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THE PROPOSED CONSTRUCTION OF GROUP HOUSING DEVELOPMENT COMPRISING 2 BLOCKS; COMBINED DOUBLE BASEMENT FLOOR FOR 2 BLOCKS; BLOCK 1 – COMBINED DOUBLE BASEMENT FLOOR + GROUND FLOOR + 3 FLOORS + 4TH FLOOR PART (HEIGHT 18.30 M) RESIDENTIAL BUILDING WITH 9 DWELLING UNITS WITH GYM, GAMES ROOM AND SWIMMING POOL IN FOURTH FLOOR PART; BLOCK 2 – COMBINED DOUBLE BASEMENT FLOOR + GROUND FLOOR + 3 FLOORS + 4TH FLOOR PART (HEIGHT 18.30 M) RESIDENTIAL BUILDING WITH 5 DWELLING UNITS; TOTALLY 14 DWELLING UNITS AVAILING PREMIUM FSI WITH TOD BENEFIT AT DOOR NO. 5/11, RUTLAND GATE 4TH STREET, NUNGAMBAKKAM, CHENNAI, COMPRISED IN OLD S.NO. 330 AND T.S. NO:58/28, 58/117 & 58/118, BLOCK NO. 12 OF NUNGAMBAKKAM VILLAGE WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

STRUCTURAL DESIGN BASIS REPORT

M/s. UNIVERSAL CONSULTANTS
2/4, First Cross Street, Indira Nagar
Adyar, Chennai - 20

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

THE PROPOSED RESIDENTIAL APARTMENT @ RUTLAND GATE ROAD CHENNAI.

PROJECT BRIEF

This report sets out the basic parameters used for the proposed residential apartment @ rutland gate road chennai..This has been updated to incorporate the current information on the structure.

A.1 STATUTORY REQUIREMENTS:

The design of structural and other building services will comply with the following requirements:

- National Building Code
- The Building Regulations Act
- The Environmental Protection Act in liaison with the Environmental Agency.
- Fire prevention and detection in compliance with the local Fire Regulation.
- ASHRAE.
- Any other applicable laws as advised by the client.
- Bureau of Indian Standard Codes.

B.0 DESIGN STANDARDS:

Specific applicable codes and standards will be identified and adopted in the design philosophies as appropriate to the structural elements. The latest editions of the Codes and Standards will be used in designs. All design work shall be based on Indian Standards and Codes with latest revision, with amendments if any, as on date.

Loads:

IS: 875-1987	Code of Practice for design loads (other than earthquake) for Buildings and structure (part 1, 2, 3, 4&5)
IS: 1911	Schedule of unit weights of building materials

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Foundations:

IS: 1080	Code of Practice for design and construction of shallow foundations on soils (other than raft, ring and shell)
IS: 1904	Code of Practice for design and construction of foundations in soils general requirement
IS: 2950	Code of Practice for design and construction of raft foundations
IS: 2974	Code of Practice for design and construction of machine foundations (All parts)
IS: 8009	Code of Practice for calculation of settlement of foundations (All parts)
IS: 11089	Code of Practice for design and construction of ring foundation

RCC:

IS: 456	Code of Practice for plain and reinforced concrete
IS: 458	Specification for precast concrete pipes
IS: 3370	Code of Practice for concrete structures for the storage of liquids: (All parts)
IS: 3414	Code of Practice for design and installation of joints in buildings
IS: 3935	Code of Practice for composite construction
IS: 4326	Code of Practice for earthquake resistant design and construction of buildings
IS: 5525	Recommendation for detailing of reinforced concrete works
IS: 1786	Specification for high strength deformed steel bars and wires for concrete reinforcement
IS: 10262	recommended guidelines for concrete mix design
IS: 11384	Code of Practice for composite construction in structural steel and concrete
IS: 1893 (Part-1)	Criteria for earthquake resistant design of structures (General provisions and building).
IS: 1893 (Part-4)	Criteria for earthquake resistant design of structures (Industrial structures including stack-like structures).
IS: 13920	Ductile Detailing of reinforced concrete structures subjected to seismic forces

Structural steel:

IS: 800	Code of Practice for general construction in steel
IS: 806	Code of Practice for use of steel tubes in general building construction
IS: 808	Dimensions for hot rolled steel beam, column channel and angle section
IS: 813	Scheme of symbols for welding
IS: 816	Code of Practice for use of metal arc welding for general construction in mild steel

