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C.KANNAN, M.E. (Structure)
STRUCTURAL ENGINEER

Door .21, plot No. 257- W, Flat No. 2B
"Utopia Apartments" 2nd Floor,
4th Main Road, Indira Nagar,
Chennai- 600 020
Mobile: 9841249815
Email: kannankds2007@gmail.com

21-03-2024

STRUCTURAL STABILITY CERTIFICATE

It is certified that the Proposed Construction Of Pryme Gio Residential Building No. 474 10th East Cross Street, Anna Nagar, Madurai North, Madurai- 625020. Having Ground plus Five upper floors is designed to resist earthquake. Check has been made and found safe and I hereby certify that,

1. The minimum column width is 300 in stilt floor areas
2. The minimum grade of concrete is M25.
3. The design analysis using the code of practice for loading Standards as per IS-875 Part I to III and seismic force as per one code IS 1893, is carried out.

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

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Structural Engineer,
DTCP Reg. No. CGLRGN/SE/Gr.I/19/05/002
Door No: 21, 4th Main Road,
Indira Nagar, Chennai - 600 020.

PROPOSED CONSTRUCTION OF PRYME GIO RESIDENTIAL BUILDING NO. 474 10TH EAST CROSS STREET, ANNA NAGAR, MADURAI NORTH, MADURAI- 625020

GENERAL NOTE ON STRUCTURAL DESIGN.

1.0 GENERAL.

1.1 DESIGN BASIS

The proposed residential building consists of Ground plus Five upper floors.

The design of this building is carried out based on frame analysis using STAAD CONNECT.

1.2 CODES AND STANDARDS

All structural design is carried out conforming to the provisions of National Building Code of India and other relevant Indian Codes and Standards.

1. I.S. 456 - 2000
2. I.S. 875 - Part I to III
3. I.S.1893 - 2016

2.0 BASIC CIVIL DESIGN LOADS

2.1 DEAD LOADS & LIVE LOADS

Typical slab dead load is calculated as follows

Self weight of slab	=	3.25kN/m²
Floor finish	=	2.0kN/m²
Live load	=	2.0kN/m²
		7.25kN/m²

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3.0 SOIL DETAILS

Based on soil test report Shallow Foundation is adopted.

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	1.2DL+1.2LL+1.2WL	DL+LL+WL
Or	Or	or
DL+LL+EL	1.2DL+1.2LL+1.2EL	DL+LL+EL

4.3 **MINIMUM COVER**

Slab	15 mm
Beam	25 mm
Columns	40 mm
Foundations	50 mm

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

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```
**************************************************
*                                                *
*          STAAD.Pro CONNECT Edition             *
*          Version  22.12.00.142                 *
*          Proprietary Program of                *
*          Bentley Systems, Inc.                 *
*          Date=    MAR 21, 2024                 *
*          Time=    15: 4:12                     *
*                                                *
*  Licensed to: C.Kannan                         *
**************************************************
```

