07-11-2025

3.0 SOIL DETAILS

Based on Soil Test Report Raft Foundation is adopted.

4.0 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

4.2.1 MINIMUM COVER

Slab	25 mm
Beam	30 mm
Columns	40 mm
Foundations	50 mm

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

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Structural Engineer
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CERTIFICATE

It is certified that the Proposed Construction of Ground + 1 Floor (G+1) building consisting of 15 villas. (Promoter's share Villa Nos. 1, 2, 3, 4, 5, 6, 7, 7A, 9, 10, 11, 12, 12A, 14, and 15). The development is situated in Survey Nos. 13/35, 13/34, 13/33, 13/32, 13/38 and 13/39, 13/40, 13/41 and 13/47, 13/48, 13/49, 13/50, 13/54, 13/53, 13/44 and 13/51, 13/43, and 13/42, Thazhambur Panchayat, Karanai Village, Vandalur Taluk, Chengalpattu District is designed to resist earth quake. Check has been made and found safe and I hereby certify that,

1. The minimum grade of concrete is M25.

2. The design analysis using the code of practice for loading Standards as per IS-875 Part I to V and seismic force as per code IS 1893, is carried out.

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

(SURESH.J)

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13-11-2025

THE PROPOSED CONSTRUCTION OF GROUND + 1 FLOOR (G+1) BUILDING CONSISTING OF 15 VILLAS. (PROMOTER'S SHARE VILLA NOS. 1, 2, 3, 4, 5, 6, 7, 7A, 9, 10, 11, 12, 12A, 14, AND 15). THE DEVELOPMENT IS SITUATED IN SURVEY NOS. 13/35, 13/34, 13/33, 13/32, 13/38 AND 13/39, 13/40, 13/41 AND 13/47, 13/48, 13/49, 13/50, 13/54, 13/53, 13/44 AND 13/51, 13/43, AND 13/42, THAZHAMBUR PANCHAYAT, KARANAI VILLAGE, VANDALUR TALUK, CHENGALPATTU DISTRICT..

GENERAL NOTE ON STRUCTURAL DESIGN.

1.0 GENERAL.

1.1 DESIGN BASIS

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

1.2 CODES AND STANDARDS

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

1. I.S. 456
2. I.S. 875 - Part I to V
3. I.S.1893
4. I.S.13920

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 0kN/m²
Floor finish	=	2.0kN/m²
Live load	=	2.0kN/m²
		7.0kN/m²

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4.2.1 MINIMUM COVER

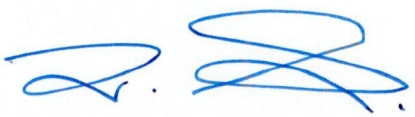
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Foundations	50 mm

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```
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*           Bentley Systems, Inc.                   *
*           Date=    NOV 13, 2025                   *
*           Time=    17:50:58                       *
*                                                   *
*  Licensed to: only @ ::LAVTeam:: (R)              *
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```