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IS: 1161	Steel tubes for structural purposes
IS: 2062	Structural steel (fusion welding quality)
IS: 4000	High Strength bolts in steel structures – Code of Practice
IS: 7215	Tolerances for fabrication of steel structures
IS: 9595	Recommendation for Metal arc welding of carbon and carbon manganese steel
IS: 12843	Tolerances for erection of steel structures

Miscellaneous:

IS:432 (part 2)	Specification for mild steel and medium tensile steel bars and hard-drawn steel wire for concrete reinforcement
IS: 8112	43 grade Ordinary Portland cement specification.
IS: 6313 (part II)	Standards for anti-termite treatment
IS: 2751	Code of practice for welding of mild steel bars used for reinforced concrete construction
IS: 1346	Code of Practice for water proofing of roofs with bitumen felts
IS: 1742	Code of Practice for building drainage
IS: 1905	Code of Practice for structural use of unreinforced masonry
IS: 2470	Code of Practice for installation of septic tank:
(Part 1)	Design criteria and construction
(Part 2)	Secondary treatment and disposal of septic tank effluent
IS: 3067	Code of Practice for general design details and preparatory works for damp proofing and water proofing of buildings
SP: 6	Handbook for structural engineers (all parts)
SP: 7	National Building Code of India
SP: 16	Design Aids for reinforced concrete to IS: 456-1978
SP: 20	Handbook on masonry design and construction
SP: 22	Explanatory handbooks on codes for earthquake engineering (IS: 1983-1975 and IS: 4326-1976)
SP: 24	Explanatory handbook on Indian Standard code of Practice for plain and reinforced concrete
SP: 25	Handbook on causes and prevention of cracks in buildings
SP: 32	Handbook on functional requirements of industrial buildings
SP: 34	Handbook of concrete reinforcement and detailing (SCIP)

C. STRUCTURAL SYSTEM

The structural system adopted is as below, based on preliminary analysis and design, which have been elucidated later in this report.

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- The structure shall be analyzed as 3D frame using Analysis software and the structure design would be based on limit state design complying with Indian codes of practices
- The foundation System shall be Pile Foundation is considered as per soil Test report.
- All slabs are designed as conventional beam column RC special moment resisting frame system.
- All water retaining structures shall be designed as 'un-cracked section' of concrete as per IS 3370
- Period of fire resistance considered is two hours. Cover for fire resistance will be as per Table 16-A of IS: 456 – 2000.
- Grade of steel Fe 550

GRADE OF CONCRETE FOR ALL MEMBERS

Pile & Pile Cap- M30
Columns- M35
Slabs- M30
Beams- M30
Staircase- M30

D. LOAD DATA

(I) DEAD LOAD

Self-weight of the materials shall be calculated on the basis of unit weights given in IS: **875 (PART I)**

- Unit weight of reinforced cement concrete = 25 KN/m^3
- Unit weight of plain cement concrete = 24 KN/m^3
- Floor finishes considered = 1.5 KN/m^2
- Unit weight of solid block = 20 KN/m^3
- Unit weight of steel = 78.5 KN/m^3
- Filling material of sunken floors = 7 KN/m^3

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(II) LIVE LOAD

1. Car Parking	:	500 Kg / Sqm
2. Kitchen	:	200 Kg / Sqm
3. Balcony	:	300 Kg / Sqm
4. Utility	:	200 Kg / Sqm
5. Toilets	:	200 Kg / Sqm
6. Living Room, Bed Room	:	200 Kg/Sqm
7. Terraces	:	200 Kg / Sqm
8. Corridors, passages, lobbies and staircases including fire escapes	:	300 Kg / Sqm
9. Gym Area	:	500 Kg / Sqm
10. Office Room	:	500 Kg / Sqm
11. Swimming Pool	:	200 Kg / Sqm
12. Sauna Room	:	300 Kg / Sqm
13. Table Tennis Section	:	500 Kg / Sqm
14. Fire tender Load	:	1500kg/Sqm
15. Yoga, Aerobics	:	300Kg / Sqm
16. Association room/FMS room	:	300Kg / Sqm
17. Squash	:	300Kg / Sqm
18. Indoor kids play area	:	300Kg / Sqm
19. Creche	:	300Kg / Sqm
20. Multi purpose hall	:	500Kg / Sqm
21. Board games room	:	300Kg / Sqm
22. Video games room	:	300Kg / Sqm
23. Change room	:	200Kg / Sqm
24. Art, painting, music deck	:	300Kg / Sqm
25. Business center	:	400Kg / Sqm
26. Learning center	:	300 Kg / Sqm
27. AV room	:	500 Kg / Sqm
28. VR games	:	300 Kg / Sqm
29. Carom, Foosball, Air Hockey	:	300Kg / Sqm
30. Terrace floor (Access provided)	:	200 Kg / Sqm
31. Lift Machine Room slab	:	1000Kg / Sqm

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Details of Dead Loads & Live Loads Considered for Residential Apartment.