```
    1. STAAD SPACE
INPUT FILE: D:\AGAN\STABILITY\Anna Nagar-Madurai\Staad\Anna nagar -Madu.. .STD
    2. START JOB INFORMATION
    3. ENGINEER DATE 21-MAR-24
    4. JOB NAME PROPOSED CONSTRUCTION OF PRYME GIO RESIDENTIAL BUILDING NO. 474 -
    5. 10TH EAST CROSS STREET, ANNA NAGAR, MADURAI NORTH, MADURAI- 625020
    6. ENGINEER NAME KANNAN
    7. CHECKER NAME KANNAN
    8. APPROVED NAME KANNAN
    9. CHECKER DATE 3/21/2024
   10. APPROVED DATE 3/21/2024
   11. END JOB INFORMATION
   12. INPUT WIDTH 79
   13. SET NL 250
   14. UNIT MMS KN
   15. JOINT COORDINATES
   16. 1 0 0 0; 2 0 0 3600; 3 0 0 6901.08; 4 0 0 10500; 5 0 3000 0; 6 0 3000 3600
   17. 7 0 3000 6901.08; 8 0 3000 10500; 9 0 6000 0; 10 0 6000 3600
   18. 11 0 6000 6901.08; 12 0 6000 10500; 13 0 9000 0; 14 0 9000 3600
   19. 15 0 9000 6901.08; 16 0 9000 10500; 17 0 12000 0; 18 0 12000 3600
   20. 19 0 12000 6901.08; 20 0 12000 10500; 21 0 15000 0; 22 0 15000 3600
   21. 23 0 15000 6901.08; 24 0 15000 10500; 25 0 18000 0; 26 0 18000 3600
   22. 27 0 18000 6901.08; 28 0 18000 10500; 29 0 -2000 0; 30 0 -2000 3600
   23. 31 0 -2000 6901.08; 32 0 -2000 10500
   24. MEMBER INCIDENCES
   25. 1 1 2; 2 2 3; 3 3 4; 4 5 6; 5 6 7; 6 7 8; 7 9 10; 8 10 11; 9 11 12; 10 13 14
   26. 11 14 15; 12 15 16; 13 17 18; 14 18 19; 15 19 20; 16 21 22; 17 22 23; 18 23 24
   27. 19 25 26; 20 26 27; 21 27 28; 22 29 1; 23 1 5; 24 5 9; 25 9 13; 26 13 17
   28. 27 17 21; 28 21 25; 29 30 2; 30 2 6; 31 6 10; 32 10 14; 33 14 18; 34 18 22
   29. 35 22 26; 36 31 3; 37 3 7; 38 7 11; 39 11 15; 40 15 19; 41 19 23; 42 23 27
   30. 43 32 4; 44 4 8; 45 8 12; 46 12 16; 47 16 20; 48 20 24; 49 24 28
   31. UNIT METER KN
   32. DEFINE MATERIAL START
   33. ISOTROPIC CONCRETE
   34. E 2.17185E+07
   35. POISSON 0.17
   36. DENSITY 23.5616
   37. ALPHA 1E-05
   38. DAMP 0.05
```

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```
39. G 9.28139E+06
40. TYPE CONCRETE
41. STRENGTH FCU 27579
42. END DEFINE MATERIAL
43. MEMBER PROPERTY
44. 22 TO 49 PRIS YD 0.45 ZD 0.2
45. 1 TO 21 PRIS YD 0.45 ZD 0.2
46. CONSTANTS
47. MATERIAL CONCRETE ALL
48. UNIT MMS KN
49. SUPPORTS
50. 29 TO 32 FIXED
51. UNIT METER KN
52. 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.

53. TYPE 1 WIND 1
54. <! STAAD PRO GENERATED DATA DO NOT MODIFY !!!
55. CUSTOM:PARAMS
56. !> END GENERATED DATA BLOCK
57. INT 1.22 1.35 1.48 HEIG  10  15  18
58. EXP 1 JOINT 1 TO 32
59. DEFINE IS1893 2016 LOAD
60. ZONE 0.1 RF 5 I 1.2 SS 1 ST 1 DM 0.05 DT 2
61. SELFWEIGHT 1
62. MEMBER WEIGHT
63. 1 TO 21 UNI 12 0 0
64. 1 TO 21 UNI 25 0 0
65. LOAD 1 LOADTYPE SEISMIC-H  TITLE EQX
66. 1893 LOAD X 1
67. LOAD 2 LOADTYPE SEISMIC-H  TITLE EQX
68. 1893 LOAD X -1.
69. LOAD 3 LOADTYPE SEISMIC-V  TITLE EQZ
70. 1893 LOAD Z 1
71. LOAD 4 LOADTYPE SEISMIC-V  TITLE EQZ
72. 1893 LOAD Z -1.
73. LOAD 5 LOADTYPE WIND  TITLE WIND +X
74. WIND LOAD X 1 TYPE 1
```

