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PAGE NO. 1

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*                                                   *
*          STAAD.Pro CONNECT Edition                *
*          Version  22.10.00.153                    *
*          Proprietary Program of                   *
*          Bentley Systems, Inc.                    *
*          Date=    SEP 24, 2024                    *
*          Time=    18:21:32                        *
*                                                   *
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*****************************************************
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```
    1. STAAD SPACE
INPUT FILE: C:\Users\suresh\Desktop\New folder\TIRUPPUR.STD
    2. START JOB INFORMATION
    3. JOB NAME THE PROPOSED CONSTRUCTION OF  RESIDENTIAL HIGH RISE AND NON HIGH RISE
    4. *GROUP  DEVELOPMENT CONSISTS OF 5 BLOCKS, BLOCK 1 TO 4:  GROUND + FIRST + SECON
    5. *FLOOR (PART) (36 D/U) , BLOCK 5: BASEMENT + GROUND FLOOR (PART) CLUB  HOUSE
    6. *(PART) + 12 UPPER FLOORS (137 D/U) TOTALLY  173 D/U  WITH SWIMMING POOL ON THE
    7. *GROUND  LEVEL COMPRISED IN S.NOS :560/1, 561/1B1B2 ,  RAKKIAPALAYAM VILLAGE,
    8. *AVINASHI TALUK , TIRUPPUR  DISTRICT .
    9. ENGINEER NAME SURESH
   10. CHECKER NAME SURESH
   11. APPROVED NAME SURESH
   12. ENGINEER DATE 9/24/2024
   13. CHECKER DATE 9/24/2024
   14. APPROVED DATE 9/24/2024
   15. END JOB INFORMATION
   16. INPUT WIDTH 79
   17. UNIT METER KN
   18. JOINT COORDINATES
   19. 1 -8.1 -1.45 0; 25 -8.1 -4.45 0; 26 -5.46 -1.45 0; 27 -5.46 -4.45 0
   20. 36 -8.1 1.55 0; 37 -5.46 1.55 0; 66 -14.3 -1.45 0; 67 -14.3 -4.45 0
   21. 68 -14.3 1.55 0; 69 -17.6 -1.45 0; 70 -17.6 -4.45 0; 71 -17.6 1.55 0
   22. 72 -8.1 4.55 0; 73 -5.46 4.55 0; 74 -14.3 4.55 0; 75 -17.6 4.55 0
   23. 76 -8.1 7.55 0; 77 -5.46 7.55 0; 78 -14.3 7.55 0; 79 -17.6 7.55 0
   24. 80 -8.1 10.55 0; 81 -5.46 10.55 0; 82 -14.3 10.55 0; 83 -17.6 10.55 0
   25. 84 -8.1 13.55 0; 85 -5.46 13.55 0; 86 -14.3 13.55 0; 87 -17.6 13.55 0
   26. 88 -8.1 16.55 0; 89 -5.46 16.55 0; 90 -14.3 16.55 0; 91 -17.6 16.55 0
   27. 92 -8.1 19.55 0; 93 -5.46 19.55 0; 94 -14.3 19.55 0; 95 -17.6 19.55 0
   28. 96 -8.1 22.55 0; 97 -5.46 22.55 0; 98 -14.3 22.55 0; 99 -17.6 22.55 0
   29. 100 -8.1 25.55 0; 101 -5.46 25.55 0; 102 -14.3 25.55 0; 103 -17.6 25.55 0
   30. 104 -8.1 28.55 0; 105 -5.46 28.55 0; 106 -14.3 28.55 0; 107 -17.6 28.55 0
   31. 108 -8.1 31.55 0; 109 -5.46 31.55 0; 110 -14.3 31.55 0; 111 -17.6 31.55 0
   32. 112 -8.1 34.55 0; 113 -5.46 34.55 0; 114 -14.3 34.55 0; 115 -17.6 34.55 0
   33. 116 -8.1 37.55 0; 117 -5.46 37.55 0; 118 -14.3 37.55 0; 119 -17.6 37.55 0
   34. MEMBER INCIDENCES
   35. 39 1 25; 40 1 26; 41 25 27; 42 26 27; 55 1 36; 56 26 37; 61 36 37; 111 66 67
   36. 112 66 1; 113 67 25; 114 66 68; 115 68 36; 116 69 70; 117 69 66; 118 70 67
   37. 119 69 71; 120 71 68; 121 36 72; 122 37 73; 123 72 73; 124 68 74; 125 74 72
   38. 126 71 75; 127 75 74; 128 72 76; 129 73 77; 130 76 77; 131 74 78; 132 78 76
```

Dr. J. SURESH, M.E., MIE., Ph.D.