The following are the imposed gravity loads adopted in additional to the self weight (Self Weight of Slab / beam /columns are calculated as per the dimensions adopted in the respective drawings).

1. Ground Floor:

a. Super Imposed Load

LOAD COMPONENT	THICKNESS (mm)	LOAD INTENSITY
Finishes	100	2.5 KN/SQMT
Finishes Fire Drive Way.	200(In Podium Area)	5 KN/SQMT
Landscape loading (300mm depth as per architectural sections)	300 (with Wet density of 20 kN/m3)	6KN/m2

b. Live Load

LOAD COMPONENT	LOAD INTENSITY (KN/SQMT)
CAR PARKING and Inner Drive Way	

2. Typical Floor's

a. Super Imposed Load

LOAD COMPONENT	THICKNESS(mm)	LOAD INTENSITY
Finishes	50	1.5 KN/SQMT

FLOOR FINISH LOAD BREAK UP

Tile thickness = 12mm
Density = 20kN/m3
Load from tile = 0.24kN/m2

Screed+ Mortar thickness (for levelled surface) = 38mm
Density = 20kN/m3
Load from screed + Mortar = 0.76kN/m2

Due to uncertainty in the surface level and Tile/ Granite, 1.5kN/m2 SDL is considered.

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b. Live Load

LOAD COMPONENT	LOAD INTENSITY (KN/SQMT)
Office floor area	5
Utility, Balcony, Corridor/Passage and staircase	3