STAAD SPACE -- PAGE NO. 3

```
  75. LOAD 6 LOADTYPE WIND  TITLE WIND -X
  76. WIND LOAD -X 1 TYPE 1
  77. LOAD 7 LOADTYPE WIND  TITLE WIND +Z
  78. WIND LOAD Z 1 TYPE 1
*WARNING- NO MEMBERS LOADED FOR A WIND LOAD GENERATION.
  79. LOAD 8 LOADTYPE WIND  TITLE WIND -Z
  80. WIND LOAD -Z 1 TYPE 1
*WARNING- NO MEMBERS LOADED FOR A WIND LOAD GENERATION.
  81. LOAD 9 LOADTYPE LIVE  TITLE L.L
  82. MEMBER LOAD
  83. 1 TO 21 UNI GY -12
  84. LOAD 10 LOADTYPE DEAD  TITLE D.L
  85. SELFWEIGHT Y -1
  86. MEMBER LOAD
  87. 1 TO 21 UNI GY -25
  88. LOAD COMB 11 1.5(DL+IL)
  89. 9 1.5 10 1.5
  90. LOAD COMB 12 1.2(DL+IL+ELX)
  91. 9 1.5 10 1.2 1 1.2
  92. LOAD COMB 13 1.2(DL+IL-ELX)
  93. 9 1.2 10 1.2 2 1.2
  94. LOAD COMB 14 1.2(DL+IL+ELZ)
  95. 9 1.2 10 1.2 3 1.2
  96. LOAD COMB 15 1.2(DL+IL-ELZ)
  97. 9 1.2 10 1.2 4 1.2
  98. LOAD COMB 16 1.2(DL+IL+WLX)
  99. 9 1.2 10 1.2 5 1.2
 100. LOAD COMB 17 1.2(DL+IL-WLX)
 101. 10 1.2 6 1.2
 102. LOAD COMB 18 1.2(DL+IL+WLZ)
 103. 9 1.2 10 1.2 7 1.2
 104. LOAD COMB 19 1.2(DL+IL-WLZ)
 105. 9 1.2 10 1.2 8 1.2
 106. LOAD COMB 20 1.5(DL+ELX)
 107. 9 1.5 10 1.5 1 1.5
 108. LOAD COMB 21 1.5(DL-ELX)
 109. 9 1.5 10 1.5 2 1.5
 110. LOAD COMB 22 1.5(DL+ELZ)
 111. 9 1.5 10 1.5 3 1.5
 112. LOAD COMB 23 1.5(DL-ELZ)
 113. 10 1.5 4 1.5
 114. LOAD COMB 24 1.5(DL+WLX)
 115. 10 1.5 5 1.5
 116. LOAD COMB 25 1.5(DL-WLX)
 117. 10 1.5 6 1.5
 118. LOAD COMB 26 1.5(DL+WLZ)
 119. 10 1.5 7 1.5
```

```
120. LOAD COMB 27 1.5(DL-WLZ)
121. 10 1.5 8 1.5
122. LOAD COMB 28 0.9 DL+ELX
123. 10 0.9 1 1.5
124. LOAD COMB 29 0.9 DL-ELX
125. 10 0.9 2 1.5
126. LOAD COMB 30 0.9 DL+ELZ
127. 10 0.9 3 1.5
128. LOAD COMB 31 0.9 DL-ELZ
129. 10 0.9 4 1.5
130. LOAD COMB 32 0.9 DL+WLX
131. 10 0.9 5 1.5
132. LOAD COMB 33 0.9 DL-WLX
133. 10 0.9 6 1.5
134. LOAD COMB 34 0.9 DL+WLZ
135. 10 0.9 7 1.5
136. LOAD COMB 35 0.9 DL-WLZ
137. 10 0.9 8 1.5
138. PERFORM ANALYSIS PRINT ALL
```

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

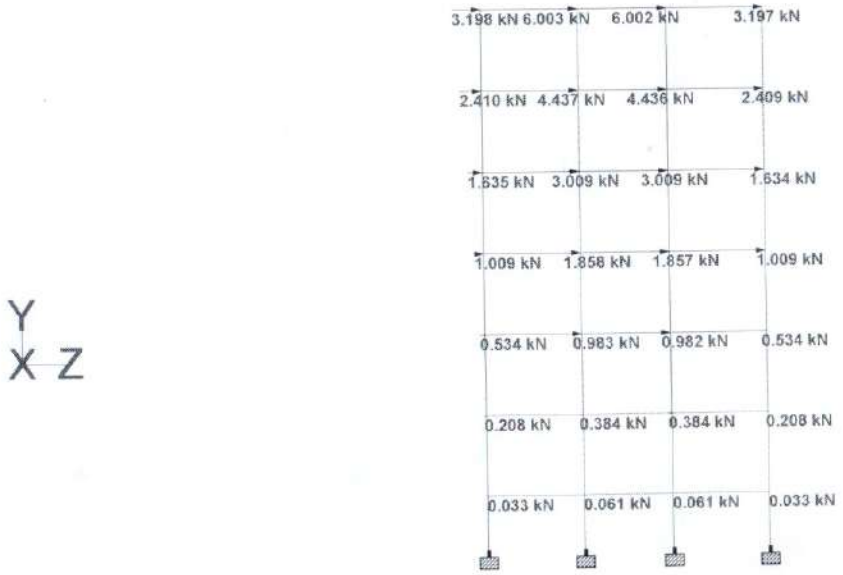
NUMBER OF JOINTS	32	NUMBER OF MEMBERS	49
NUMBER OF PLATES	0	NUMBER OF SOLIDS	0
NUMBER OF SURFACES	0	NUMBER OF SUPPORTS	4

Using 64-bit analysis engine.