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    1. STAAD SPACE
INPUT FILE: I:\1.MISCELLANEOUS\STABILITY CERTIFICATE\UC-FELIXA VILLA\FELIXA VILLA.STD
    2. START JOB INFORMATION
    3. JOB NAME THE PROPOSED CONSTRUCTION OF GROUND + 1 FLOOR (G+1) BUILDING
    4. *CONSISTING OF 15 VILLAS. (PROMOTER?S SHARE VILLA NOS. 1, 2, 3, 4, 5, 6, 7, 7A,
    5. *9, 10, 11, 12, 12A, 14, AND 15). THE DEVELOPMENT IS SITUATED IN SURVEY NOS.
    6. *13/35, 13/34, 13/33, 13/32, 13/38 AND 13/39, 13/40, 13/41 AND 13/47, 13/48,
    7. *13/49, 13/50, 13/54, 13/53, 13/44 AND 13/51, 13/43, AND 13/42, THAZHAMBUR
    8. *PANCHAYAT, KARANAI VILLAGE, VANDALUR TALUK, CHENGALPATTU DISTRICT.
    9. ENGINEER NAME SURESH
   10. CHECKER NAME SURESH
   11. APPROVED NAME SURESH
   12. ENGINEER DATE 11/13/2025
   13. CHECKER DATE 11/13/2025
   14. APPROVED DATE 11/13/2025
   15. END JOB INFORMATION
   16. INPUT WIDTH 79
   17. UNIT METER KN
   18. JOINT COORDINATES
   19. 1 -10.26 -1.45 0; 25 -10.26 -4.45 0; 26 -5.46 -1.45 0; 27 -5.46 -4.45 0
   20. 36 -10.26 1.55 0; 37 -5.46 1.55 0; 66 -14.44 -1.45 0; 67 -14.44 -4.45 0
   21. 68 -14.44 1.55 0; 69 -19.54 -1.45 0; 70 -19.54 -4.45 0; 71 -19.54 1.55 0
   22. MEMBER INCIDENCES
   23. 39 1 25; 40 1 26; 41 25 27; 42 26 27; 55 1 36; 56 26 37; 61 36 37; 111 66 67
   24. 112 66 1; 113 67 25; 114 66 68; 115 68 36; 116 69 70; 117 69 66; 118 70 67
   25. 119 69 71; 120 71 68
   26. DEFINE MATERIAL START
   27. ISOTROPIC CONCRETE
   28. E 2.17185E+07
   29. POISSON 0.17
   30. DENSITY 23.5616
   31. ALPHA 1E-05
   32. DAMP 0.05
   33. END DEFINE MATERIAL
   34. MEMBER PROPERTY INDIAN
   35. 40 41 61 112 113 115 117 118 120 PRIS YD 0.6 ZD 0.2
   36. MEMBER PROPERTY INDIAN
   37. 39 42 55 56 111 114 116 119 PRIS YD 0.6 ZD 0.2
   38. CONSTANTS
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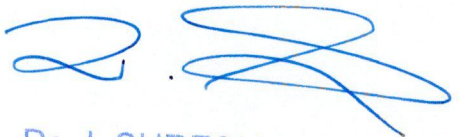


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```
39. MATERIAL CONCRETE ALL
40. SUPPORTS
41. 25 27 67 70 FIXED
42. DEFINE 1893 LOAD
43. ZONE 0.16 RF 3 I 1 SS 2 ST 1 DM 0.5
44. MEMBER WEIGHT
45. 39 TO 42 55 56 61 111 TO 120 UNI -14.5
46. DEFINE WIND LOAD

** 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.

47. TYPE 1
48. INT 0.673 1.03335 1.3537 1.65375 HEIG  10  30  50  100
49. EXP 1 JOINT 1 25 TO 27 36 37 66 TO 71
50. LOAD 1 LOADTYPE NONE  TITLE SLX1
51. 1893 LOAD X 1
52. LOAD 2 LOADTYPE NONE  TITLE SLZ1
53. 1893 LOAD Z 1
54. LOAD 3 LOADTYPE DEAD  TITLE DL
55. SELFWEIGHT Y -1
56. MEMBER LOAD
57. 40 61 112 115 117 120 UNI GY -25
58. LOAD 4 LOADTYPE LIVE  TITLE LL
59. MEMBER LOAD
60. 40 61 112 115 117 120 UNI GY -15
61. LOAD 7 LOADTYPE WIND  TITLE WLZ1
62. WIND LOAD Z 1 TYPE 1
63. LOAD 8 LOADTYPE WIND  TITLE WLZ2
64. WIND LOAD Z -1 TYPE 1
65. LOAD COMB 9 1.5(DL+LL)
66. 3 1.5 4 1.5
67. LOAD COMB 10 1.2(DL+LL+SLX)
68. 3 1.2 4 1.2 1 1.2
69. LOAD COMB 11 1.2(DL+LL+SLZ)
70. 3 1.2 4 1.2 2 1.2
71. LOAD COMB 14 1.2(DL+LL+WLZ1)
72. 3 1.2 4 1.2 7 1.2
73. LOAD COMB 15 1.2(DL+LL+WLZ2)
74. 3 1.2 4 1.2 8 1.2
75. LOAD COMB 16 1.5(DL+SLX)
76. 3 1.5 1 1.5
77. LOAD COMB 17 1.5(DL+SLZ)
```



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```
78. 3 1.5 2 1.5
79. LOAD COMB 20 1.5(DL+WLZ1)
80. 3 1.5 7 1.5
81. LOAD COMB 21 1.5(DL+WLZ2)
82. 3 1.5 8 1.5
83. LOAD COMB 22 0.9DL+1.5SLX
84. 3 0.9 1 1.5
85. LOAD COMB 23 0.9DL+1.5SLZ
86. 3 0.9 2 1.5
87. LOAD COMB 26 0.9DL+1.5WLZ1
88. 3 0.9 7 1.5
89. LOAD COMB 27 0.9DL+1.5WLZ2
90. 3 0.9 8 1.5
91. PERFORM ANALYSIS
```

