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04-09-2024

CERTIFICATE

It is certified that the Proposed Construction of Group Development comprising 17 Blocks; combined basement floor for block A to D; Block A to H, J to N, P & Q - Stilt Floor + 5 Floors (Height -18.30m) Residential with 655 Dwelling Units; Commercial Block - Basement Floor + Ground Floor + 2 Floors (Height -13.26m); Amenity Block -Basement Floor (Part) + Ground Floor + 3 Floors (Height -16.60m) at Bharaniputhur Main Road Kolathuvancherry, Chennai 600056 comprised in S.Nos. 133/1A, 134/2, 136/1, 136/2A, 136/2B, 137,138,139,140, 141/1A1, 141/1B & 141/2 of Kolathuvancherry Village within the limits of Kundrathur Panchayat Union 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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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

04-09-2024

THE PROPOSED CONSTRUCTION OF GROUP DEVELOPMENT COMPRISING 17 BLOCKS; COMBINED BASEMENT FLOOR FOR BLOCK A TO D; BLOCK A TO H, J TO N, P & Q - STILT FLOOR + 5 FLOORS (HEIGHT -18.30M) RESIDENTIAL WITH 655 DWELLING UNITS; COMMERCIAL BLOCK - BASEMENT FLOOR + GROUND FLOOR + 2 FLOORS (HEIGHT -13.26M); AMENITY BLOCK -BASEMENT FLOOR (PART) + GROUND FLOOR + 3 FLOORS (HEIGHT -16.60M) AT BHARANIPUTHUR MAIN ROAD KOLATHUVANCHERRY, CHENNAI 600056 COMPRISED IN S.NOS. 133/1A, 134/2, 136/1, 136/2A, 136/2B, 137,138,139,140, 141/1A1, 141/1B & 141/2 OF KOLATHUVANCHERRY VILLAGE WITHIN THE LIMITS OF KUNDRATHUR PANCHAYAT UNION.

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 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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    3. JOB NAME THE PROPOSED CONSTRUCTION OF GROUP DEVELOPMENT COMPRISING 17 BLOCKS
    4. *COMBINED BASEMENT FLOOR FOR BLOCK A TO D; BLOCK A TO H, J TO N, P & Q - STILT
    5. *FLOOR + 5 FLOORS (HEIGHT -18.30M) RESIDENTIAL WITH 655 DWELLING UNITS
    6. *COMMERCIAL BLOCK - BASEMENT FLOOR + GROUND FLOOR + 2 FLOORS (HEIGHT -13.26M)
    7. *AMENITY BLOCK -BASEMENT FLOOR (PART) + GROUND FLOOR + 3 FLOORS (HEIGHT -16.60M
    8. *AT BHARANIPUTHUR MAIN ROAD KOLATHUVANCHERRY, CHENNAI 600056 COMPRISED IN S.NOS
    9. *133/1A, 134/2, 136/1, 136/2A, 136/2B, 137,138,139,140, 141/1A1, 141/1B & 141/2
   10. *OF KOLATHUVANCHERRY VILLAGE WITHIN THE LIMITS OF KUNDRATHUR  PANCHAYAT UNION.