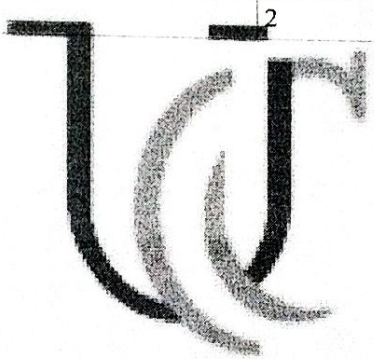
2. Terrace Floor's

a. Super Imposed Load

LOAD COMPONENT	THICKNESS(mm)	LOAD INTENSITY
Finishes	150	3 KN/SQMT

b. Live Load

LOAD COMPONENT	LOAD INTENSITY (KN/SQMT)
Terrace Area	2



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(III) **WIND LOADS**

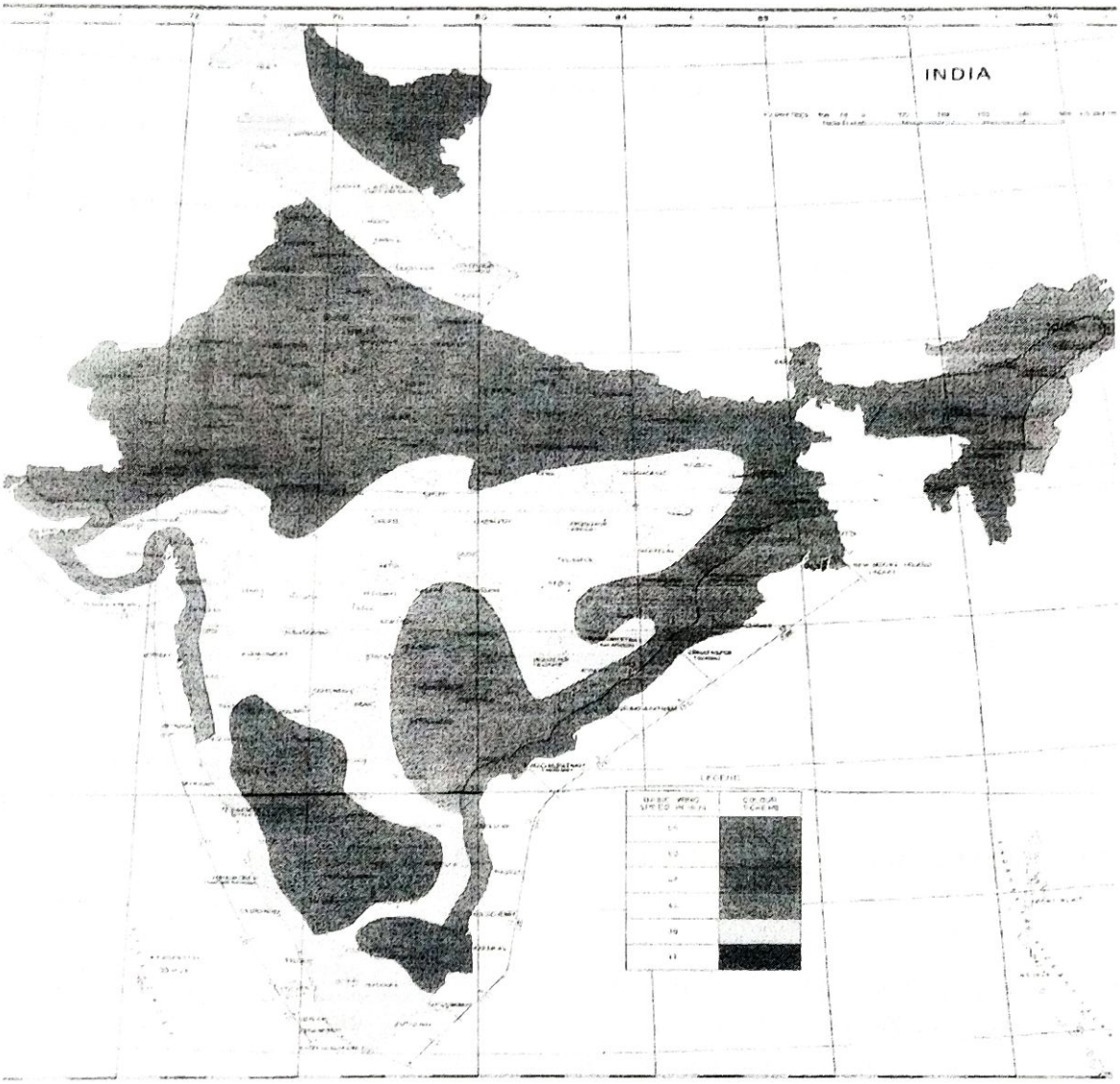


Fig.2 Basic Wind Speed

The following parameters are considered for the calculation of wind pressure for the proposed residential apartment:

Basic Wind Speed (Vb) : 50 m/sec
Risk Coefficient (k1) : 1.08
Terrain, category and class: Category 1 & Class B.

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Size factor (k2)	:	1.13(Calculated by considering the actual height of the Structure)
Topography factor (k3)	:	1.00
Importance factor for the cyclonic region (k4)	:	1.00
Design wind speed Vz	:	***Vb x k1 x k2 x k3 x k4***
Design wind pressure Pz	:	***0.6 x Vz²***

(IV) **SEISMIC LOAD**

Seismic loads for design of structure shall be considered as per **IS 1893-2016.**

Zone	: III
Zone factor	: 0.16
Importance factor	: 1.2
Response Reduction factor	: 5.0
Damping ratio	: 5%

The ductile detailing of the structure elements would be done as per IS 13920-2016, Confining Reinforcement will be designed as per IS 13920-2016.

E. ENVIRONMENTAL CONDITIONS, CORROSION AND FIRE PROTECTION FOR CONCRETE AND STRUCTURAL STEEL

- **Environment** : Moderate for all structures other than water retaining structure
  Exposure conditions : Concrete surfaces protected against weather or aggressive condition except those situated in coastal area.
- **Fire protection** : Thickness of the structural elements as per cl.21.0 of IS456:2000

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Fire Resistance h	Minimum Beam Width b	Rib Width of Slabs b_w	Minimum Thickness of Floors D	Column Dimension (b or D)			Minimum Wall Thickness		
				Fully Exposed	50% Exposed	One Face Exposed	$p<0.4\%$	$0.4\% \le p \le 1\%$	$p>1\%$
	mm	mm	mm	mm	mm	mm	mm	mm	mm
0.5	200	125	75	150	125	100	150	100	100
1	200	125	95	200	160	120	150	120	100
1.5	200	125	110	250	200	140	175	140	100
2	200	125	125	300	200	160	–	160	100
3	240	150	150	400	300	200	–	200	150
4	280	175	170	450	350	240	–	240	180

NOTES

1 These minimum dimensions relate specifically to the covers given in Table 16A.

2 p is the percentage of steel reinforcement.

FIG. 1 MINIMUM DIMENSIONS OF REINFORCED CONCRETE MEMBERS FOR FIRE RESISTANCE

- **Minimum grade of concrete** : Moderate exposure – M25
- **Nominal cover to reinforcement** : For Moderate Exposure Nominal cover should not be less than 30 mm.

