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UNIVERSAL CONSULTANTS

STABILITY CERTIFICATE

The detailed engineering and structure design of the proposed building comprising of Stilt Floor + 5Floors (Height 18.30m) Residential Building with 30 dwelling Units (Affordable housing) at Plot No.8,9,10,11,12 & 13 (Approved layout PPD/LO.No. 129/2004) Sethunarayna Street, Sai Enclave, Chitlapakkam, Chennai – 600064 comprised in Old S.No. 120/2, New S.No. 120/2A1B3, 120/2A2B2, 120/2A1B2 (Patta) of chitlapakkam village within the limit of Tambaram Municipal Corporation has done by me/used based on the report of geotechnical Investigation (Soil test) done by Qualy Care Civil Research Centre Pvt. Ltd 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/We 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 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 IS-875 and design of earthquake resistant structure as per IS Code No IS-1893 & IS-13920.

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

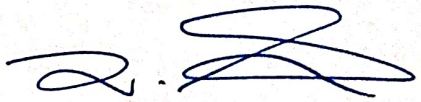
Dr. J. SURESH, M.E., MIE., Ph.D.
Stamp and Signature
Structural Engineer
Plot No. 555, VGP Layout, Mullai Street,
Uthandi, Chennai - 600 119.
Reg. No. SE/I/2024/2/0014
Reg. No. RSE100382019
Reg. No. CGLDIST/SE/Gr-I/2024/07/005

Encl.: Structural Design Calculation

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www.universalconsultants.net
suresh@universalconsultants.net
New. No. 2/4, First Cross Street,
Indira Nagar, Adyar, Chennai - 600 020.

```
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*           STAAD.Pro CONNECT Edition               *
*           Version  22.10.00.153                   *
*           Proprietary Program of                  *
*           Bentley Systems, Inc.                   *
*           Date=    JAN 10, 2025                   *
*           Time=    14:28:10                       *
*                                                   *
*  Licensed to: Universal Consultants               *
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```
INPUT FILE: C:\Users\suresh\Desktop\STAAD\UC-KMR HOUSING\KMR HOUSING.STD
     1. STAAD SPACE
     2. START JOB INFORMATION
     3. JOB NAME THE PROPOSED CONSTRUCTION OF STILT
     4. *FLOOR + 5FLOORS (HEIGHT 18.30M) RESIDENTIAL BUILDING WITH 30 DWELLING UNITS
     5. *(AFFORDABLE HOUSING) AT PLOT NO.8,9,10,11,12 & 13 (APPROVED LAYOUT PPD/
     6. *LO.NO. 129/2004) SETHUNARAYNA STREET, SAI ENCLAVE, CHITLAPAKKAM,CHENNAI -
     7. *600064 COMPRISED IN OLD S.NO. 120 /2, NEW S.NO. 120/2A1B3, 120/2A2B2, 120/2A1B
     8. *(PATTA) OF CHITLAPAKKAM VILLAGE WITHIN THE LIMIT OF TAMBARAM
     9. *MUNICIPAL CORPORATION.
    10. ENGINEER NAME SURESH
    11. CHECKER NAME SURESH
    12. APPROVED NAME SURESH
    13. ENGINEER DATE 1/10/2025
    14. CHECKER DATE 1/10/2025
    15. APPROVED DATE 1/10/2025
    16. END JOB INFORMATION
    17. INPUT WIDTH 79
    18. UNIT METER KN
    19. JOINT COORDINATES
    20. 1 -5 -1 0; 25 -5 -4 0; 26 -1.5 -1 0; 27 -1.5 -4 0; 28 2.2 -1 0; 29 2.2 -4 0
    21. 36 -5 2 0; 37 -1.5 2 0; 38 2.2 2 0; 42 -5 5 0; 43 -1.5 5 0; 44 2.2 5 0
    22. 57 5.9 -1 0; 58 5.9 -4 0; 59 5.9 2 0; 60 5.9 5 0; 63 9.6 -1 0; 64 9.6 -4 0
    23. 65 9.6 2 0; 66 9.6 5 0; 67 -5 8 0; 68 -1.5 8 0; 69 2.2 8 0; 70 5.9 8 0
    24. 71 9.6 8 0; 72 -5 11 0; 73 -1.5 11 0; 74 2.2 11 0; 75 5.9 11 0; 76 9.6 11 0
    25. 77 -5 14 0; 78 -1.5 14 0; 79 2.2 14 0; 80 5.9 14 0; 81 9.6 14 0
    26. MEMBER INCIDENCES
    27. 39 1 25; 40 1 26; 41 25 27; 42 26 27; 43 26 28; 44 27 29; 45 28 29; 55 1 36
    28. 56 26 37; 57 28 38; 61 36 37; 62 37 38; 66 36 42; 67 37 43; 68 38 44; 72 42 43
    29. 73 43 44; 96 28 57; 97 29 58; 98 57 58; 99 57 59; 100 38 59; 101 59 60
    30. 102 44 60; 107 57 63; 108 58 64; 109 63 64; 110 63 65; 111 59 65; 112 65 66
    31. 113 60 66; 114 42 67; 115 43 68; 116 44 69; 117 67 68; 118 68 69; 119 60 70
    32. 120 69 70; 121 66 71; 122 70 71; 123 67 72; 124 68 73; 125 69 74; 126 72 73
    33. 127 73 74; 128 70 75; 129 74 75; 130 71 76; 131 75 76; 132 72 77; 133 73 78
    34. 134 74 79; 135 77 78; 136 78 79; 137 75 80; 138 79 80; 139 76 81; 140 80 81
    35. DEFINE MATERIAL START
    36. ISOTROPIC CONCRETE
    37. E 2.17185E+07
    38. POISSON 0.17
```



