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THE PROPOSED CONSTRUCTION OF STILT FLOOR + 5 FLOORS RESIDENTIAL BUILDING WITH 15 DWELLING UNITS AVAILING PREMIUM FSI AT NEW DOOR NO: 9, OLD DOOR NO: 14, ANNA AVENUE, ADYAR, CHENNAI - 600 020. COMPRISED IN T.S.NOS: 46 / 4 & 46 / 27, IN BLOCK NO: 16, PALLIPATTU VILLAGE, VELACHERY TALUK, CHENNAI DISTRICT. 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 STAAD Pro V8i.

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
5. I.S.800

2.0 BASIC CIVIL DESIGN LOADS

2.0 DEAD LOADS & LIVE LOADS

Typical slab dead load is calculated as follows

Residential Building

Self weight of slab	=	2.0kN/m²
Floor finish	=	2.0kN/m²
Live load	=	3.0kN/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	20 mm
Beam	25 mm
Columns	40 mm
Foundations	50 mm

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

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REG No. RSE100392019

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*          STAAD.Pro CONNECT Edition             *
*          Version  22.12.00.142                 *
*          Proprietary Program of                *
*          Bentley Systems, Inc.                 *
*          Date=    AUG  3, 2023                 *
*          Time=    15: 4:15                     *
*                                                *
*  Licensed to: United Consultanta               *
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INPUT FILE: D:\KAVIYARASU R\STABILITY CERTIFICATE\3540 - ANNA AVENUE - ADYAR\PROPOSED STILT + 5 RESIDE.. .STD
    2. ADYAR
    3. START JOB INFORMATION
    4. ENGINEER DATE 03-AUG-23
    5. JOB NAME PLAN SHOWING THE PROPOSED CONSTRUCTION OF STILT FLOOR + 5 -
    6. FLOORS RESIDENTIAL BUILDING WITH 15 DWELLING UNITS AVAILING PREMIUM FSI AT -
    7. *NEW DOOR -NO: 9, OLD DOOR NO: 14,ANNA AVENUE, ADYAR, CHENNAI - 600 020. -
    8. COMPRISED IN -T.S.NOS: 46 / 4 & 46 / 27, IN BLOCK NO: 16, PALLIPATTU VILLAGE -
    9. VELACHERY TALUK, CHENNAI DISTRICT.GREATER CHENNAI CORPORATION.
   10. ENGINEER NAME KAVIYARASU R
   11. CHECKER NAME ALEX JACOB
   12. APPROVED NAME ALEX JACOB
   13. CHECKER DATE 8/3/2023
   14. APPROVED DATE 8/3/2023
   15. END JOB INFORMATION
   16. INPUT WIDTH 79
   17. UNIT METER KN
   18. JOINT COORDINATES
   19. 1 0 0 0; 2 3 0 0; 3 8.4 0 0; 4 12 0 0; 5 15.9 0 0; 6 19.105 0 0; 7 25.14 0 0
   20. 8 28.69 0 0; 9 34.715 0 0; 10 0 3 0; 11 3 3 0; 12 8.4 3 0; 13 12 3 0
   21. 14 15.9 3 0; 15 19.105 3 0; 16 25.14 3 0; 17 28.69 3 0; 18 34.715 3 0
   22. 19 0 6 0; 20 3 6 0; 21 8.4 6 0; 22 12 6 0; 23 15.9 6 0; 24 19.105 6 0
   23. 25 25.14 6 0; 26 28.69 6 0; 27 34.715 6 0; 28 0 9 0; 29 3 9 0; 30 8.4 9 0
   24. 31 12 9 0; 32 15.9 9 0; 33 19.105 9 0; 34 25.14 9 0; 35 28.69 9 0
   25. 36 34.715 9 0; 37 0 12 0; 38 3 12 0; 39 8.4 12 0; 40 12 12 0; 41 15.9 12 0
   26. 42 19.105 12 0; 43 25.14 12 0; 44 28.69 12 0; 45 34.715 12 0; 46 0 15 0
   27. 47 3 15 0; 48 8.4 15 0; 49 12 15 0; 50 15.9 15 0; 51 19.105 15 0
   28. 52 25.14 15 0; 53 28.69 15 0; 54 34.715 15 0; 55 0 18 0; 56 3 18 0
   29. 57 8.4 18 0; 58 12 18 0; 59 15.9 18 0; 60 19.105 18 0; 61 25.14 18 0
   30. 62 28.69 18 0; 63 34.715 18 0
   31. MEMBER INCIDENCES
   32. 9 1 10; 10 2 11; 11 3 12; 12 4 13; 13 5 14; 14 6 15; 15 7 16; 16 8 17; 17 9 18
   33. 18 10 19; 19 11 20; 20 12 21; 21 13 22; 22 14 23; 23 15 24; 24 16 25; 25 17 26
   34. 26 18 27; 27 19 28; 28 20 29; 29 21 30; 30 22 31; 31 23 32; 32 24 33; 33 25 34
   35. 34 26 35; 35 27 36; 36 28 37; 37 29 38; 38 30 39; 39 31 40; 40 32 41; 41 33 42
   36. 42 34 43; 43 35 44; 44 36 45; 45 37 46; 46 38 47; 47 39 48; 48 40 49; 49 41 50
   37. 50 42 51; 51 43 52; 52 44 53; 53 45 54; 54 46 55; 55 47 56; 56 48 57; 57 49 58
   38. 58 50 59; 59 51 60; 60 52 61; 61 53 62; 62 54 63; 63 10 11; 64 11 12; 65 12 13
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PLAN SHOWING THE PROPOSED CONSTRUCTION RESIDENTIAL BUILD -- PAGE NO. 2