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

NUMBER OF JOINTS	12	NUMBER OF MEMBERS	17
NUMBER OF PLATES	0	NUMBER OF SOLIDS	0
NUMBER OF SURFACES	0	NUMBER OF SUPPORTS	4

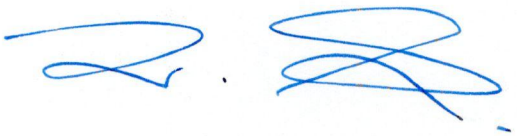
Using 64-bit analysis engine.

SOLVER USED IS THE OUT-OF-CORE BASIC SOLVER

```
 ORIGINAL/FINAL BAND-WIDTH=     6/     3/     18 DOF
TOTAL      PRIMARY LOAD CASES =     6, TOTAL DEGREES OF FREEDOM =      48
TOTAL LOAD COMBINATION  CASES =    13  SO FAR.
  SIZE OF STIFFNESS MATRIX =        1 DOUBLE  KILO-WORDS
  REQRD/AVAIL. DISK SPACE  =     12.0/1935513.9 MB
```

```
**WARNING: IF THIS UBC/IBC ANALYSIS HAS TENSION/COMPRESSION
OR REPEAT LOAD OR RE-ANALYSIS OR SELECT OPTIMIZE, THEN EACH
UBC/IBC CASE SHOULD BE FOLLOWED BY PERFORM ANALYSIS & CHANGE.
```

```
************************************************************
* UNITS - KN    METE                                       *
* TIME PERIOD FOR X 1893 LOADING =    0.28752 SEC          *
* SA/G PER 1893=    1.250, LOAD FACTOR= 1.000              *
* VB PER 1893=    0.0333 X      960.48=      32.02 KN      *
*                                                          *
************************************************************
```