Type of Structural element	Min. Cover to reinforcement
Pile	50 mm
Pile Cap	60 mm

For 1.5 hr Fire Resistance Beams , Slabs and Columns Shall have the min Cover as Specified below: Ref: (Table 16A of IS456:2000)

Type of Structural element	Min. Cover to reinforcement
Beam	30 mm
Slabs	25mm
Columns	40 mm

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F. TEMPERATURE AND SHRINKAGE EFFECT:

Horizontal floor displacement due to differential temperatures and shrinkage is of importance in long concrete buildings. It can be taken care of by either providing expansion joints at an appropriate spacing or designing structural members for the additional moments caused by the temperature and shrinkage effects. For this project we consider expansion joint.

TEMPERATURE LOADS:

The effect of temperature will be considered wherever applicable in accordance with relevant Indian Codes. The coefficient for thermal expansion and contraction will be in accordance with IS: 456 and IS: 800 for concrete and steel respectively.

G. EXCEPTIONAL LOADS:

- Loads due to the following catastrophe scenarios are not considered in the design.
- Exceptional loads due to terrorist attacks (Explosions)
- Accidental loads (Falling of aircraft on the building)
- Accidental hitting of vehicle on the facade
- Snow Load

G. DESIGN LOAD COMBINATION

The proposed building is designed using the limit state method with appropriate factors as per **IS: 456,** The load combinations are as follows

Load Combination

1.5(DL+LL)

1.2(DL+LL+SLX1)

1.2(DL+LL+SLX2)

1.2(DL+LL+SLZ1)

1.2(DL+LL+SLZ2)

1.2(DL+LL+WLX1)

1.2(DL+LL+WLX2)

1.2(DL+LL+WLZ1)

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1.2(DL+LL+WLZ2)

1.5(DL+SLX1)

1.5(DL+SLX2)

1.5(DL+SLZ1)

1.5(DL+SLZ2)

1.5(DL+WLX1)

1.5(DL+WLX2)

1.5(DL+WLZ1)

1.5(DL+WLZ2)

0.9DL+1.5SLX1

0.9DL+1.5SLX2

0.9DL+1.5SLZ1

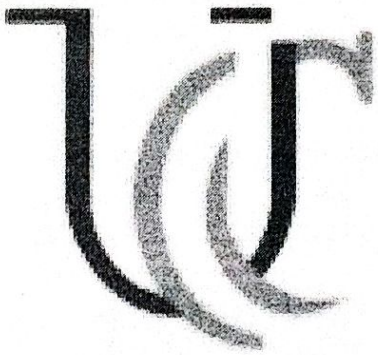
0.9DL+1.5SLZ2

0.9DL+1.5WLX1

0.9DL+1.5WLX2

0.9DL+1.5WLZ1

0.9DL+1.5WLZ2



Where

DL	- Dead load
LL	- Live load
WLX, WLZ	- Wind load in X and Z direction
SLX, SLZ	- Seismic load in X and Z direction.

H. REINFORCEMENT STEEL:

- All reinforcement shall confirm to IS: 1786 – 2008 having minimum yield strength of 500 N/sq-mm.(Fe500)

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J. DEFLECTION LIMITS

For Reinforced concrete works:

- Limiting values of deflection (Short and Long term) as per **cl. 35.3and 23.2 of IS: 456-2000** is followed in the design.
- Limiting value for short term deflection is considered as span/250 and for the long term deflection is considered as span/350 or 20mm whichever less as per IS 456 – 2000.
- The vertical deflection limits may generally be assumed to be satisfied provided that the span to depth ratios is not greater than the values obtained as below:

  Continuous..... 26
  Simply Supported..... 20
  Cantilever..... 7

- As per IS1893 (Part1):2002, Story drift in any storey due to minimum specified design seismic lateral force shall not exceed 0.004 times the storey height.

K. CRACKING LIMITS

- Limiting values of crack width as per cl. 35.3 of IS 456-2000 is followed in the design.
- In general for slabs and beams, the crack width is limited to 0.3mm.
- For water retaining structures, the water retaining portion of the structure will be designed as uncracked section.

F. FOUNDATION SYSTEM:

Foundation system of the structure is designed considering the recommendation from the Geotechnical report.