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39. 133 75 79; 134 79 78; 135 76 80; 136 77 81; 137 80 81; 138 78 82; 139 82 80
40. 140 79 83; 141 83 82; 142 80 84; 143 81 85; 144 84 85; 145 82 86; 146 86 84
41. 147 83 87; 148 87 86; 149 84 88; 150 85 89; 151 88 89; 152 86 90; 153 90 88
42. 154 87 91; 155 91 90; 156 88 92; 157 89 93; 158 92 93; 159 90 94; 160 94 92
43. 161 91 95; 162 95 94; 163 92 96; 164 93 97; 165 96 97; 166 94 98; 167 98 96
44. 168 95 99; 169 99 98; 170 96 100; 171 97 101; 172 100 101; 173 98 102
45. 174 102 100; 175 99 103; 176 103 102; 177 100 104; 178 101 105; 179 104 105
46. 180 102 106; 181 106 104; 182 103 107; 183 107 106; 184 104 108; 185 105 109
47. 186 108 109; 187 106 110; 188 110 108; 189 107 111; 190 111 110; 191 108 112
48. 192 109 113; 193 112 113; 194 110 114; 195 114 112; 196 111 115; 197 115 114
49. 198 112 116; 199 113 117; 200 116 117; 201 114 118; 202 118 116; 203 115 119
50. 204 119 118
51. DEFINE MATERIAL START
52. ISOTROPIC CONCRETE
53. E 2.17185E+07
54. POISSON 0.17
55. DENSITY 23.5616
56. ALPHA 1E-05
57. DAMP 0.05
58. END DEFINE MATERIAL
59. MEMBER PROPERTY INDIAN
60. 40 41 61 112 113 115 117 118 120 123 125 127 130 132 134 137 139 141 144 146 -
61. 148 151 153 155 158 160 162 165 167 169 172 174 176 179 181 183 186 188 190 -
62. 193 195 197 200 202 204 PRIS YD 0.6 ZD 0.2
63. MEMBER PROPERTY INDIAN
64. 39 42 55 56 111 114 116 119 121 122 124 126 128 129 131 133 135 136 138 140 -
65. 142 143 145 147 149 150 152 154 156 157 159 161 163 164 166 168 170 171 173 -
66. 175 177 178 180 182 184 185 187 189 191 192 194 196 198 199 201 -
67. 203 PRIS YD 0.6 ZD 0.2
68. CONSTANTS
69. MATERIAL CONCRETE ALL
70. SUPPORTS
71. 25 27 67 70 FIXED
72. DEFINE 1893 LOAD
73. ZONE 0.16 RF 3 I 1 SS 2 ST 1 DM 0.5
74. MEMBER WEIGHT
75. 39 TO 42 55 56 61 111 TO 204 UNI -14.5
76. 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.