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39. 66 13 14; 67 14 15; 68 15 16; 69 16 17; 70 17 18; 71 19 20; 72 20 21; 73 21 22
40. 74 22 23; 75 23 24; 76 24 25; 77 25 26; 78 26 27; 79 28 29; 80 29 30; 81 30 31
41. 82 31 32; 83 32 33; 84 33 34; 85 34 35; 86 35 36; 87 37 38; 88 38 39; 89 39 40
42. 90 40 41; 91 41 42; 92 42 43; 93 43 44; 94 44 45; 95 46 47; 96 47 48; 97 48 49
43. 98 49 50; 99 50 51; 100 51 52; 101 52 53; 102 53 54; 103 55 56; 104 56 57
44. 105 57 58; 106 58 59; 107 59 60; 108 60 61; 109 61 62; 110 62 63
45. DEFINE MATERIAL START
46. ISOTROPIC CONCRETE
47. E 2.17185E+07
48. POISSON 0.17
49. DENSITY 23.5616
50. ALPHA 1E-05
51. DAMP 0.05
52. G 9.28139E+06
53. TYPE CONCRETE
54. STRENGTH FCU 27579
55. END DEFINE MATERIAL
56. MEMBER PROPERTY
57. 9 10 14 TO 17 PRIS YD 0.6 ZD 0.3
58. 11 TO 13 18 TO 62 PRIS YD 0.6 ZD 0.2
59. 63 TO 110 PRIS YD 0.6 ZD 0.2
60. CONSTANTS
61. MATERIAL CONCRETE ALL
62. SUPPORTS
63. 1 TO 9 FIXED
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 WIND 1
66. <! STAAD PRO GENERATED DATA DO NOT MODIFY !!!
67. IS875-2015:PARAMS 0 0 0 0.000 0.000 5.000 0 50.000 0 1.000 0 0 1.000 2 1.000 -
68. 1.000 0 0.000 0.000 0.000 0 0 0 1.000 0 0 0.200 1.000 0 1.000 1.000 1.000
69. !> END GENERATED DATA BLOCK
70. INT 1 1 1.653 1.705 HEIG  5  10  15  18
71. DEFINE IS1893 2016 LOAD
72. ZONE 0.16 RF 2.5 I 1.2 SS 2 ST 1 DM 0.05 PX 0.65 PZ 0.65
73. SELFWEIGHT -1
74. MEMBER WEIGHT
75. 63 TO 67 69 71 TO 75 77 79 TO 83 85 87 TO 91 93 95 TO 99 101 103 TO 107 -
76. 109 UNI -10 0 0
77. 68 70 76 78 84 86 92 94 100 102 108 110 UNI -9.6 0 0
78. 63 TO 110 UNI -9.6 0 0
79. LOAD 1 LOADTYPE SEISMIC-H  TITLE EQ X
80. 1893 LOAD X 1
81. LOAD 2 LOADTYPE SEISMIC-H  TITLE -EQ X
82. 1893 LOAD X -1.
83. LOAD 3 LOADTYPE SEISMIC-H  TITLE EQ Z
```

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PLAN SHOWING THE PROPOSED CONSTRUCTION RESIDENTIAL BUILD -- PAGE NO. 3