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Reg. No. RSE100382019
Reg. No. CGLDIST/SE/Gr-I/2024/07/005

```
39. DENSITY 23.5616
40. ALPHA 1E-05
41. DAMP 0.05
42. END DEFINE MATERIAL
43. MEMBER PROPERTY INDIAN
44. 39 42 45 55 TO 57 66 TO 68 98 99 101 109 110 112 114 TO 116 119 121 -
45. 123 TO 125 128 130 132 TO 134 137 139 PRIS YD 0.8 ZD 0.3
46. 40 41 43 44 61 62 72 73 96 97 100 102 107 108 111 113 117 118 120 122 126 -
47. 127 129 131 135 136 138 140 PRIS YD 0.6 ZD 0.2
48. CONSTANTS
49. MATERIAL CONCRETE ALL
50. SUPPORTS
51. 25 27 29 58 64 FIXED
52. DEFINE 1893 LOAD
53. ZONE 0.16 RF 3 I 1 SS 2 ST 1 DM 0.5
54. MEMBER WEIGHT
55. 39 TO 45 55 TO 57 61 62 66 TO 68 72 73 96 TO 102 107 TO 140 UNI -14.5
56. 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.

57. TYPE 1
58. INT 0.673 1.03335 1.3537 1.65375 HEIG  10  30  50  100
59. EXP 1 JOINT 1 25 TO 29 36 TO 38 42 TO 44 57 TO 60 63 TO 81
60. LOAD 1 LOADTYPE NONE  TITLE SLX1
61. 1893 LOAD X 1
62. LOAD 2 LOADTYPE NONE  TITLE SLZ1
63. 1893 LOAD Z 1
64. LOAD 3 LOADTYPE DEAD  TITLE DL
65. SELFWEIGHT Y -1
66. MEMBER LOAD
67. 40 43 61 62 72 73 96 100 102 107 111 113 117 118 120 122 126 127 129 131 135 -
68. 136 138 140 UNI GY -25
69. LOAD 4 LOADTYPE LIVE  TITLE LL
70. MEMBER LOAD
71. 40 43 61 62 72 73 96 100 102 107 111 113 117 118 120 122 126 127 129 131 135 -
72. 136 138 140 UNI GY -15
73. LOAD 7 LOADTYPE WIND  TITLE WLZ1
74. WIND LOAD Z 1 TYPE 1
75. LOAD 8 LOADTYPE WIND  TITLE WLZ2
76. WIND LOAD Z -1 TYPE 1
77. LOAD COMB 9 1.5(DL+LL)
```