77. TYPE 1
78. INT 0.673 1.03335 1.3537 1.65375 HEIG  10  30  50  100
79. EXP 1 JOINT 1 25 TO 27 36 37 66 TO 119
80. LOAD 1 LOADTYPE NONE  TITLE SLX1
81. 1893 LOAD X 1
82. LOAD 2 LOADTYPE NONE  TITLE SLZ1
83. 1893 LOAD Z 1
```

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STAAD SPACE -- PAGE NO. 3

```
 84. LOAD 3 LOADTYPE DEAD  TITLE DL
 85. SELFWEIGHT Y -1
 86. MEMBER LOAD
 87. 40 61 112 115 117 120 123 125 127 130 132 134 137 139 141 144 146 148 151 -
 88. 153 155 158 160 162 165 167 169 172 174 176 179 181 183 186 188 190 193 195 -
 89. 197 200 202 204 UNI GY -25
 90. LOAD 4 LOADTYPE LIVE  TITLE LL
 91. MEMBER LOAD
 92. 40 61 112 115 117 120 123 125 127 130 132 134 137 139 141 144 146 148 151 -
 93. 153 155 158 160 162 165 167 169 172 174 176 179 181 183 186 188 190 193 195 -
 94. 197 200 202 204 UNI GY -15
 95. LOAD 7 LOADTYPE WIND  TITLE WLZ1
 96. WIND LOAD Z 1 TYPE 1
 97. LOAD 8 LOADTYPE WIND  TITLE WLZ2
 98. WIND LOAD Z -1 TYPE 1
 99. LOAD COMB 9 1.5(DL+LL)
100. 3 1.5 4 1.5
101. LOAD COMB 10 1.2(DL+LL+SLX)
102. 3 1.2 4 1.2 1 1.2
103. LOAD COMB 11 1.2(DL+LL+SLZ)
104. 3 1.2 4 1.2 2 1.2
105. LOAD COMB 14 1.2(DL+LL+WLZ1)
106. 3 1.2 4 1.2 7 1.2
107. LOAD COMB 15 1.2(DL+LL+WLZ2)
108. 3 1.2 4 1.2 8 1.2
109. LOAD COMB 16 1.5(DL+SLX)
110. 3 1.5 1 1.5
111. LOAD COMB 17 1.5(DL+SLZ)
112. 3 1.5 2 1.5
113. LOAD COMB 20 1.5(DL+WLZ1)
114. 3 1.5 7 1.5
115. LOAD COMB 21 1.5(DL+WLZ2)
116. 3 1.5 8 1.5
117. LOAD COMB 22 0.9DL+1.5SLX
118. 3 0.9 1 1.5
119. LOAD COMB 23 0.9DL+1.5SLZ
120. 3 0.9 2 1.5
121. LOAD COMB 26 0.9DL+1.5WLZ1
122. 3 0.9 7 1.5
123. LOAD COMB 27 0.9DL+1.5WLZ2
124. 3 0.9 8 1.5
125. PERFORM ANALYSIS
```



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STAAD SPACE -- PAGE NO. 4

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

NUMBER OF JOINTS	60	NUMBER OF MEMBERS	101
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 = 6, TOTAL DEGREES OF FREEDOM = 336
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.