```
 84. 1893 LOAD Z 1
 85. LOAD 4 LOADTYPE SEISMIC-H  TITLE - EQ Z
 86. 1893 LOAD Z -1.
 87. LOAD 5 LOADTYPE DEAD  TITLE DL
 88. SELFWEIGHT Y -1 LIST ALL
 89. MEMBER LOAD
 90. 63 TO 67 69 71 TO 75 77 79 TO 83 85 87 TO 91 93 95 TO 99 101 103 TO 107 -
 91. 109 UNI GY -10
 92. 68 70 76 78 84 86 92 94 100 102 108 110 UNI GY -9.6
 93. LOAD 6 LOADTYPE LIVE  TITLE LL
 94. MEMBER LOAD
 95. 63 TO 110 UNI GY -9.6
 96. LOAD 7 LOADTYPE WIND  TITLE WL Z
 97. WIND LOAD Z 1 TYPE 1
 98. LOAD 8 LOADTYPE WIND  TITLE -WL Z
 99. WIND LOAD -Z -1 TYPE 1
100. LOAD COMB 9 1.5(DL+LL)
101. 5 1.5 6 1.5
102. LOAD COMB 10 1.2(DL+LL+EQX)
103. 5 1.2 6 1.2 1 1.2
104. LOAD COMB 11 1.2(DL+LL-EQX)
105. 5 1.2 6 1.2 2 1.2
106. LOAD COMB 12 1.2(DL+LL+EQZ)
107. 6 1.2 5 1.2 3 1.2
108. LOAD COMB 13 1.2(DL+LL-EQZ)
109. 5 1.2 6 1.2 4 1.2
110. LOAD COMB 14 1.5(DL+EQX)
111. 5 1.5 1 1.5
112. LOAD COMB 15 1.5(DL-EQX)
113. 5 1.5 2 1.5
114. LOAD COMB 16 1.5(DL+EQZ)
115. 5 1.5 3 1.5
116. LOAD COMB 17 1.5(DL-EQZ)
117. 5 1.5 4 1.5
118. LOAD COMB 18 0.9DL+1.5EQX
119. 5 0.9 1 1.5
120. LOAD COMB 19 0.9DL-1.5EQX
121. 5 0.9 2 1.5
122. LOAD COMB 20 0.9DL+1.5EQZ
123. 5 0.9 3 1.5
124. LOAD COMB 21 0.9DL-1.5EQZ
125. 5 0.9 4 1.5
126. LOAD COMB 22 1.2(DL+LL+WLZ)
127. 5 1.2 6 1.2 7 1.2
```



PLAN SHOWING THE PROPOSED CONSTRUCTION RESIDENTIAL BUILD -- PAGE NO. 4

```
128. LOAD COMB 23 1.2(DL+LL-WLZ)
129. 5 1.2 6 1.2 8 1.2
130. LOAD COMB 24 1.5(DL+WLZ)
131. 5 1.5 7 1.5
132. LOAD COMB 25 1.5(DL-WLZ)
133. 5 1.5 8 1.5
134. LOAD COMB 26 0.9DL+1.5WLZ
135. 5 0.9 7 1.5
136. LOAD COMB 27 0.9DL-1.5WLZ
137. 5 0.9 8 1.5
138. PERFORM ANALYSIS
```

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

NUMBER OF JOINTS	63	NUMBER OF MEMBERS	102
NUMBER OF PLATES	0	NUMBER OF SOLIDS	0
NUMBER OF SURFACES	0	NUMBER OF SUPPORTS	9

Using 64-bit analysis engine.

SOLVER USED IS THE IN-CORE ADVANCED MATH SOLVER

TOTAL PRIMARY LOAD CASES = 8, TOTAL DEGREES OF FREEDOM = 324
TOTAL LOAD COMBINATION CASES = 19 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.

***NOTE: Equivalent Static Analysis should preferably be performed for regular structures with approximate natural time period less than 0.4s and regular structures with height less than 15m in Seismic Zone II. Ref Cl.6.4.3 and 7.6
BASE SHEAR AND TIME PERIOD IN X

