47; 82 47 48; 83 48 49; 84 46 50; 85 47 51; 86 48 52; 87 49 53
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REG No. RSE100392025

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39. 88 50 51; 89 51 52; 90 52 53; 91 50 54; 92 51 55; 93 52 56; 94 53 57; 95 54 55
40. 96 55 56; 97 56 57
41. DEFINE MATERIAL START
42. ISOTROPIC CONCRETE
43. E 2.17185E+07
44. POISSON 0.17
45. DENSITY 23.5616
46. ALPHA 1E-05
47. DAMP 0.05
48. G 9.28139E+06
49. TYPE CONCRETE
50. STRENGTH FCU 27579
51. END DEFINE MATERIAL
52. MEMBER PROPERTY
53. 10 TO 12 19 TO 21 28 TO 30 37 TO 39 46 TO 48 53 TO 55 60 TO 62 67 TO 69 74 -
54. 75 TO 76 81 TO 83 88 TO 90 95 TO 97 PRIS YD 0.5 ZD 0.2
55. 5 TO 8 14 TO 17 23 TO 26 32 TO 35 41 TO 44 49 TO 52 56 TO 59 63 TO 66 -
56. 70 TO 73 77 TO 80 84 TO 87 91 TO 94 PRIS YD 0.5 ZD 0.3
57. CONSTANTS
58. MATERIAL CONCRETE ALL
59. SUPPORTS
60. 1 TO 4 FIXED
61. DEFINE WIND LOAD

*** 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.

62. TYPE 1 WIND 1
63. <! STAAD PRO GENERATED DATA DO NOT MODIFY !!!
64. CUSTOM:PARAMS
65. !> END GENERATED DATA BLOCK
66. INT 1.5 1.65375 HEIG  10  15
67. DEFINE IS1893 2016 LOAD
68. ZONE 0.16 RF 2.5 I 1.2 SS 2 ST 1 DM 0.05 PX 0.57 PZ 0.57
69. MEMBER WEIGHT
70. 10 TO 12 19 TO 21 28 TO 30 37 TO 39 46 TO 48 53 TO 55 60 TO 62 67 TO 69 74 -
71. 75 TO 76 81 TO 83 88 TO 90 95 TO 97 UNI -12.2
72. 10 TO 12 19 TO 21 28 TO 30 37 TO 39 46 TO 48 53 TO 55 60 TO 62 67 TO 69 74 -
73. 75 TO 76 81 TO 83 88 TO 90 95 TO 97 UNI -10
74. SELFWEIGHT -1
75. LOAD 1 LOADTYPE SEISMIC-H  TITLE EQX
76. 1893 LOAD X 1
77. PERFORM ANALYSIS
```

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

NUMBER OF JOINTS	52	NUMBER OF MEMBERS	84
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 = 1, TOTAL DEGREES OF FREEDOM = 288
TOTAL LOAD COMBINATION CASES = 0 SO FAR.

***NOTE: Equivalent Static Analysis should preferably be performed for regular structures with approximate natural time period less than 0.4s and regular structures with height less than 15m in Seismic Zone II. Ref Cl.6.4.3 and 7.6 BASE SHEAR AND TIME PERIOD IN X

```
*********************************************************
* UNITS - KN    METE                                    *
* TIME PERIOD FOR X 1893 LOADING =    0.57000 SEC       *
* SA/G PER 1893=    2.386, LOAD FACTOR= 1.000           *
* VB PER 1893=    0.0916 X     1840.04=     168.59 KN   *
* VB Act Based on Clause 7.2.1 =      168.59 KN         *
* VB Min based on Clause 7.2.2 =       20.24 KN         *
*                                                       *
*********************************************************
```

78. CHANGE
79. LOAD 2 LOADTYPE SEISMIC-H TITLE -EQX
80. 1893 LOAD X -1.
81. PERFORM ANALYSIS

***NOTE: Equivalent Static Analysis should preferably be performed for regular structures with approximate natural time period less than 0.4s and regular structures with height less than 15m in Seismic Zone II. Ref Cl.6.4.3 and 7.6 BASE SHEAR AND TIME PERIOD IN X

```
*********************************************************
* UNITS - KN    METE                                    *
* TIME PERIOD FOR X 1893 LOADING =    0.57000 SEC       *
* SA/G PER 1893=    2.386, LOAD FACTOR=-1.000           *
* VB PER 1893=    0.0916 X     1840.04=    -168.59 KN   *
* VB Act Based on Clause 7.2.1 =     -168.59 KN         *
* VB Min based on Clause 7.2.2 =      -20.24 KN         *
*                                                       *
*********************************************************
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    82. CHANGE
    83. LOAD 3 LOADTYPE SEISMIC-H  TITLE EQZ
    84. 1893 LOAD Z 1
    85. PERFORM ANALYSIS

   ***NOTE: Equivalent Static Analysis should preferably be performed for regular
structures with approximate natural time period less than 0.4s and regular
structures with height less than 15m in Seismic Zone II. Ref Cl.6.4.3 and 7.6
BASE SHEAR AND TIME PERIOD IN Z


   ********************************************************
   * UNITS - KN    METE                                   *
   * TIME PERIOD FOR Z 1893 LOADING =    0.57000 SEC      *
   * SA/G PER 1893=    2.386, LOAD FACTOR= 1.000          *
   * VB PER 1893=    0.0916 X     1840.04=     168.59 KN   *
   * VB Act Based on Clause 7.2.1 =      168.59 KN        *
   * VB Min based on Clause 7.2.2 =       20.24 KN        *
   *                                                      *
   ********************************************************