```
*************************************************************
* UNITS - KN    METE                                        *
* TIME PERIOD FOR X 1893 LOADING =    1.23737 SEC           *
* SA/G PER 1893=    0.550, LOAD FACTOR= 1.000               *
* VB PER 1893=    0.0147 X     5076.45=      74.39 KN       *
*                                                           *
*************************************************************
```

```
*************************************************************
* UNITS - KN    METE                                        *
* TIME PERIOD FOR Z 1893 LOADING =    1.23737 SEC           *
* SA/G PER 1893=    0.550, LOAD FACTOR= 1.000               *
* VB PER 1893=    0.0147 X     5076.45=      74.39 KN       *
*                                                           *
*************************************************************
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126. FINISH

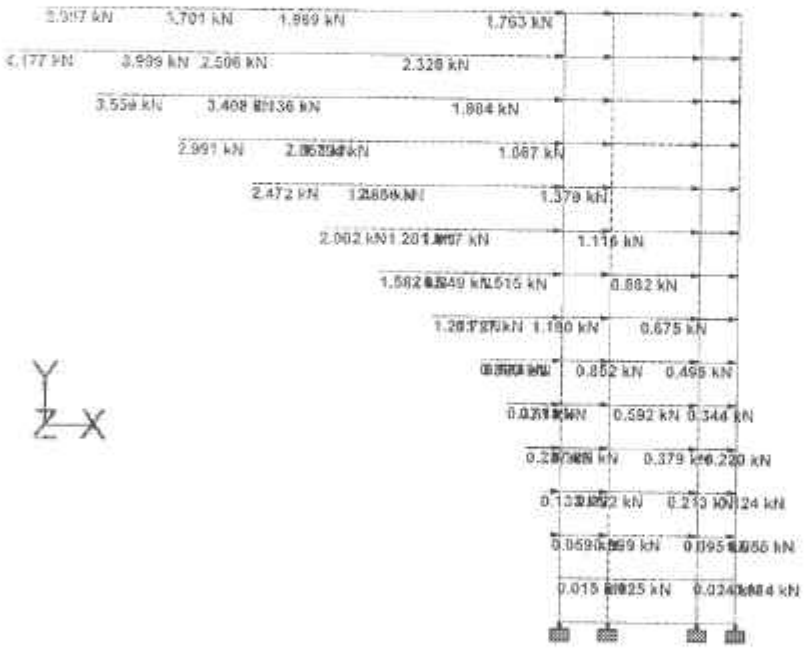
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********** END OF THE STAAD.Pro RUN **********

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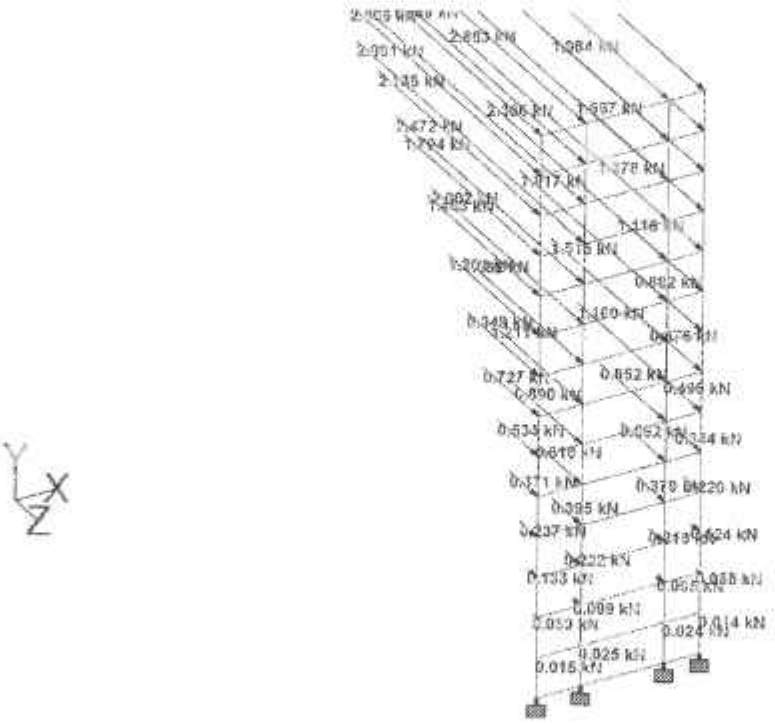

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*  For technical assistance on STAAD.Pro, please visit     *
*  http://www.bentley.com/en/support/                      *
*                                                          *
*  Details about additional assistance from                *
*  Bentley and Partners can be found at program menu       *