```
*********************************************************
* UNITS - KN    METE                                    *
* TIME PERIOD FOR X 1893 LOADING =    0.65000 SEC       *
* SA/G PER 1893=    2.092, LOAD FACTOR= 1.000           *
* VB PER 1893=    0.0803 X     2981.14=     239.52 KN   *
* VB Act Based on Clause 7.2.1 =      239.52 KN         *
* VB Min based on Clause 7.2.2 =       32.79 KN         *
*                                                       *
*********************************************************
```

***NOTE: Equivalent Static Analysis should preferably be performed for regular structures with approximate natural time period less than 0.4s and regular structures with height less than 15m in Seismic Zone II. Ref Cl.6.4.3 and 7.6

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PLAN SHOWING THE PROPOSED CONSTRUCTION RESIDENTIAL BUILD -- PAGE NO. 5

BASE SHEAR AND TIME PERIOD IN X

```
*********************************************************
* UNITS - KN    METE                                    *
* TIME PERIOD FOR X 1893 LOADING =    0.65000 SEC       *
* SA/G PER 1893=    2.092, LOAD FACTOR=-1.000           *
* VB PER 1893=    0.0803 X     2981.14=    -239.52 KN   *
* VB Act Based on Clause 7.2.1 =     -239.52 KN         *
* VB Min based on Clause 7.2.2 =      -32.79 KN         *
*                                                       *
*********************************************************
```

***NOTE: Equivalent Static Analysis should preferably be performed for regular structures with approximate natural time period less than 0.4s and regular structures with height less than 15m in Seismic Zone II. Ref Cl.6.4.3 and 7.6

BASE SHEAR AND TIME PERIOD IN Z

```
*********************************************************
* UNITS - KN    METE                                    *
* TIME PERIOD FOR Z 1893 LOADING =    0.65000 SEC       *
* SA/G PER 1893=    2.092, LOAD FACTOR= 1.000           *
* VB PER 1893=    0.0803 X     2981.14=     239.52 KN   *
* VB Act Based on Clause 7.2.1 =      239.52 KN         *
* VB Min based on Clause 7.2.2 =       32.79 KN         *
*                                                       *
*********************************************************
```

***NOTE: Equivalent Static Analysis should preferably be performed for regular structures with approximate natural time period less than 0.4s and regular structures with height less than 15m in Seismic Zone II. Ref Cl.6.4.3 and 7.6

BASE SHEAR AND TIME PERIOD IN Z

```
*********************************************************
* UNITS - KN    METE                                    *
* TIME PERIOD FOR Z 1893 LOADING =    0.65000 SEC       *
* SA/G PER 1893=    2.092, LOAD FACTOR=-1.000           *
* VB PER 1893=    0.0803 X     2981.14=    -239.52 KN   *
* VB Act Based on Clause 7.2.1 =     -239.52 KN         *
* VB Min based on Clause 7.2.2 =      -32.79 KN         *
*                                                       *
*********************************************************
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139. FINISH