- The foundation system will be designed as pile foundation as per soil test report.
- Safe load for different dia of pile,

  500 dia – 120T

  600 dia - 180T

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    5. *BASEMENT FLOOR + GROUND FLOOR + 3 FLOORS + 4TH FLOOR PART (HEIGHT 18.30 M)
    6. *RESIDENTIAL BUILDING WITH 9 DWELLING UNITS WITH GYM, GAMES ROOM AND SWIMMING
    7. *POOL IN FOURTH FLOOR PART; BLOCK 2 ? COMBINED DOUBLE BASEMENT FLOOR + GROUND
    8. *FLOOR + 3 FLOORS + 4TH FLOOR PART (HEIGHT 18.30 M) RESIDENTIAL BUILDING WITH 5
    9. *DWELLING UNITS; TOTALLY 14 DWELLING UNITS AVAILING PREMIUM FSI WITH TOD BENEFI
   10. *AT DOOR NO. 5/11, RUTLAND GATE 4TH STREET, NUNGAMBAKKAM, CHENNAI, COMPRISED IN
   11. *OLD S.NO. 330 AND T.S. NO:58/28, 58/117 & 58/118, BLOCK NO. 12 OF NUNGAMBAKKAM
   12. *VILLAGE WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION.
   13. ENGINEER NAME SURESH
   14. CHECKER NAME SURESH
   15. APPROVED NAME SURESH
   16. ENGINEER DATE 2/25/2025
   17. CHECKER DATE 2/25/2025
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   31. 39 1 25; 40 1 26; 41 25 27; 42 26 27; 43 26 28; 44 27 29; 45 28 29; 55 1 36
   32. 56 26 37; 57 28 38; 61 36 37; 62 37 38; 66 36 42; 67 37 43; 68 38 44; 72 42 43
   33. 73 43 44; 96 28 57; 97 29 58; 98 57 58; 99 57 59; 100 38 59; 101 59 60
   34. 102 44 60; 107 57 63; 108 58 64; 109 63 64; 110 63 65; 111 59 65; 112 65 66
   35. 113 60 66; 114 42 67; 115 43 68; 116 44 69; 117 67 68; 118 68 69; 119 60 70
   36. 120 69 70; 121 66 71; 122 70 71; 123 67 72; 124 68 73; 125 69 74; 126 72 73
   37. 127 73 74; 128 70 75; 129 74 75; 130 71 76; 131 75 76; 132 72 77; 133 73 78
   38. 134 74 79; 135 77 78; 136 78 79; 137 75 80; 138 79 80; 139 76 81; 140 80 81
```

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```
39. 141 77 82; 142 78 83; 143 79 84; 144 82 83; 145 83 84; 146 80 85; 147 84 85
40. 148 81 86; 149 85 86
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. END DEFINE MATERIAL
49. MEMBER PROPERTY INDIAN
50. 39 42 45 55 TO 57 66 TO 68 98 99 101 109 110 112 114 TO 116 119 121 -
51. 123 TO 125 128 130 132 TO 134 137 139 141 TO 143 146 -
52. 148 PRIS YD 0.8 ZD 0.3
53. 40 41 43 44 61 62 72 73 96 97 100 102 107 108 111 113 117 118 120 122 126 -
54. 127 129 131 135 136 138 140 144 145 147 149 PRIS YD 0.6 ZD 0.2
55. CONSTANTS
56. MATERIAL CONCRETE MEMB 39 TO 45 55 TO 57 61 62 66 TO 68 72 73 96 TO 102 107 -
57. 108 TO 149
58. SUPPORTS
59. 25 27 29 58 64 FIXED
60. DEFINE 1893 LOAD
61. ZONE 0.16 RF 3 I 1 SS 2 ST 1 DM 0.5
62. MEMBER WEIGHT
63. 39 TO 45 55 TO 57 61 62 66 TO 68 72 73 96 TO 102 107 TO 149 UNI -14.5
64. 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.

65. TYPE 1
66. INT 0.673 1.03335 1.3537 1.65375 HEIG  10  30  50  100
67. EXP 1 JOINT 1 25 TO 29 36 TO 38 42 TO 44 57 TO 60 63 TO 86
68. LOAD 1 LOADTYPE NONE  TITLE SLX1
69. 1893 LOAD X 1
70. LOAD 2 LOADTYPE NONE  TITLE SLZ1
71. 1893 LOAD Z 1
72. LOAD 3 LOADTYPE DEAD  TITLE DL
73. SELFWEIGHT Y -1 LIST ALL
74. MEMBER LOAD
75. 40 43 61 62 72 73 96 100 102 107 111 113 117 118 120 122 126 127 129 131 135 -
76. 136 138 140 144 145 147 149 UNI GY -25
77. LOAD 4 LOADTYPE LIVE  TITLE LL
78. MEMBER LOAD
79. 40 43 61 62 72 73 96 100 102 107 111 113 117 118 120 122 126 127 129 131 135 -
80. 136 138 140 144 145 147 149 UNI GY -15
81. LOAD 7 LOADTYPE WIND  TITLE WLZ1
82. WIND LOAD Z 1 TYPE 1
```