   11. ENGINEER NAME SURESH
   12. CHECKER NAME SURESH
   13. APPROVED NAME SURESH
   14. ENGINEER DATE 9/4/2024
   15. CHECKER DATE 9/4/2024
   16. APPROVED DATE 9/4/2024
   17. END JOB INFORMATION
   18. INPUT WIDTH 79
   19. UNIT METER KN
   20. JOINT COORDINATES
   21. 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
   22. 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
   23. 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
   24. 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
   25. 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
   26. 77 -5 14 0; 78 -1.5 14 0; 79 2.2 14 0; 80 5.9 14 0; 81 9.6 14 0; 82 -5 17 0
   27. 83 -1.5 17 0; 84 2.2 17 0; 85 5.9 17 0; 86 9.6 17 0
   28. MEMBER INCIDENCES
   29. 39 1 25; 40 1 26; 41 25 27; 42 26 27; 43 26 28; 44 27 29; 45 28 29; 55 1 36
   30. 56 26 37; 57 28 38; 61 36 37; 62 37 38; 66 36 42; 67 37 43; 68 38 44; 72 42 43
   31. 73 43 44; 96 28 57; 97 29 58; 98 57 58; 99 57 59; 100 38 59; 101 59 60
   32. 102 44 60; 107 57 63; 108 58 64; 109 63 64; 110 63 65; 111 59 65; 112 65 66
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   35. 127 73 74; 128 70 75; 129 74 75; 130 71 76; 131 75 76; 132 72 77; 133 73 78
   36. 134 74 79; 135 77 78; 136 78 79; 137 75 80; 138 79 80; 139 76 81; 140 80 81
   37. 141 77 82; 142 78 83; 143 79 84; 144 82 83; 145 83 84; 146 80 85; 147 84 85
   38. 148 81 86; 149 85 86
```

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STAAD SPACE -- PAGE NO. 2

```
39. DEFINE MATERIAL START
40. ISOTROPIC CONCRETE
41. E 2.17185E+07
42. POISSON 0.17
43. DENSITY 23.5616
44. ALPHA 1E-05
45. DAMP 0.05
46. END DEFINE MATERIAL
47. MEMBER PROPERTY INDIAN
48. 39 42 45 55 TO 57 66 TO 68 98 99 101 109 110 112 114 TO 116 119 121 -
49. 123 TO 125 128 130 132 TO 134 137 139 141 TO 143 146 -
50. 148 PRIS YD 0.8 ZD 0.3
51. 40 41 43 44 61 62 72 73 96 97 100 102 107 108 111 113 117 118 120 122 126 -
52. 127 129 131 135 136 138 140 144 145 147 149 PRIS YD 0.6 ZD 0.2
53. CONSTANTS
54. MATERIAL CONCRETE ALL