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

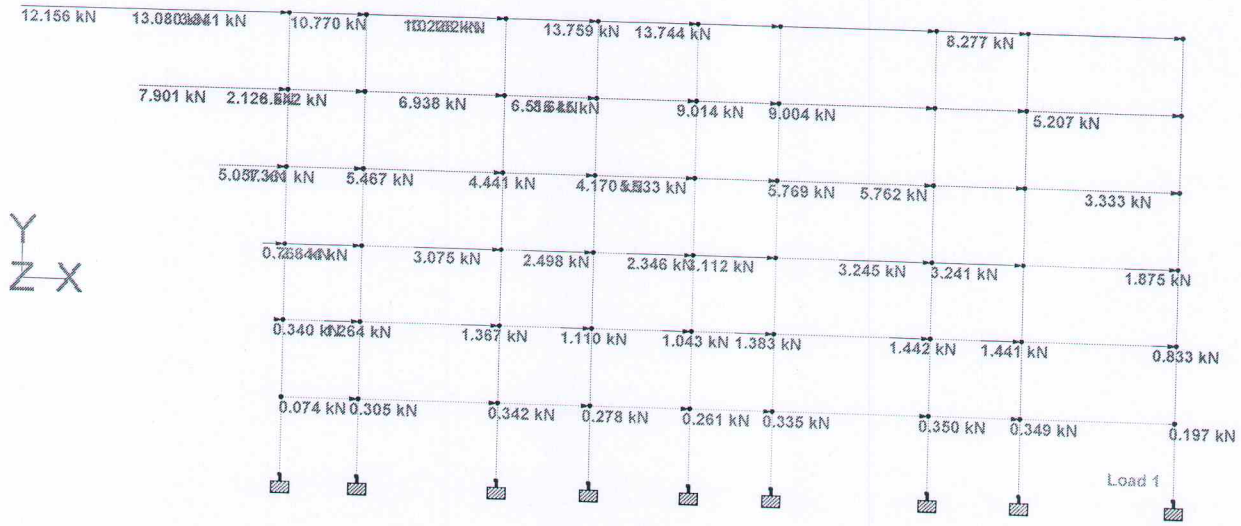
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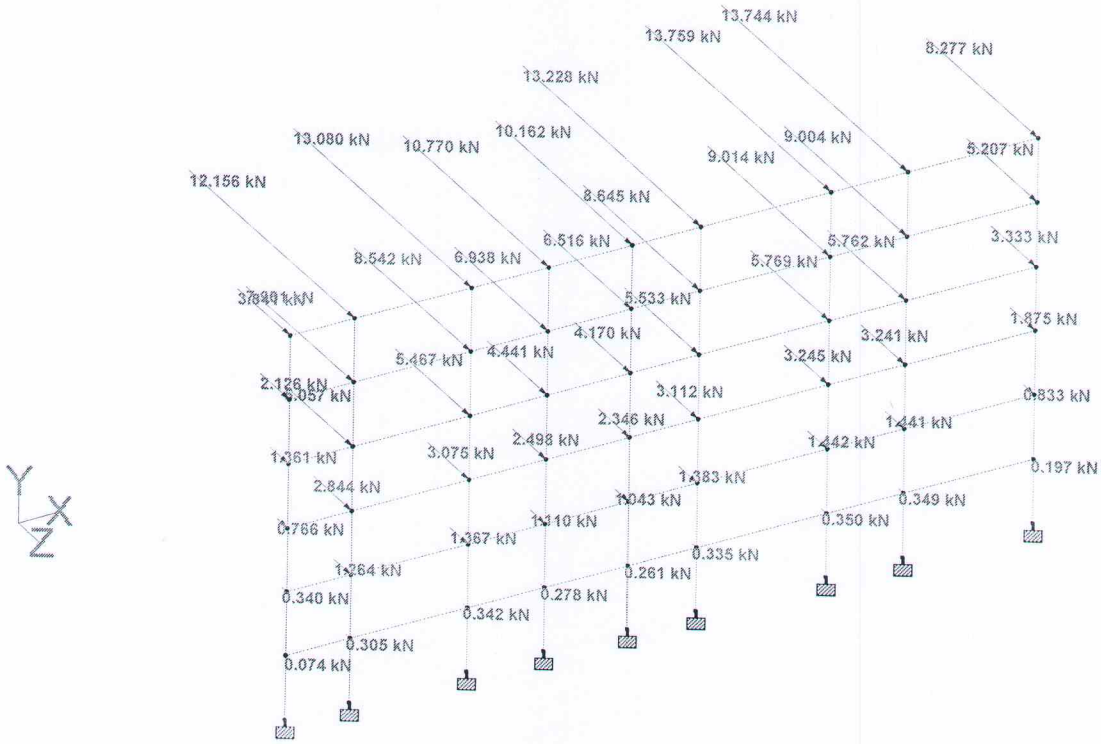
PLAN SHOWING THE PROPOSED CONSTRUCTION RESIDENTIAL BUILD -- PAGE NO. 6