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STAAD SPACE -- PAGE NO. 4

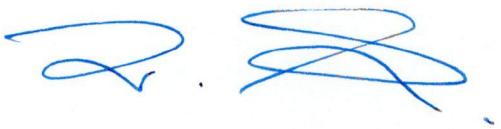
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*********************************************************
* UNITS - KN    METE                                    *
* TIME PERIOD FOR Z 1893 LOADING =    0.28752 SEC       *
* SA/G PER 1893=    1.250, LOAD FACTOR= 1.000           *
* VB PER 1893=    0.0333 X      960.48=      32.02 KN   *
*                                                       *
*********************************************************
```

92. FINISH

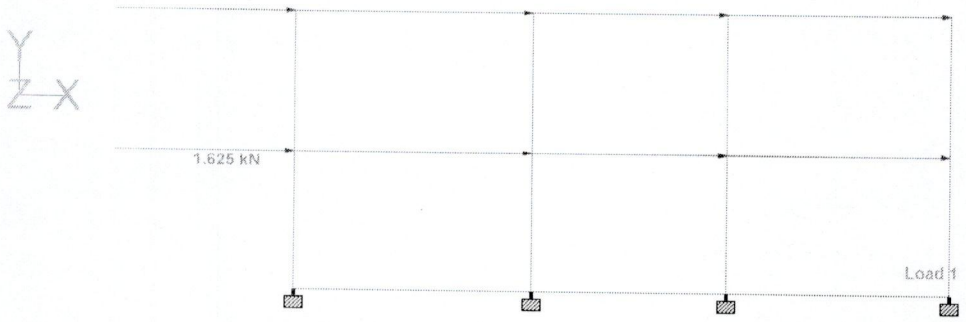
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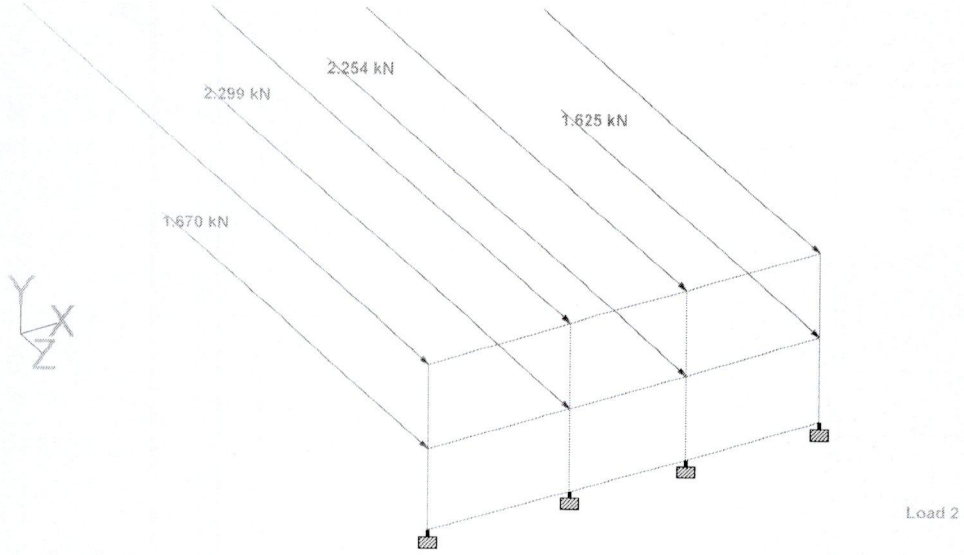
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    *   For technical assistance on STAAD.Pro, please visit    *
    *   http://www.bentley.com/en/support/                     *
    *                                                          *
    *   Details about additional assistance from               *