SOLVER USED IS THE IN-CORE ADVANCED MATH SOLVER

TOTAL PRIMARY LOAD CASES = 10, TOTAL DEGREES OF FREEDOM = 168
TOTAL LOAD COMBINATION CASES = 25 SO FAR.

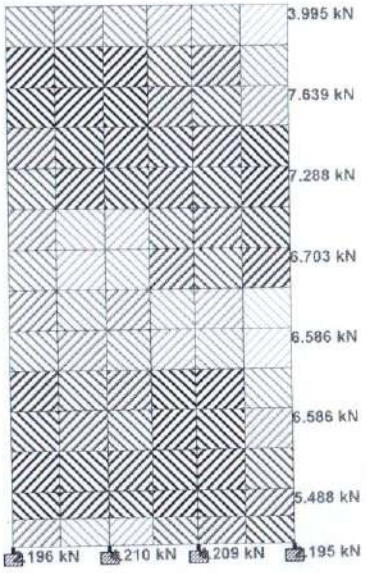
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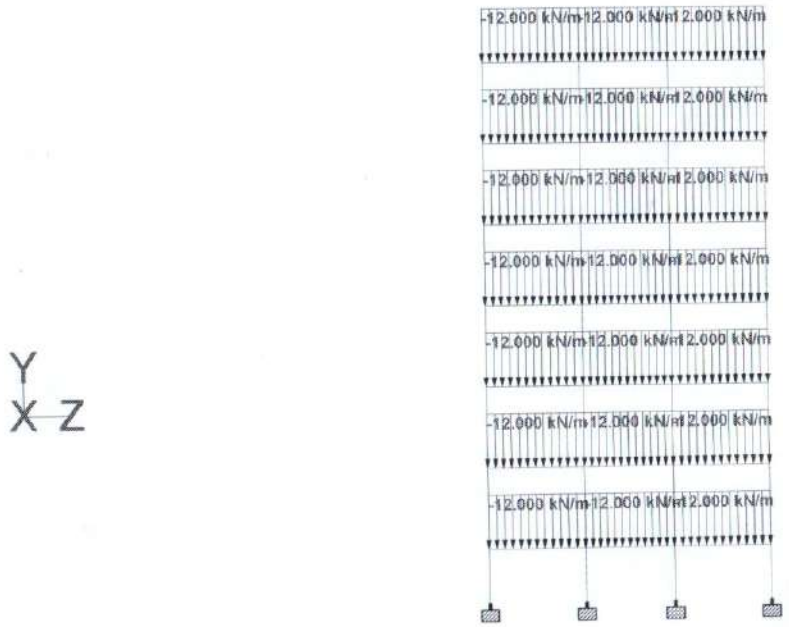
Load 3

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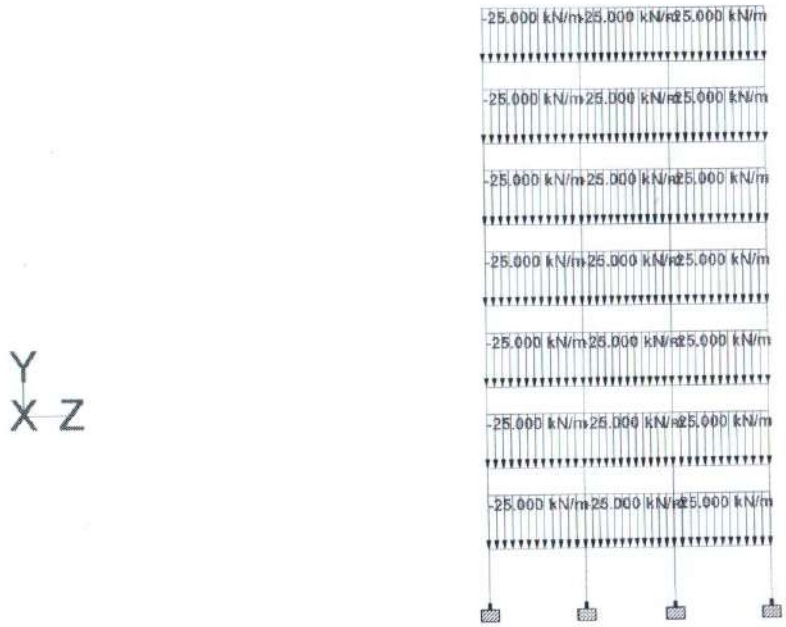

Y
X
Z


3.995 kN
7.639 kN
7.288 kN
6.703 kN
6.586 kN
6.586 kN
5.488 kN
196 kN
210 kN
209 kN
195 kN

Load 5



Load 9



Load 10

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