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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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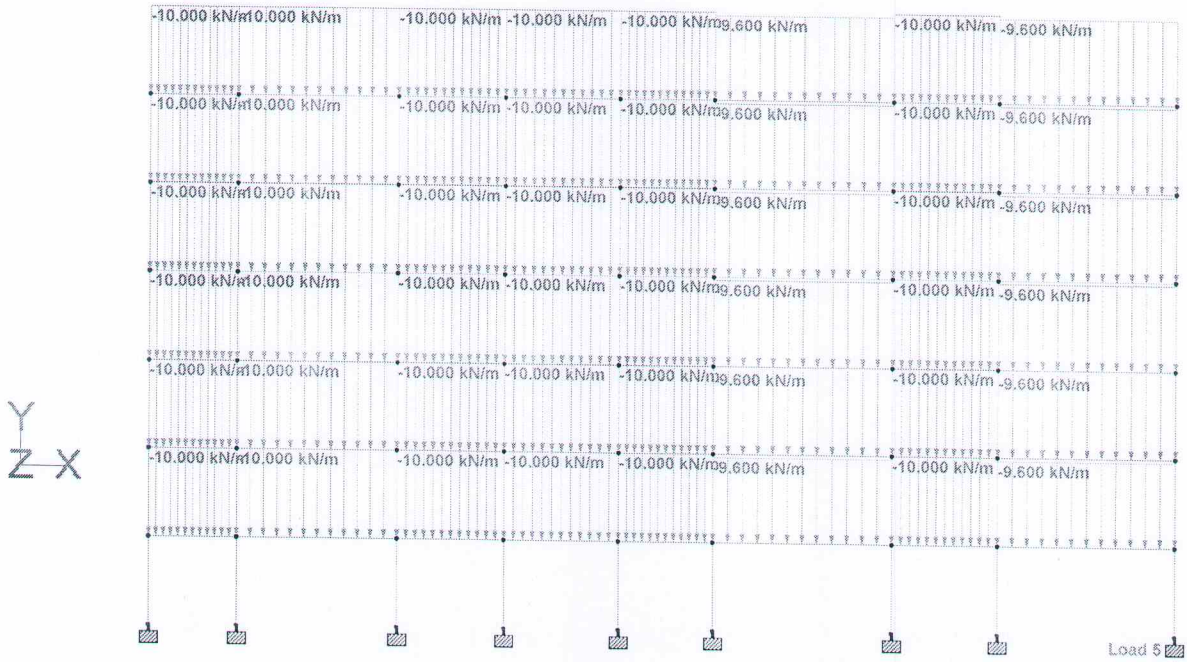