*  Help->Technical Support                                 *
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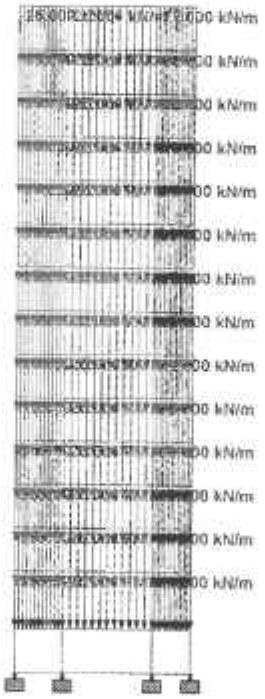
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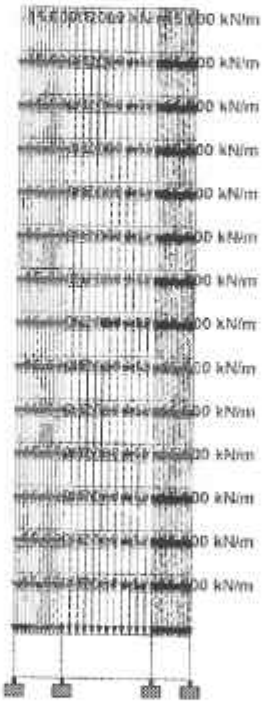
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Load 2

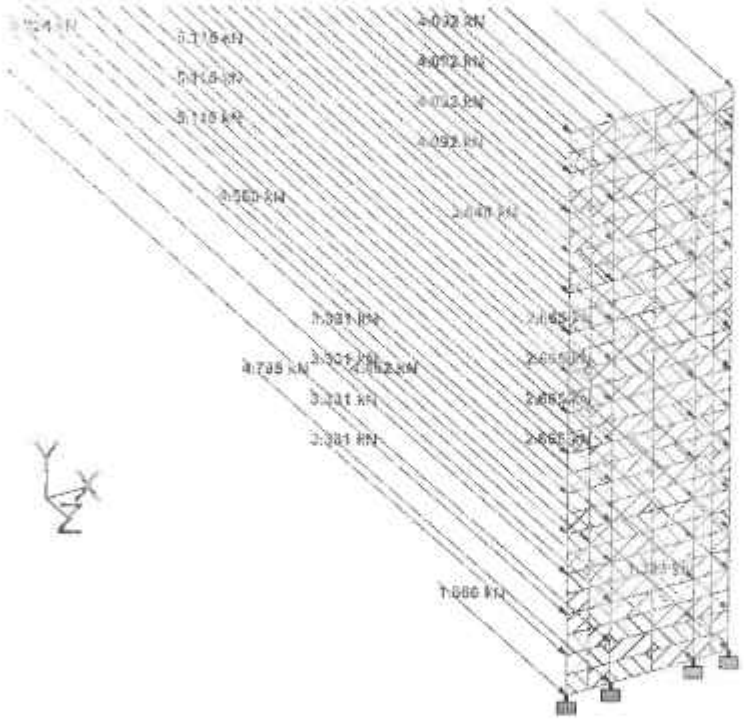
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Load 1

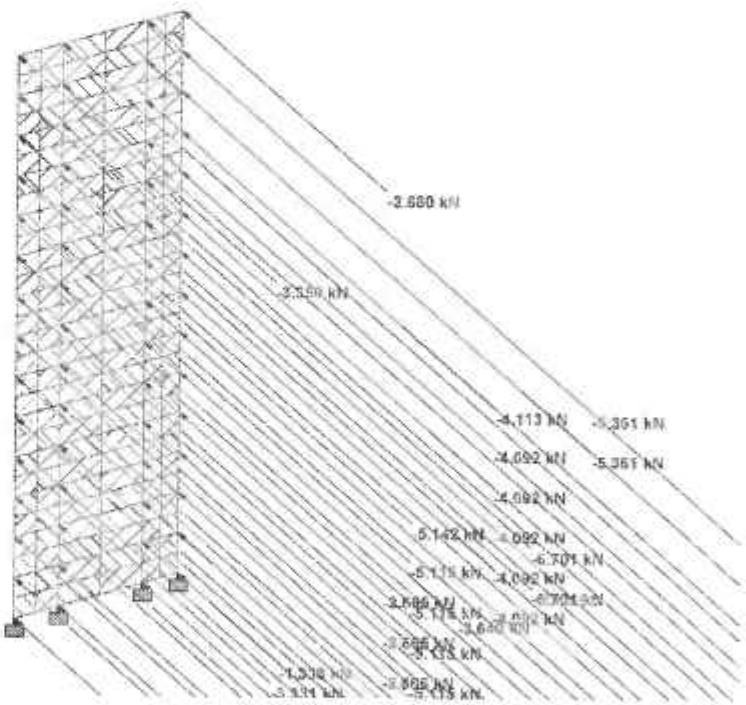
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	Part		
Job Title THE PROPOSED CONSTRUCTION OF RESIDENTIAL HIGH RISE AND NON HIGH RISE	Ref		
	By Suresh	Date 9/24/2024	Chd Suresh
Client	File TIRUPPUR.std	Date/Time 24-Sep-2024 18:11	



Load 7

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Annexure – XIV

[See rule 51 (3)]

Form 1

Structural Design Basis Report

(1) This report to accompany the application for Building Developments

Part1	General Data		
S. No.	Description	Information	Notes
1	Site Address	SF.NOS :560/1,561/1B1B2, RAKKIYAPALAYAM VILLAGE, AVINASHI TALUK, TIRUPPUR DISTRICT.	
2	Name of Owner	CASAGRANDE COIMBATORE LLP	
3	Name of Registered Developer along with the Registration Number	S.R. AMUDHASAKARAN CGLDIST/RD/2023/12/032	
4	Name of Registered Architect along with the Registration Number	K. P. LENIN CA/2009/45680	
5	Name of Registered Structural engineer along with the Registration Number	Dr. SURESH CGLRGN/SE/Gr-I/2019/06/012	
6	Use of the building	Residential Building	