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```
 83. LOAD 8 LOADTYPE WIND  TITLE WLZ2
 84. WIND LOAD Z -1 TYPE 1
 85. LOAD COMB 9 1.5(DL+LL)
 86. 3 1.5 4 1.5
 87. LOAD COMB 10 1.2(DL+LL+SLX)
 88. 3 1.2 4 1.2 1 1.2
 89. LOAD COMB 11 1.2(DL+LL+SLZ)
 90. 3 1.2 4 1.2 2 1.2
 91. LOAD COMB 14 1.2(DL+LL+WLZ1)
 92. 3 1.2 4 1.2 7 1.2
 93. LOAD COMB 15 1.2(DL+LL+WLZ2)
 94. 3 1.2 4 1.2 8 1.2
 95. LOAD COMB 16 1.5(DL+SLX)
 96. 3 1.5 1 1.5
 97. LOAD COMB 17 1.5(DL+SLZ)
 98. 3 1.5 2 1.5
 99. LOAD COMB 20 1.5(DL+WLZ1)
100. 3 1.5 7 1.5
101. LOAD COMB 21 1.5(DL+WLZ2)
102. 3 1.5 8 1.5
103. LOAD COMB 22 0.9DL+1.5SLX
104. 3 0.9 1 1.5
105. LOAD COMB 23 0.9DL+1.5SLZ
106. 3 0.9 2 1.5
107. LOAD COMB 26 0.9DL+1.5WLZ1
108. 3 0.9 7 1.5
109. LOAD COMB 27 0.9DL+1.5WLZ2
110. 3 0.9 8 1.5
111. PERFORM ANALYSIS


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

  NUMBER OF JOINTS         40  NUMBER OF MEMBERS      67
  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 =     210
TOTAL LOAD COMBINATION  CASES =    13  SO FAR.
```



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STAAD SPACE -- PAGE NO. 4

**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 =    0.73574 SEC          *
* SA/G PER 1893=    0.924, LOAD FACTOR= 1.000              *
* VB PER 1893=    0.0246 X     3216.10=      79.26 KN      *
*                                                          *
************************************************************
```

```
************************************************************
* UNITS - KN    METE                                       *
* TIME PERIOD FOR Z 1893 LOADING =    0.73574 SEC          *
* SA/G PER 1893=    0.924, LOAD FACTOR= 1.000              *
* VB PER 1893=    0.0246 X     3216.10=      79.26 KN      *
*                                                          *
************************************************************
```

112. FINISH

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

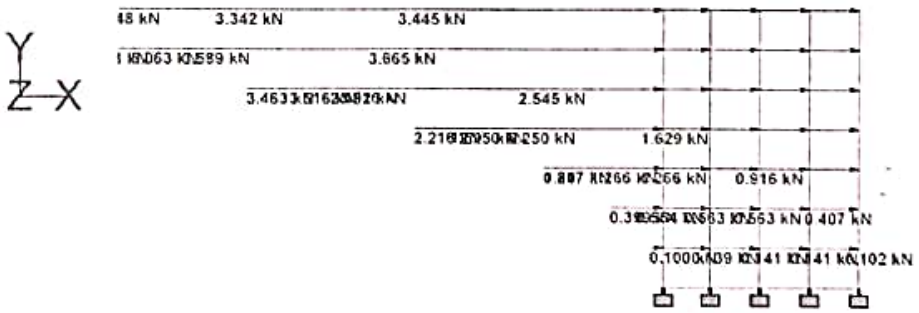
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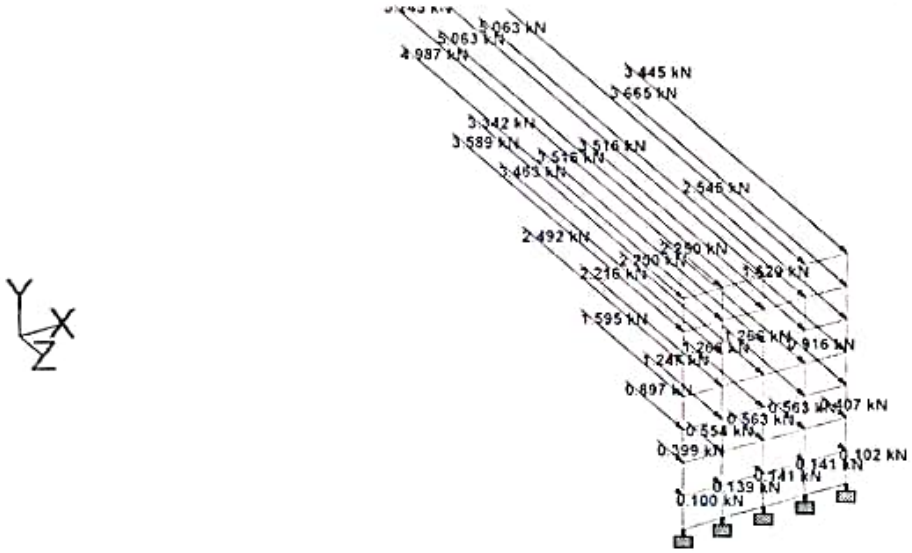
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*   For technical assistance on STAAD.Pro, please visit     *
*   http://www.bentley.com/en/support/                      *
*                                                           *
*   Details about additional assistance from                *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

