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06-01-2025

CERTIFICATE

It is certified that the Proposed Construction of Stilt Floor (Parking) + 3 Floors Residential Building with 12 Dwelling Units (Height 12.00m) at New Door No.7, Old Door No. 6, Panchali Amman Koil Street, Arumbakkam, Chennai - 600 106 Comprised In T.S.No. 23, Old S.No. 189 Part, 183 Part, & 184-Part Block No 10, Ward No.1 of Arumbakkam Village within the Limits of Greater Chennai Corporation 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.

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

06-01-2025

THE PROPOSED CONSTRUCTION OF STILT FLOOR (PARKING) + 3 FLOORS RESIDENTIAL BUILDING WITH 12 DWELLING UNITS (HEIGHT 12.00M) AT NEW DOOR NO.7, OLD DOOR NO. 6, PANCHALI AMMAN KOIL STREET, ARUMBAKKAM, CHENNAI - 600 106 COMPRISED IN T.S.NO. 23, OLD S.NO. 189 PART, 183 PART, & 184-PART BLOCK NO 10, WARD NO.1 OF ARUMBAKKAM VILLAGE WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION.

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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3.0 SOIL DETAILS

Based on Soil Test Report Pile 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

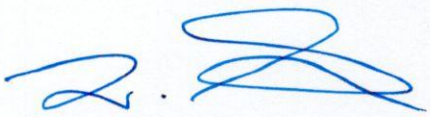
Slab	25 mm
Beam	30 mm
Columns	40 mm
Foundations	50 mm