7	Number of stories above ground level (including story's to be added later, if any)	4 Blocks - Ground floor + 2 upper floors and 1 Block -1 Basement Floors + Ground floor + 12 upper floors	
8	Number of basements below ground level	One	
9	Type of structure Load bearing walls R.C.C. frame R.C.C. frame and Shear Walls Steel frame	RCC Frame	
10	Soil data Type of soil Design safe bearing capacity	Brown Highly weathered rock 1.5m depth – 200 kPa 4m depth – 850 kPa	IS:1893 C1.6.3.5.2 IS: 1904 IS: 1892 IS: 2131 IS: 2720

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11	Dead loads (unit weight adopted) Earth Water Brick masonry Plain cement concrete Reinforced cement concrete Floor finish Other fill materials	 20 KN/cum 10 KN/cum 20 KN/cum 24 KN/cum 25 KN/cum 20 KN/cum	IS: 875 Part 1
12	Imposed (live) loads Floor loads Roof loads	2 KN/m^2	IS: 875 Part 2
13	Cyclone/Wind Speed Design pressure intensity	39 m/s	IS: 875 Part 3
14	Seismic zone	III	IS: 1893 (2016)
15	Importance factor	1.2	IS:1893(2016) Table 6
16	Seismic zone factor (Z)	0.16 (Zone – III)	IS:1893 Table 2
17	Response reduction factor	5	IS:1893 Table 7
18	Fundamental natural period – approx.	0.965	IS:1893 C1.7.6
19	Design horizontal acceleration spectrum value (Ah)	0.019	IS: 1893 C1.6.4.2
20	Expansion/Separation Joints	Yes	
21	Building is regular/irregular	Regular	IS 1893

- Enclose detailed drawings drawn to scale for each floor.
- In case terrace garden is provided, indicate additional fill load and live load along with the detailed drawings drawn to scale.