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Job Title THE PROPOSED CONSTRUCTION OF GROUP HOUSING DEVELOPMENT COMPRISING 2	Ref		
	By Suresh	Date 2/25/2025	Chd Suresh
Client	File RUTLAND.std	Date/Time 25-Feb-2025 14:05	

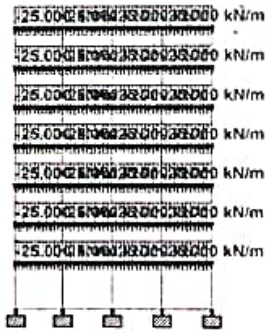


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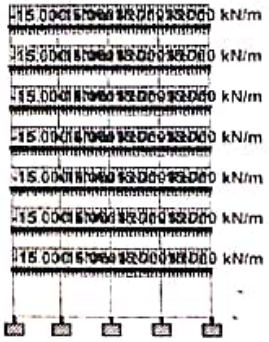


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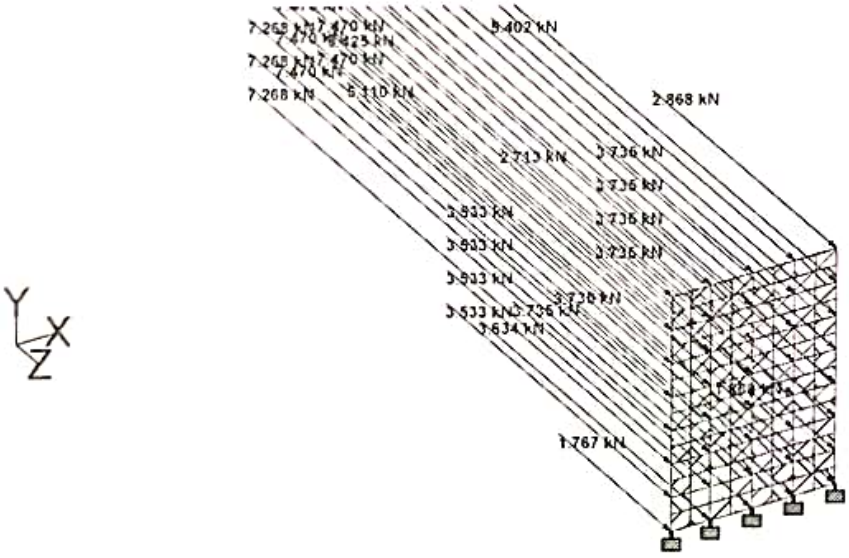
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Job Title THE PROPOSED CONSTRUCTION OF GROUP HOUSING DEVELOPMENT COMPRISING 2	Ref		
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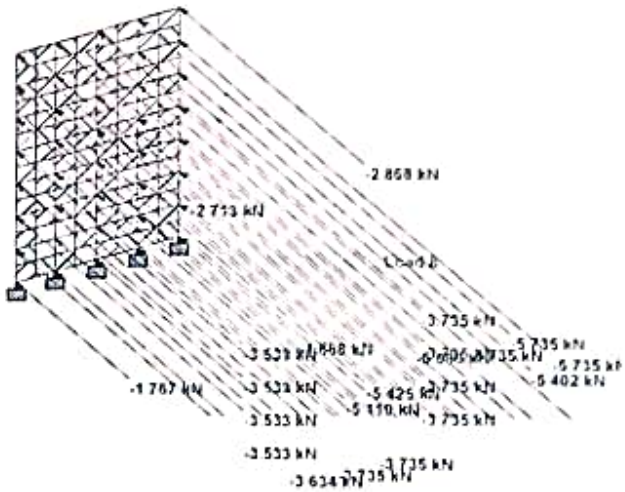
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Load 7

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