    86. CHANGE
    87. LOAD 4 LOADTYPE SEISMIC-H  TITLE -EQZ
    88. 1893 LOAD Z -1.
    89. PERFORM ANALYSIS

   ***NOTE: Equivalent Static Analysis should preferably be performed for regular
structures with approximate natural time period less than 0.4s and regular
structures with height less than 15m in Seismic Zone II. Ref Cl.6.4.3 and 7.6
BASE SHEAR AND TIME PERIOD IN Z


   ********************************************************
   * UNITS - KN    METE                                   *
   * TIME PERIOD FOR Z 1893 LOADING =    0.57000 SEC      *
   * SA/G PER 1893=    2.386, LOAD FACTOR=-1.000          *
   * VB PER 1893=    0.0916 X     1840.04=    -168.59 KN   *
   * VB Act Based on Clause 7.2.1 =     -168.59 KN        *
   * VB Min based on Clause 7.2.2 =      -20.24 KN        *
   *                                                      *
   ********************************************************



    90. CHANGE
    91. LOAD 5 LOADTYPE DEAD  TITLE DL
    92. SELFWEIGHT Y -1
    93. MEMBER LOAD
    94. 10 TO 12 19 TO 21 28 TO 30 37 TO 39 46 TO 48 53 TO 55 60 TO 62 67 TO 69 74 -
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 95. 75 TO 76 81 TO 83 88 TO 90 95 TO 97 UNI GY -5
 96. 10 TO 12 19 TO 21 28 TO 30 37 TO 39 46 TO 48 53 TO 55 60 TO 62 67 TO 69 74 -
 97. 75 TO 76 81 TO 83 88 TO 90 95 TO 97 UNI GY -10
 98. LOAD 6 LOADTYPE LIVE  TITLE LL
 99. MEMBER LOAD
100. 10 TO 12 19 TO 21 28 TO 30 37 TO 39 46 TO 48 53 TO 55 60 TO 62 67 TO 69 74 -
101. 75 TO 76 81 TO 83 88 TO 90 95 TO 97 UNI GY -7.5
102. LOAD 7 LOADTYPE WIND  TITLE WLZ
103. WIND LOAD Z 1 TYPE 1
104. LOAD 8 LOADTYPE WIND  TITLE -WLZ
105. WIND LOAD Z -1 TYPE 1
106. LOAD COMB 9 1.5(DL+LL)
107. 5 1.5 6 1.5
108. LOAD COMB 10 1.2(DL+LL+EQX)
109. 5 1.2 6 1.2 1 1.2
110. LOAD COMB 11 1.2(DL+LL-EQX)
111. 5 1.2 6 1.2 2 1.2
112. LOAD COMB 12 1.2(DL+LL+EQZ)
113. 6 1.2 5 1.2 3 1.2
114. LOAD COMB 13 1.2(DL+LL-EQZ)
115. 5 1.2 6 1.2 4 1.2
116. LOAD COMB 14 1.5(DL+EQX)
117. 5 1.5 1 1.5
118. LOAD COMB 15 1.5(DL-EQX)
119. 5 1.5 2 1.5
120. LOAD COMB 16 1.5(DL+EQZ)
121. 5 1.5 3 1.5
122. LOAD COMB 17 1.5(DL-EQZ)
123. 5 1.5 4 1.5
124. LOAD COMB 18 0.9DL+1.5EQX
125. 5 0.9 1 1.5
126. LOAD COMB 19 0.9DL-1.5EQX
127. 5 0.9 2 1.5
128. LOAD COMB 20 0.9DL+1.5EQZ
129. 5 0.9 3 1.5
130. LOAD COMB 21 0.9DL-1.5EQZ
131. 5 0.9 4 1.5
132. LOAD COMB 22 1.2(DL+LL+WLZ)
133. 5 1.2 6 1.2 7 1.2
134. LOAD COMB 23 1.2(DL+LL-WLZ)
135. 5 1.2 6 1.2 8 1.2
136. LOAD COMB 24 1.5(DL+WLZ)
137. 5 1.5 7 1.5
138. LOAD COMB 25 1.5(DL-WLZ)
139. 5 1.5 8 1.5
140. LOAD COMB 26 0.9DL+1.5WLZ
141. 5 0.9 7 1.5
142. LOAD COMB 27 0.9DL-1.5WLZ
143. 5 0.9 8 1.5
144. PERFORM ANALYSIS
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   145. START CONCRETE DESIGN
CONCRETE DESIGN
   146. CODE INDIAN
   147. ENSH 1 ALL
   148. FC 25000 MEMB 10 TO 12 19 TO 21 28 TO 30 37 TO 39 46 TO 48 53 TO 55 -
   149. 60 TO 62 67 TO 69 74 TO 76 81 TO 83 88 TO 90 95 TO 97
   150. FC 35000 MEMB 5 TO 8 14 TO 17 23 TO 26 32 TO 35 41 TO 44 49 TO 52 56 TO 59 -
   151. 63 TO 66 70 TO 73 77 TO 80 84 TO 87 91 TO 94
   152. FYMAIN 550000 ALL
   153. DESIGN BEAM 10 TO 12 19 TO 21 28 TO 30 37 TO 39 46 TO 48 53 TO 55 60 TO 62 -
   154. 67 TO 69 74 TO 76 81 TO 83 88 TO 90 95 TO 97
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