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Part 2	Load bearing masonry buildings		
Sl.No.	**Description**	**Information**	**Notes**
1	Building category	-	IS: 4326 C1.7 Read with IS:1893 Zone / Bldg. — II III IV V Ordinary — B C D E Important — C D E E
2	Basement Provided	-	
3	Number of floors including Ground Floor (all floors including stepped floors in hill slopes)	-	
4	Type of wall masonry	-	
5	Type and mix of Mortar	-	IS: 4326 C1.8.1.2
6	Re: size and position of openings (See note No.[i]) Minimum distance (b5) Ratio $(b_1+b_2+b_3)/l_1$ or $(b_6+b_7)/l_2$ Minimum pier width between consequent opening (b_4) Vertical distance (h_3) Ratio of wall height to thickness 4 Ratio of wall length between cross wall to thickness	-	IS: 4326 Table 4, Fig.7
7	Horizontal seismic band at plinth level at window sill level at lintel level at ceiling level at eave level of sloping roof at top of gable walls at top of ridge walls	P IP NA / / / / / / /	(see note No.2) IS:4326 C1 8.4.6 IS: 4326 C1 8.3 IS: 4326 C1 8.4.2 IS: 4326 C1 8.4.3 IS: 4326 C1 8.4.3 IS: 4326 C1 8.4.4
8	Vertical reinforcing bar at corners and T junction of walls at jambs of doors and window openings	/	IS: 4326 C1 8.4.8. IS: 4326 C1 8.4.9
9	Integration of prefab roofing/flooring elements through reinforced concrete screed.	/	IS:4326 C1 9.1.4
10	Horizontal bracings in pitched truss in horizontal plane at the level of ties in the slopes of pitched roofs	/ /	

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Notes: (i) Information in Item 6 should be given on separate A4 sheets for all walls with large number of openings

(ii) IP indicated "Information Provided"

IP indicates "Information to be provided" NA

indicates "Not Applicable"

Tick mark one box

Part 3	**Reinforced concrete framed buildings**		
Sl. No.	**Description**	**Information**	**Notes**
1	Type of building Regular frames Regular frames with Shear Walls Irregular frames Irregular frames with Shear Walls Soft storey	Regular Frames	IS: 1893 C1 7.1
2	Number of basements	One	
3	Number of floors including ground floor	4 Blocks - Ground floor + 2 upper floors and 1 Block -1 Basement Floors + Ground floor + 12 upper floors	
4	Horizontal floor system Beams and slabs Waffles Ribbed floor Flat slab with drops Flat plate without drops	Beams and slabs	
5	Soil data Type of soil Recommended type of foundation -Independent footings -Raft -Piles Recommended bearing capacity of soil Recommended type, length, diameter and load capacity of piles Depth of water table	Brown Highly weathered rock 1.5m depth – 200 kPa 4m depth – 850 kPa Independent footing and raft flooting	IS: 1498
6	Foundations Depth below ground level Type Independent Interconnected Raft Piles	Independent footing	

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7	System of interconnecting foundations Plinth beams Foundation beams	Plinth beams	IS: 1893 C1 7.12.1
8	Grades if concrete used in different parts of building	M-35 for columns M-25 for other R.C.C	
9	Method of analysis used	Response Spectrum Method	
10	Computer software used	Etabs	
11	Torsion included	Yes	IS: 1893 C1 7.9
12	Base shear a. Based on approximate fundamental period b. Based on dynamic analysis c. Ratio of a/b	0.432 1.1 1	IS: 1893 Cl. 7.6.2
13	Distribution of seismic forces along the height of the building.	1.2	IS:1893 Cl.7.7 (Provide sketch)
14	The Column of soft ground storey specially designed.	Yes	IS: 1893 Cl.7.10
15	Clear minimum cover provided in • Footing & Raft • Column • Beams • Slabs	50 mm 40 mm 30 mm 25 mm	IS: 456 Cl. 26.4
16	Ductile detailing of RC frame • Type of reinforcement used • Minimum dimension of beams • Minimum dimension of columns • Minimum percentage of reinforcement of beams at any cross section • Maximum percentage of reinforcement at any section of beam • Spacing of transverse reinforcement in 2-d length of beams near the ends • Ratio of capacity of beams in shear to capacity of beams in flexure • Maximum percentage of reinforcement in column • Confining stirrups near ends of columns and in beam-column joints Diameter Spacing • Ratio of shear capacity of columns to maximum seismic shear in the storey.	Fe 550 200 mm 300 mm 0.25% 3% 120 mm 100mm 4% 8 mm 100 mm 1	IS: 456 Cl. 5.6 IS: 13920 Cl.6.1 IS: 13920 Cl.7.1.2 IS: 456 Cl.26.5.1(a) IS: 13920 Cl.6.2.1 IS: 456 Cl.26.5.1.1(b) IS: 13920 Cl.6.2.2 IS: 13920 Cl.6.3.5

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17	Does the features require clearance by SDRP Example: High rise building Prefab building Building in hazard prone areas		

Foundation

i. In case raft foundation has been adopted, indicate K value used for analysis of the raft. (Sub grade Modulus Ks – tons/m2/m)

ii. Incase pile foundations have been used, give full particulars of the piles, type, dia, length, capacity

iii. In case of high water table, indicate system of countering water pressure, and indicate the existing water table, and that assumed to design foundations.