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STAAD SPACE -- PAGE NO. 3

```
 78. 3 1.5 4 1.5
 79. LOAD COMB 10 1.2(DL+LL+SLX)
 80. 3 1.2 4 1.2 1 1.2
 81. LOAD COMB 11 1.2(DL+LL+SLZ)
 82. 3 1.2 4 1.2 2 1.2
 83. LOAD COMB 14 1.2(DL+LL+WLZ1)
 84. 3 1.2 4 1.2 7 1.2
 85. LOAD COMB 15 1.2(DL+LL+WLZ2)
 86. 3 1.2 4 1.2 8 1.2
 87. LOAD COMB 16 1.5(DL+SLX)
 88. 3 1.5 1 1.5
 89. LOAD COMB 17 1.5(DL+SLZ)
 90. 3 1.5 2 1.5
 91. LOAD COMB 20 1.5(DL+WLZ1)
 92. 3 1.5 7 1.5
 93. LOAD COMB 21 1.5(DL+WLZ2)
 94. 3 1.5 8 1.5
 95. LOAD COMB 22 0.9DL+1.5SLX
 96. 3 0.9 1 1.5
 97. LOAD COMB 23 0.9DL+1.5SLZ
 98. 3 0.9 2 1.5
 99. LOAD COMB 26 0.9DL+1.5WLZ1
100. 3 0.9 7 1.5
101. LOAD COMB 27 0.9DL+1.5WLZ2
102. 3 0.9 8 1.5
103. PERFORM ANALYSIS
```

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

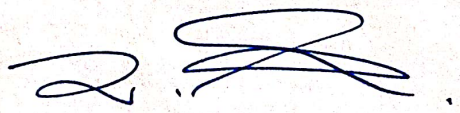
NUMBER OF JOINTS	35	NUMBER OF MEMBERS	58
NUMBER OF PLATES	0	NUMBER OF SOLIDS	0
NUMBER OF SURFACES	0	NUMBER OF SUPPORTS	5

Using 64-bit analysis engine.

SOLVER USED IS THE IN-CORE ADVANCED MATH SOLVER

TOTAL PRIMARY LOAD CASES = 6, TOTAL DEGREES OF FREEDOM = 180
TOTAL LOAD COMBINATION CASES = 13 SO FAR.