    *   Bentley and Partners can be found at program menu      *
    *   Help->Technical Support                                *
    *                                                          *
    *      Copyright (c) 1997-2017 Bentley Systems, Inc.       *
    *                 http://www.bentley.com                   *
    ************************************************************
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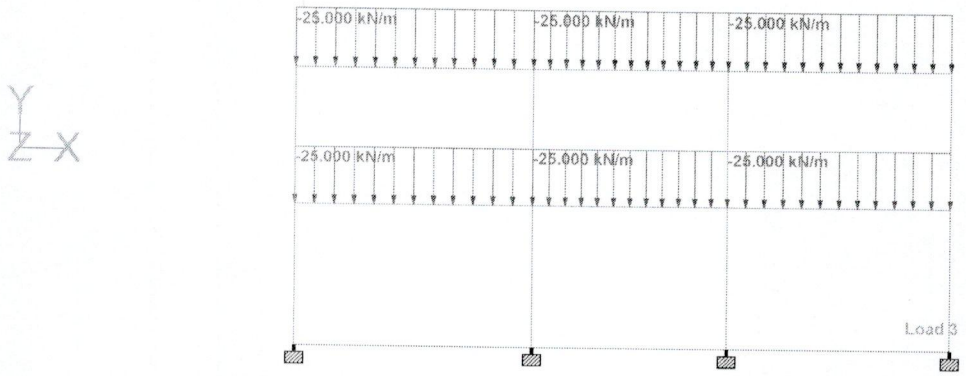


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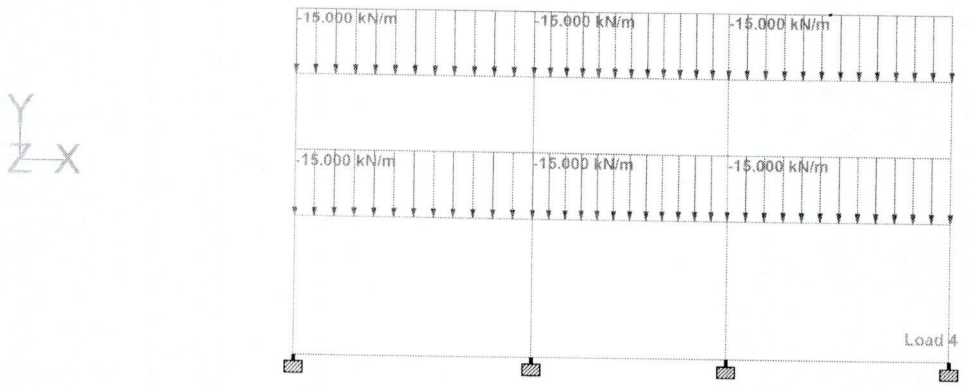


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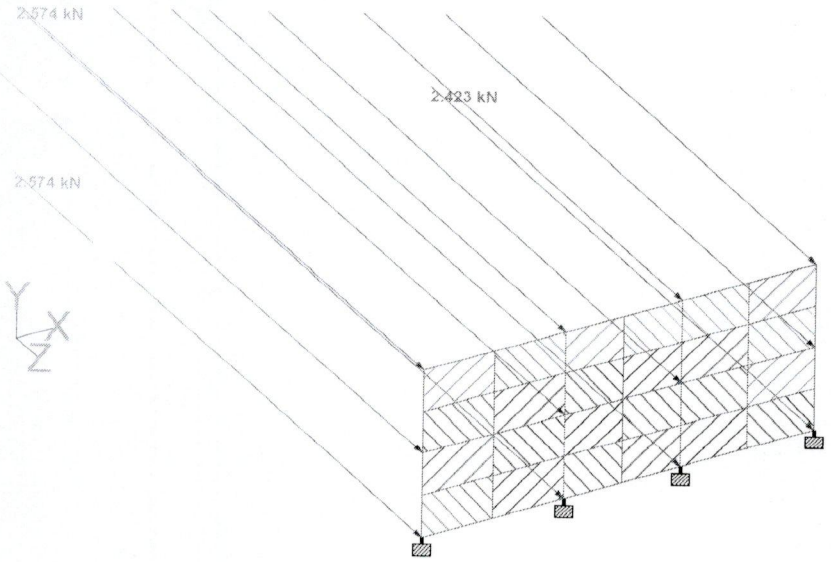
Dr. J. SURESH, M.E., MIE., Ph.D.
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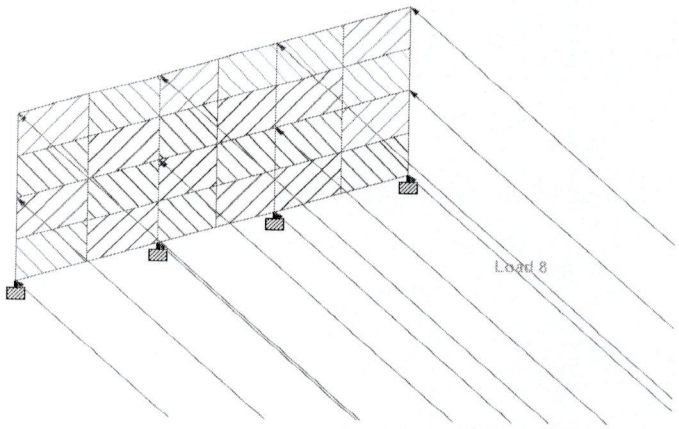
Dr. J. SURESH, M.E., MIE., Ph.D.
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Load 7

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-2.423 k

-2.574 kN

-2.423 k

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