55. SUPPORTS
56. 25 27 29 58 64 FIXED
57. DEFINE 1893 LOAD
58. ZONE 0.16 RF 3 I 1 SS 2 ST 1 DM 0.5
59. MEMBER WEIGHT
60. 39 TO 45 55 TO 57 61 62 66 TO 68 72 73 96 TO 102 107 TO 149 UNI -14.5
61. 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.

62. TYPE 1
63. INT 0.673 1.03335 1.3537 1.65375 HEIG  10  30  50  100
64. EXP 1 JOINT 1 25 TO 29 36 TO 38 42 TO 44 57 TO 60 63 TO 86
65. LOAD 1 LOADTYPE NONE  TITLE SLX1
66. 1893 LOAD X 1
67. LOAD 2 LOADTYPE NONE  TITLE SLZ1
68. 1893 LOAD Z 1
69. LOAD 3 LOADTYPE DEAD  TITLE DL
70. SELFWEIGHT Y -1
71. MEMBER LOAD
72. 40 43 61 62 72 73 96 100 102 107 111 113 117 118 120 122 126 127 129 131 135 -
73. 136 138 140 144 145 147 149 UNI GY -25
74. LOAD 4 LOADTYPE LIVE  TITLE LL
75. MEMBER LOAD
76. 40 43 61 62 72 73 96 100 102 107 111 113 117 118 120 122 126 127 129 131 135 -
77. 136 138 140 144 145 147 149 UNI GY -15
78. LOAD 7 LOADTYPE WIND  TITLE WLZ1
79. WIND LOAD Z 1 TYPE 1
80. LOAD 8 LOADTYPE WIND  TITLE WLZ2
```