**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.



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STAAD SPACE -- PAGE NO. 4

```
*********************************************************
*                                                       *
* UNITS - KN    METE                                    *
* TIME PERIOD FOR X 1893 LOADING =    0.65541 SEC       *
* SA/G PER 1893=    1.038, LOAD FACTOR= 1.000           *
* VB PER 1893=    0.0277 X     2786.90=      77.11 KN   *
*                                                       *
*********************************************************


*********************************************************
*                                                       *
* UNITS - KN    METE                                    *
* TIME PERIOD FOR Z 1893 LOADING =    0.65541 SEC       *
* SA/G PER 1893=    1.038, LOAD FACTOR= 1.000           *
* VB PER 1893=    0.0277 X     2786.90=      77.11 KN   *
*                                                       *
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104. FINISH

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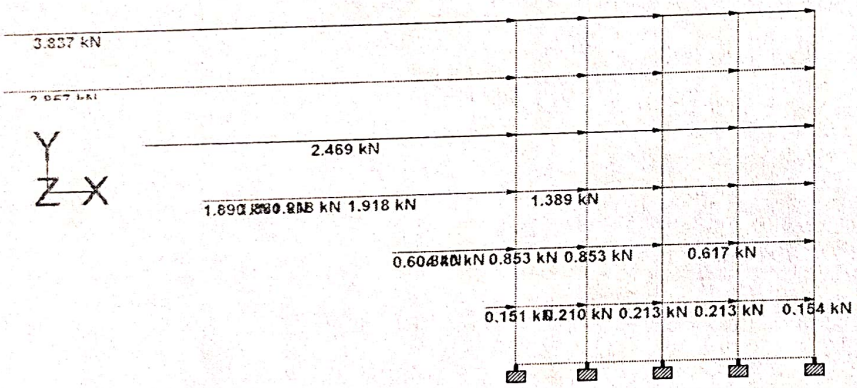
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Dr. J. SURESH, M.E., MIE., Ph.D.
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STAAD SPACE -- PAGE NO. 5