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

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*           Version  22.10.00.153                *
*           Proprietary Program of               *
*           Bentley Systems, Inc.                *
*           Date=    JAN  7, 2025                *
*           Time=    11:58:38                    *
*                                                *
*  Licensed to: Universal Consultants            *
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     2. START JOB INFORMATION
     3. JOB NAME THE PROPOSED CONSTRUCTION OF STILT FLOOR (PARKING) + 3 FLOORS
     4. *RESIDENTIAL BUILDING WITH 12 DWELLING UNITS (HEIGHT 12.00M) AT NEW DOOR NO.7,
     5. *OLD DOOR NO. 6, PANCHALI AMMAN KOIL STREET, ARUMBAKKAM, CHENNAI - 600 106
     6. *COMPRISED IN T.S.NO. 23, OLD S.NO. 189 PART, 183 PART, & 184-PART BLOCK NO 10,
     7. *WARD NO.1 OF ARUMBAKKAM VILLAGE WITHIN THE LIMITS OF GREATER CHENNAI
     8. *CORPORATION.
     9. ENGINEER NAME SURESH
    10. CHECKER NAME SURESH
    11. APPROVED NAME SURESH
    12. ENGINEER DATE 1/7/2025
    13. CHECKER DATE 1/7/2025
    14. APPROVED DATE 1/7/2025
    15. END JOB INFORMATION
    16. INPUT WIDTH 79
    17. UNIT METER KN
    18. JOINT COORDINATES
    19. 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
    20. 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
    21. 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
    22. 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
    23. 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
    24. 77 -5 14 0; 78 -1.5 14 0; 79 2.2 14 0; 80 5.9 14 0; 81 9.6 14 0
    25. MEMBER INCIDENCES
    26. 39 1 25; 40 1 26; 41 25 27; 42 26 27; 43 26 28; 44 27 29; 45 28 29; 55 1 36
    27. 56 26 37; 57 28 38; 61 36 37; 62 37 38; 66 36 42; 67 37 43; 68 38 44; 72 42 43
    28. 73 43 44; 96 28 57; 97 29 58; 98 57 58; 99 57 59; 100 38 59; 101 59 60
    29. 102 44 60; 107 57 63; 108 58 64; 109 63 64; 110 63 65; 111 59 65; 112 65 66
    30. 113 60 66; 114 42 67; 115 43 68; 116 44 69; 117 67 68; 118 68 69; 119 60 70
    31. 120 69 70; 121 66 71; 122 70 71; 123 67 72; 124 68 73; 125 69 74; 126 72 73