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STAAD SPACE -- PAGE NO. 3

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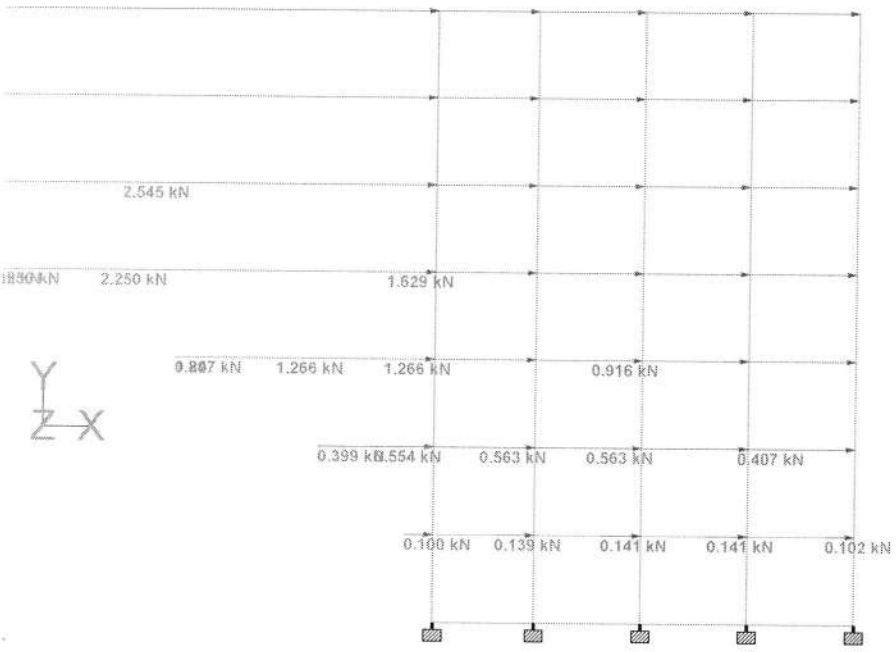
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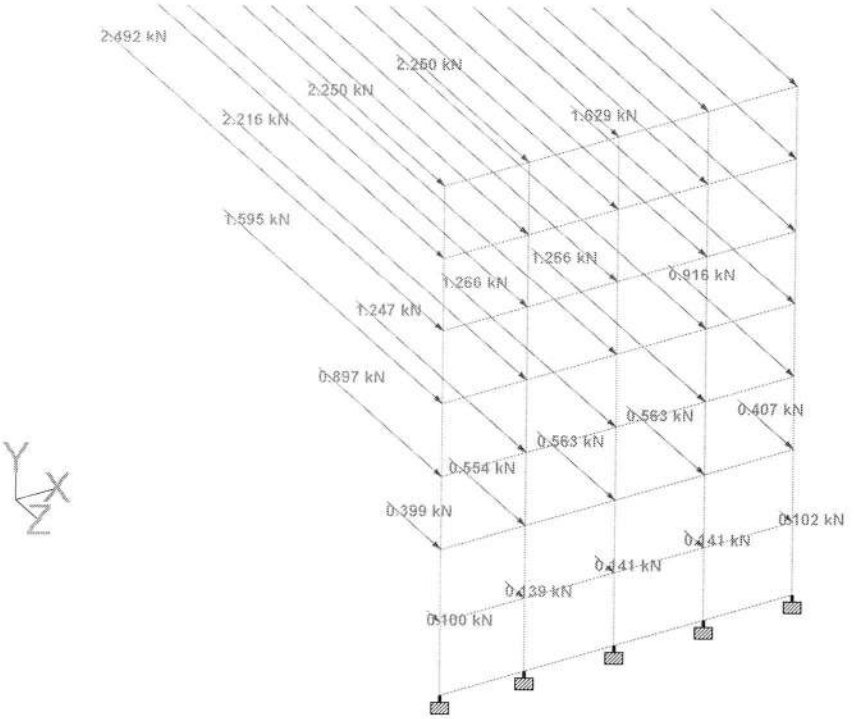
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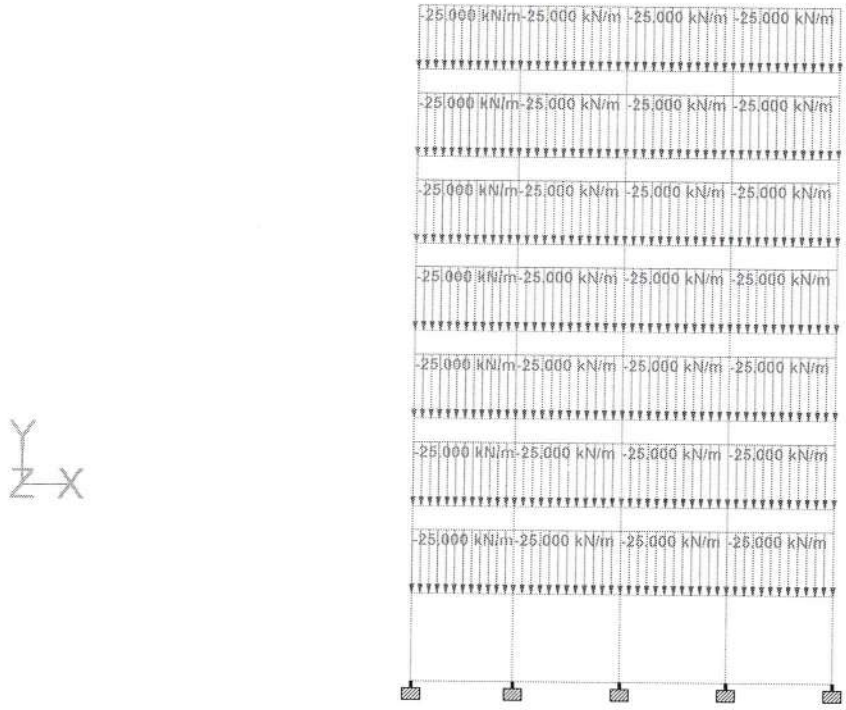
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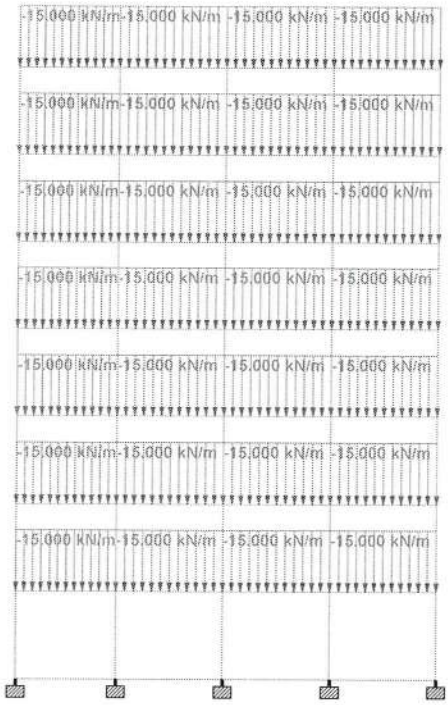


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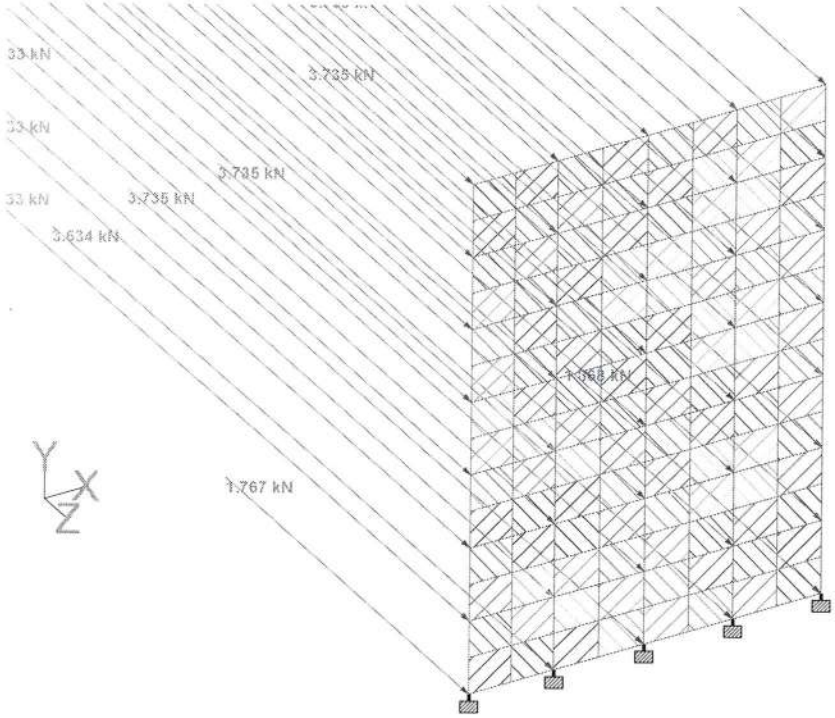
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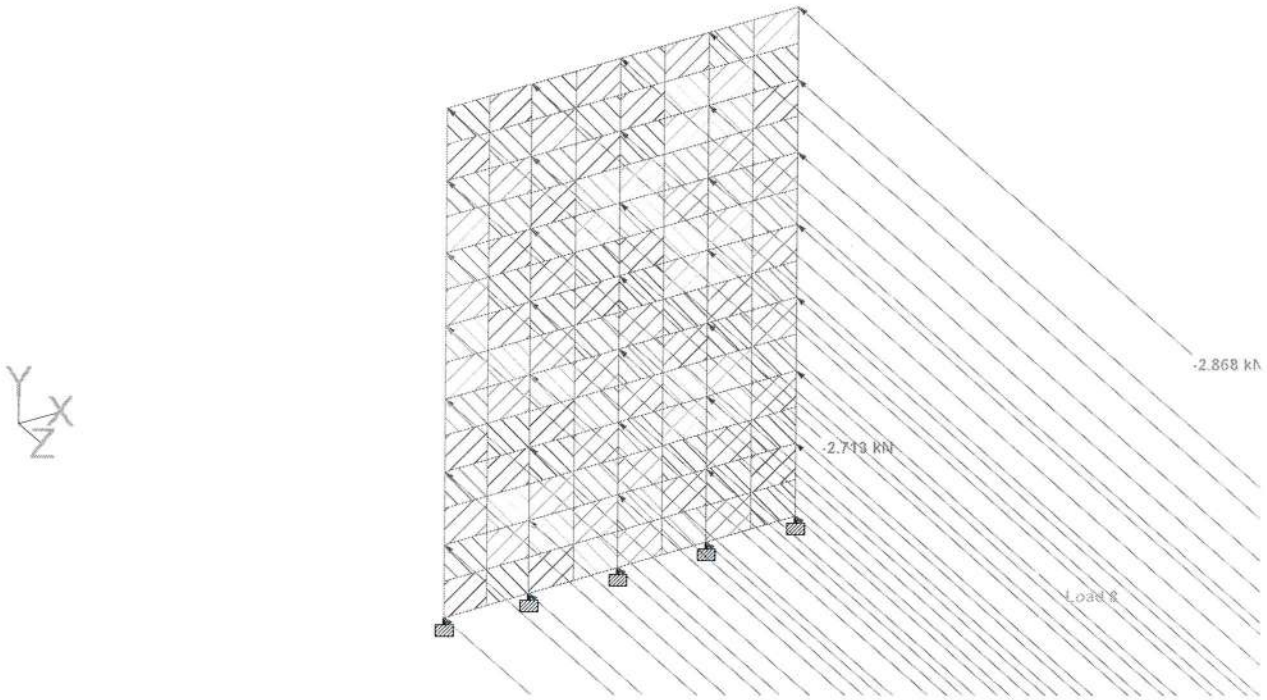
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	By Suresh	Date 9/4/2024	Chd Suresh
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Load 7

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	Part		
Job Title THE PROPOSED CONSTRUCTION OF GROUP DEVELOPMENT COMPRISING 17 BLOCKS	Ref		
	By Suresh	Date 9/4/2024	Chd Suresh
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