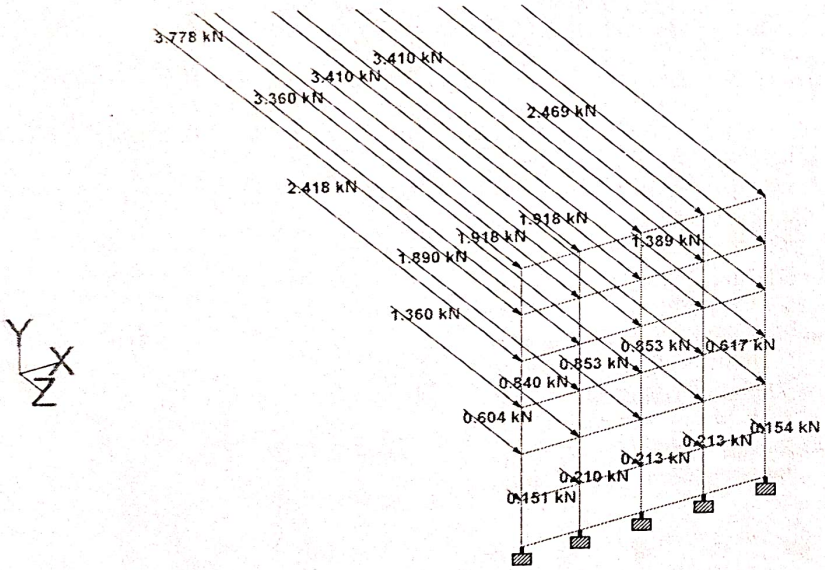
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*    For technical assistance on STAAD.Pro, please visit    *
*    http://www.bentley.com/en/support/                     *
*                                                           *
*    Details about additional assistance from               *
*    Bentley and Partners can be found at program menu      *
*    Help->Technical Support                                *
*                                                           *
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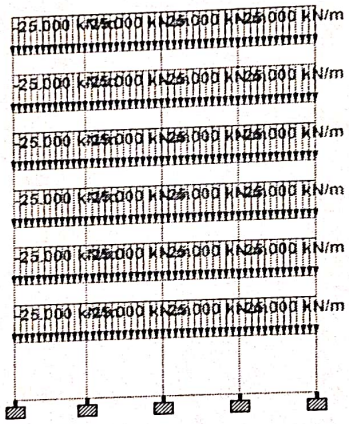
Dr. J. SURESH, M.E., MIE., Ph.D.
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Plot No. 555, VGP Layout, Mullai Street,
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Load 2

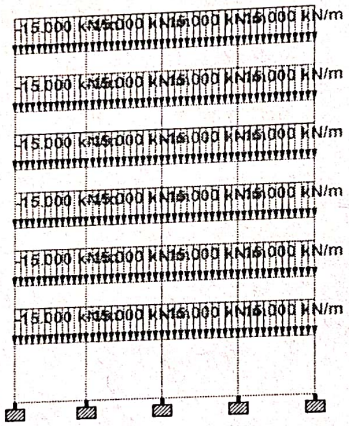
Dr. J. SURESH, M.E., MIE., Ph.D.
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Plot No. 555, VGP Layout, Mullai Street,
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Reg. No. SE/I/2024/2/0014
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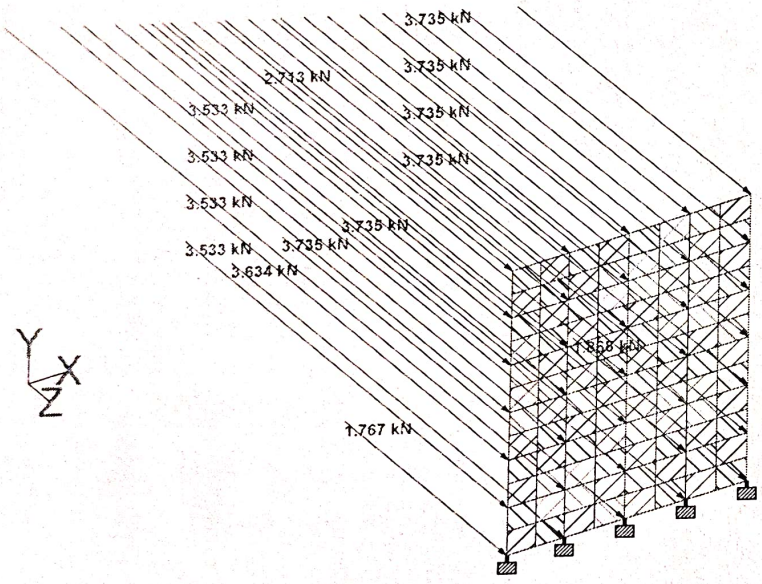
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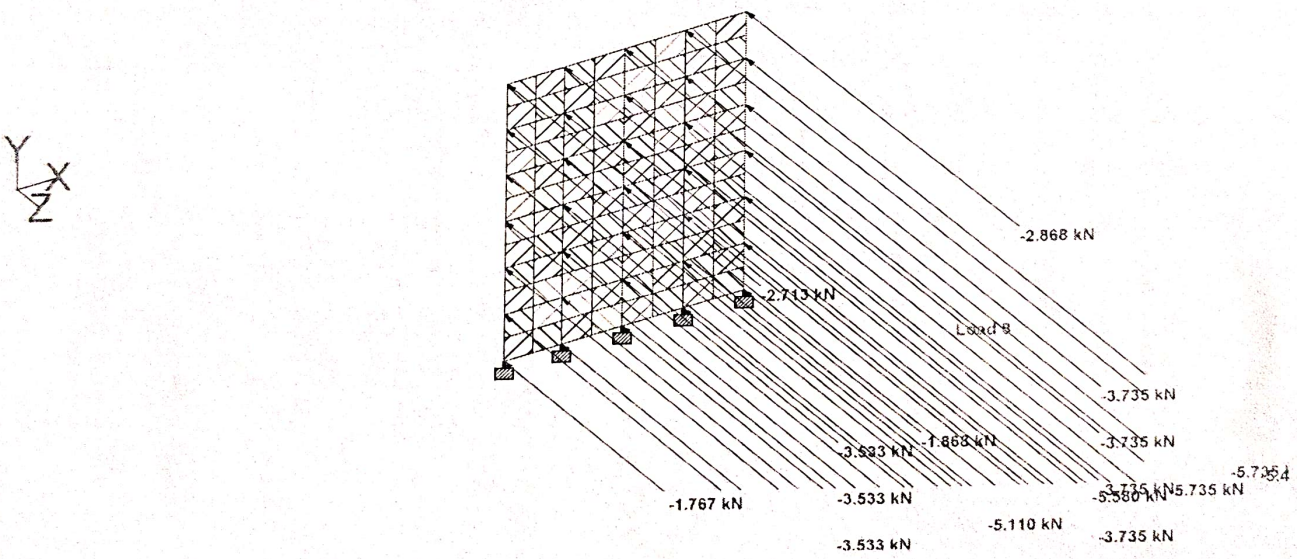
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Load 7

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