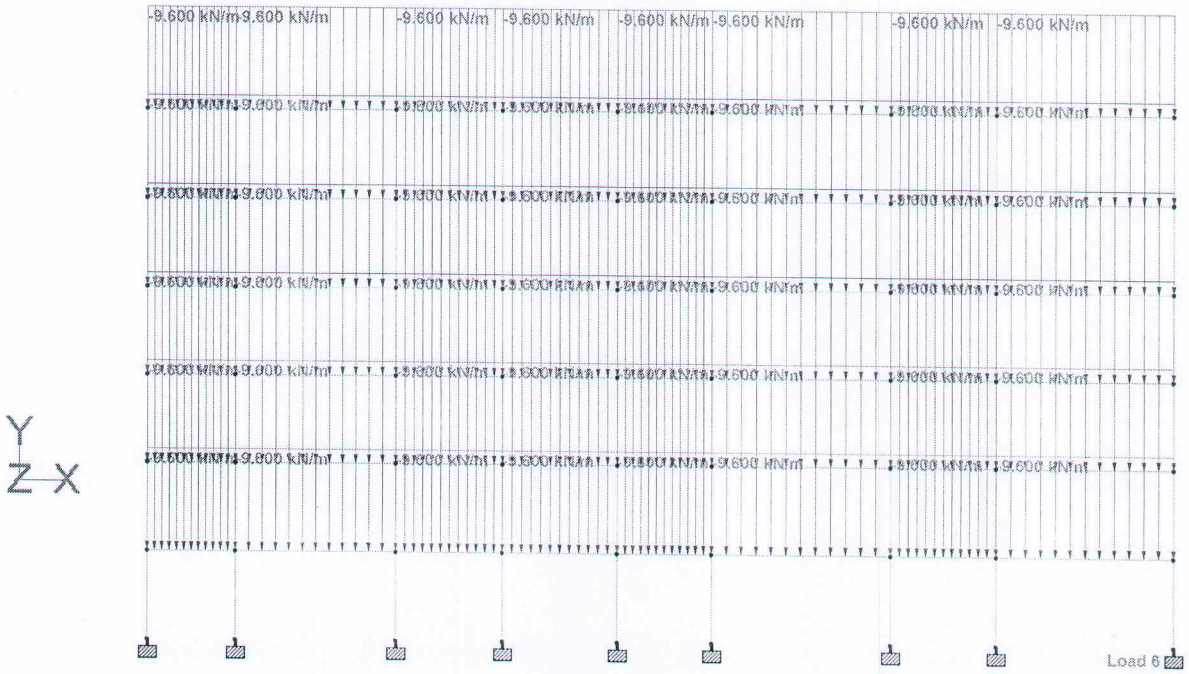
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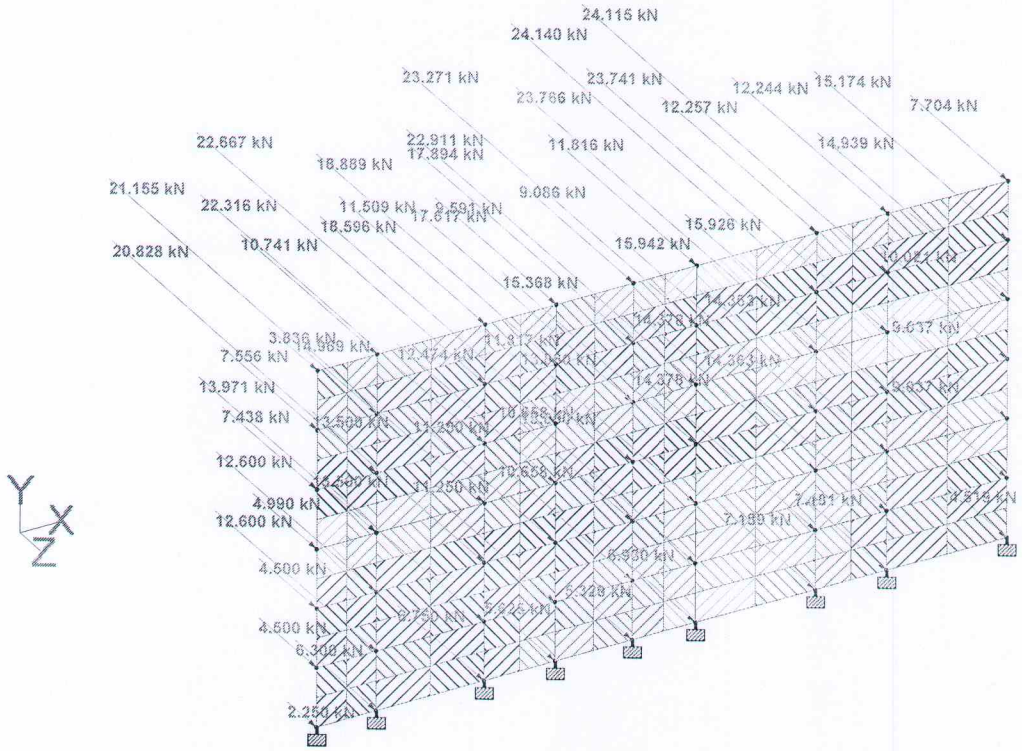
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Load 7

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