Idealization for Earthquake analysis

i. In case of composite system of shear walls and rigid frames, give distribution of base shear in the two systems on the basis of analysis, and that used for design of each system

ii. Indicate the idealization of frames and shear walls adopted in the analysis with the help of sketches.

iii. Submit framing plans of each floor

iv. In case of basements, indicate the system used to contain earth pressures.

Part 4	**Buildings in structural steel**		
1	Adopted method of design	○ Simple ○ Semi-rigid ○ Rigid	IS:800 Cl 3.4.4 IS:800 Cl.3.4.5 IS:800 Cl.3.5.6
2	Design based on	○ Elastic analysis ○ Plastic analysis	IS: 800 Section-9 SP;6 (6)
3	Floor construction	○ Composite ○ Non composite ○ Boarded	
4	Roof construction	○ Composite ○ Non composite ○ Metal ○ Any other	
5	Horizontal force resisting system adopted	Frames Braced frames Frames & shear walls	Note: Seismic force As per IS:1893 Would depend on system
6	Slenderness ratios maintained	Members defined in Table 3.1, IS:800	IS 800; Cl.3.7
7	Member deflection limited to	Beams, Rafters Crane Girders, Purlins Top of columns	IS:800 Cl.3.13
8	Structural members	○ Encased in concrete Not encased	IS: 800 Section-10

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9	Proposed material	○ General weld-able ○ High strength	IS: 2062 IS: 8500
10	Minimum metal thickness Specified for corrosion protection	○ Hot rolled sections ○ Cold formed sections ○ Tubes	IS: 800, Cl.3.8 Cl.3.8.1 to Cl.3.8.4 Cl.3.8.5
11	Structural connections	○ Rivets ○ CT Bolts ○ S H F G Bolts ○ Black Bolts ○ Welding field Shop (Specify welding type proposed) Composite	IS: 800, Section-8 IS: 1929, 2155, 1149 IS 6639, 1367 IS 3757, 4000 IS: 1363, 1367 IS: 816, 814,1395, 7280, 3613, 6419, 6560, 813, 9595
12	Minimum Fire rating proposed, with method	○ Rating.....hours ○ Method proposed. -In tumescent painting -Spraying -Quilting -Fire retardant boarding	IS: 1641, 1642, 1643

Part-5

Any special weakness in the building making it vulnerable for stability related failure and the precaution to be taken during execution/completion and finishing to be indicated.

Part-6

Recommendations of structural Engineer with respect to special requirements needed with respect to structural safety and stability to be taken note of by competent authority feature like incorporation of swimming pool, heavy load on roof, prefabricated structure or any other hazardous features should be included.

Structural Engineer Seal and Signature

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Home Vastu Shastra, Plot Vastu Shastra, Property Management

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