    32. 127 73 74; 128 70 75; 129 74 75; 130 71 76; 131 75 76; 132 72 77; 133 73 78
    33. 134 74 79; 135 77 78; 136 78 79; 137 75 80; 138 79 80; 139 76 81; 140 80 81
    34. DEFINE MATERIAL START
    35. ISOTROPIC CONCRETE
    36. E 2.17185E+07
    37. POISSON 0.17
    38. DENSITY 23.5616
```



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

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

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


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

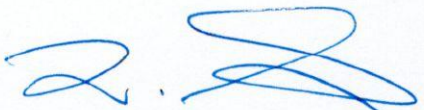
  NUMBER OF JOINTS          35  NUMBER OF MEMBERS       58
  NUMBER OF PLATES           0  NUMBER OF SOLIDS         0
  NUMBER OF SURFACES         0  NUMBER OF SUPPORTS       5

        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

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*************************************************************
* 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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103. FINISH

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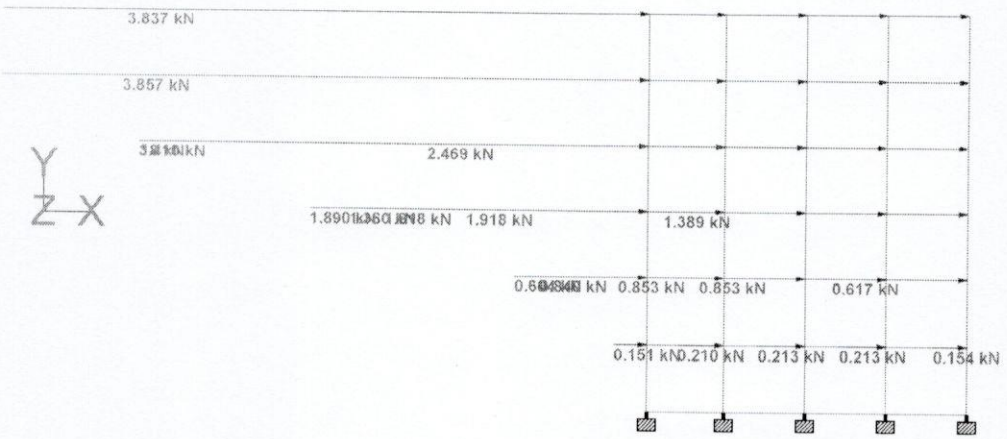
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STAAD SPACE

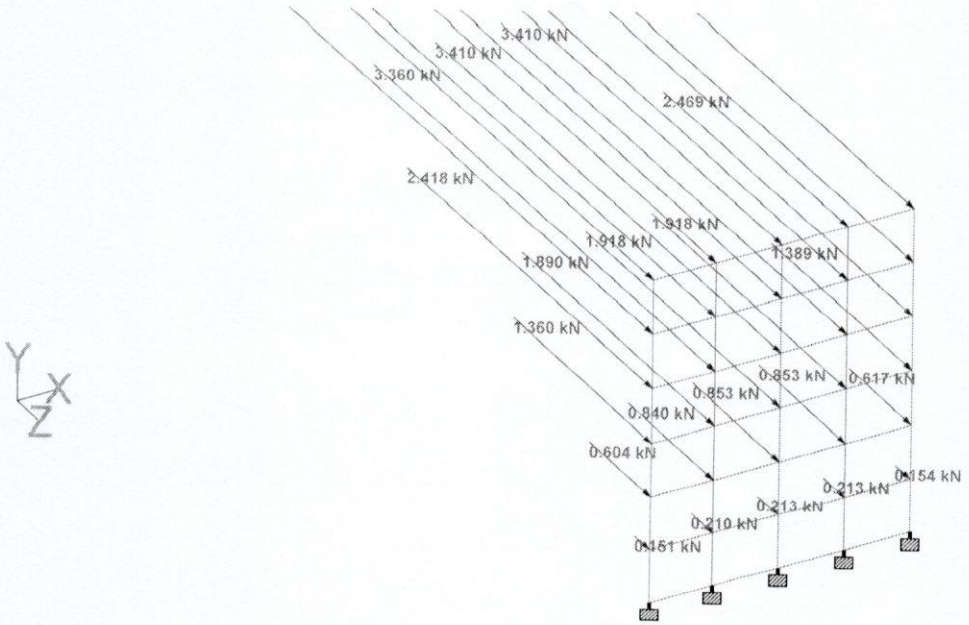

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*   For technical assistance on STAAD.Pro, please visit     *
*   http://www.bentley.com/en/support/                      *
*                                                           *
*   Details about additional assistance from                *
*   Bentley and Partners can be found at program menu       *
*   Help->Technical Support                                 *
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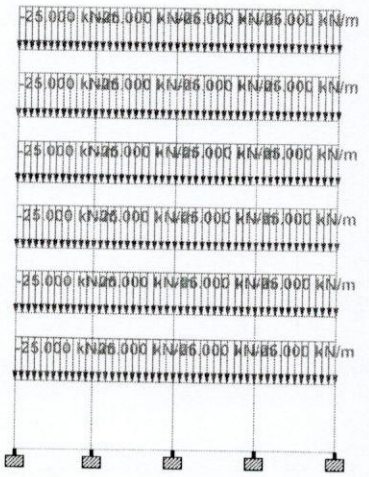
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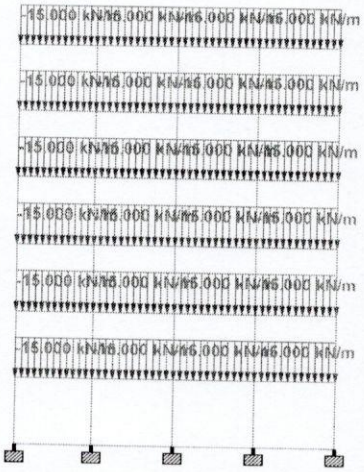
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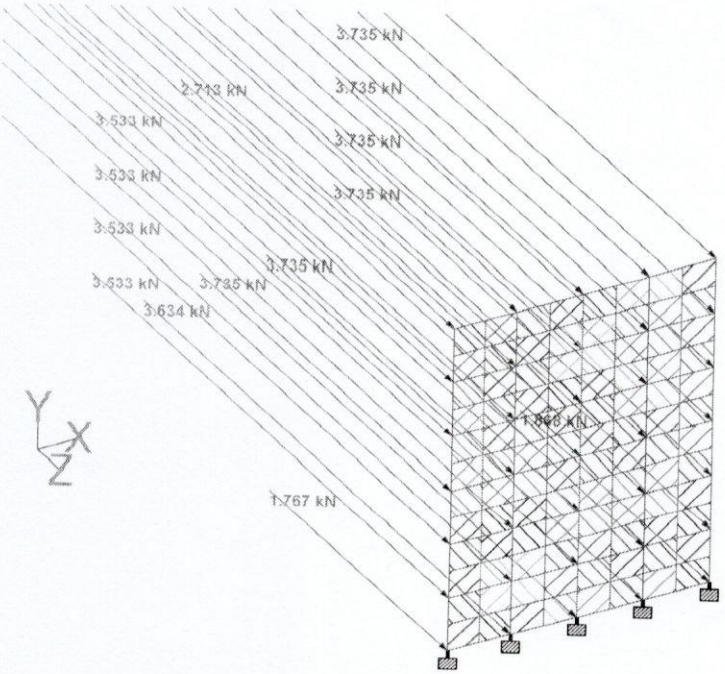
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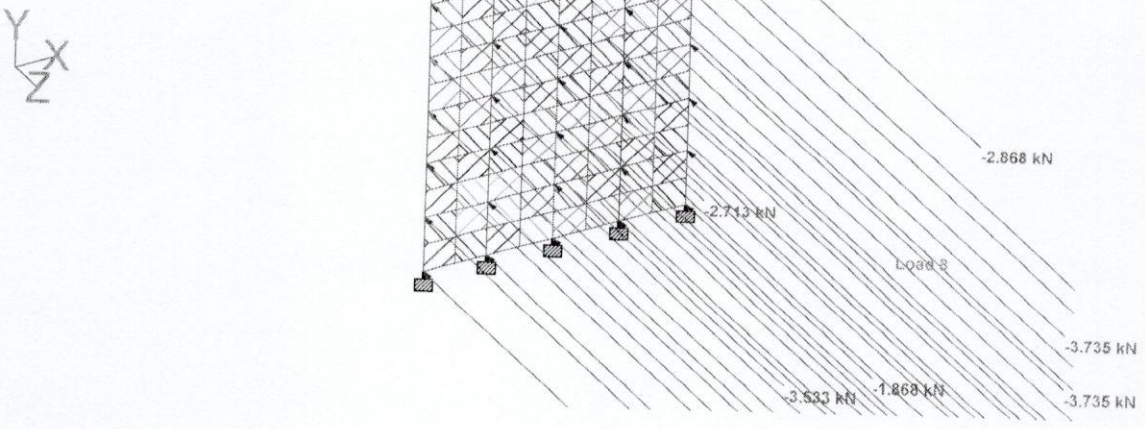
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Load 7

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