Verified RealEstate™

Your trusted partner for buying, selling, and managing property, ensuring hassle-free service with 100% transparency.

3/350/2 Mettukuppam,
OMR Thoraipakkam,
Chennai, India

hello@verified.realestate
+91 9996 12 9996

**Official Property Record**

Digitally Verified Record - Powered by Verified RealEstate™



**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

**01-07-2024**

## STRUCTURAL STABILITY CERTIFICATE

It is certified that the Proposed Residential Building at Plot No. 11C & 11D, Door No. 13 & 15 Murugesan Street, Rangarajapuram, Kodambakkam, Chennai- 600024, Comprised in Old S. No. 4/2 Part T. S. No. 4/22 & 4/23, Block No. 45 Of Puliyur Village Within the Limit Of Greater Chennai Corporation. Having Stilt 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.

C. KANNAN, B.E., M.E, (Structure)
Structural Engineer,
CMDA Reg. No: SE/I/2024/2/0047
Door No: 21, 4th Main Road,
Indira Nagar, Chennai-600 020.

**PROPOSED RESIDENTIAL BUILDING AT PLOT NO. 11C & 11D, DOOR NO. 13 & 15 MURUGESAN STREET, RANGARAJAPURAM, KODAMBAKKAM, CHENNAI- 600024, COMPRISED IN OLD S. NO. 4/2 PART T. S. NO. 4/22 & 4/23, BLOCK NO. 45 OF PULIYUR VILLAGE WITHIN THE LIMIT OF GREATER CHENNAI CORPORATION**

## GENERAL NOTE ON STRUCTURAL DESIGN.

## 1.0 GENERAL.

### 1.1 DESIGN BASIS

The proposed residential building consists of Stilt 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 |

C. KANNAN, B.E., M.E, (Structure)
Structural Engineer,
CMDA Reg. No: SE/I/2024/2/0047
Door No: 21, 4th Main Road,
Indira Nagar, Chennai - 600 020.

## 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<br>Or<br>DL+LL+EL | 1.2DL+1.2LL+1.2WL<br>Or<br>1.2DL+1.2LL+1.2EL | DL+LL+WL<br>or<br>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.

C. KANNAN, B.E., M.E, (Structure)
Structural Engineer,
CMDA Reg. No: SE/I/2024/2/0047
Door No: 21, 4th Main Road,
Indira Nagar, Chennai-600 020.

```
**************************************************
*                                                *
*          STAAD.Pro CONNECT Edition             *
*          Version  22.12.00.142                 *
*          Proprietary Program of                *
*          Bentley Systems, Inc.                 *
*          Date=    JUL 19, 2024                 *
*          Time=    16:14:45                     *
*                                                *
*  Licensed to: C.Kannan                         *
**************************************************
```

```
     1. STAAD SPACE
INPUT FILE: D:\AGAN\3.STABILITY\KCEE-Murugesan Kodambakkam\Staad\KCEE-M.. .STD
     2. START JOB INFORMATION
     3. ENGINEER DATE 7/1/2024
     4. JOB NAME PROPOSED RESIDENTIAL BUILDING AT PLOT NO.11C &11D, DOOR -
     5. NO.13&15,MURUGESAN STREET, RANGARAJAPURAM, KODAMBAKKAM , CHENNAI -600024, -
     6. COMPRISED IN OLD S.NO 4/2 PART, T.S.NO. 4/22&4/23, BLOCK NO. 45 OF PULIYUR -
     7. VILLAGE WITHIN THE LIMIT OF GREATER CHENNAI COPORATION
     8. ENGINEER NAME KANNAN
     9. CHECKER NAME KANNAN
    10. APPROVED NAME KANNAN
    11. CHECKER DATE 7/1/2024
    12. APPROVED DATE 7/1/2024
    13. END JOB INFORMATION
    14. INPUT WIDTH 79
    15. SET NL 250
    16. UNIT INCHES KN
    17. JOINT COORDINATES
    18. 40 0 0 1019.73; 41 177 0 1019.73; 43 284.931 0 1019.73; 108 0 118.11 1019.73
    19. 109 177 118.11 1019.73; 110 284.931 118.11 1019.73; 111 349.5 118.11 1019.73
    20. 161 0 -78.7402 1019.73; 162 177 -78.7402 1019.73; 163 284.931 -78.7402 1019.73
    21. 208 0 236.22 1019.73; 209 177 236.22 1019.73; 210 284.931 236.22 1019.73
    22. 211 349.5 236.22 1019.73; 273 0 354.331 1019.73; 274 177 354.331 1019.73
    23. 275 284.931 354.331 1019.73; 276 349.5 354.331 1019.73; 338 0 472.441 1019.73
    24. 339 177 472.441 1019.73; 340 284.931 472.441 1019.73
    25. 341 349.5 472.441 1019.73; 403 0 590.551 1019.73; 404 177 590.551 1019.73
    26. 405 284.931 590.551 1019.73; 406 349.5 590.551 1019.73; 468 0 708.661 1019.73
    27. 469 177 708.661 1019.73; 470 284.931 708.661 1019.73
    28. 471 349.5 708.661 1019.73; 472 349.5 -0.000234664 1019.73
    29. MEMBER INCIDENCES
    30. 44 40 41; 45 41 43; 135 108 109; 136 109 110; 137 110 111; 245 208 209
    31. 246 209 210; 247 210 211; 335 273 274; 336 274 275; 337 275 276; 425 338 339
    32. 426 339 340; 427 340 341; 515 403 404; 516 404 405; 517 405 406; 605 468 469
    33. 606 469 470; 607 470 471; 773 161 40; 774 40 108; 775 108 208; 776 208 273
    34. 777 273 338; 778 338 403; 779 403 468; 780 162 41; 781 41 109; 782 109 209
    35. 783 209 274; 784 274 339; 785 339 404; 786 404 469; 787 163 43; 788 43 110
    36. 789 110 210; 790 210 275; 791 275 340; 792 340 405; 793 405 470; 794 43 472
    37. SUPPORTS
    38. 161 TO 163 FIXED
```

C. KANNAN, B.E., M.E, (Structure)
Structural Engineer,
CMDA Reg. No: SE/I/2024/2/0047
Door No: 21, 4th Main Road,
Indira Nagar, Chennai-600 020.

```
39. UNIT METER KN
40. DEFINE MATERIAL START
41. ISOTROPIC CONCRETE
42. E 2.17185E+07
43. POISSON 0.17
44. DENSITY 23.5616
45. ALPHA 1E-05
46. DAMP 0.05
47. G 9.28139E+06
48. TYPE CONCRETE
49. STRENGTH FCU 27579
50. END DEFINE MATERIAL
51. MEMBER PROPERTY
52. 773 TO 793 PRIS YD 0.45 ZD 0.23
53. 44 45 135 TO 137 245 TO 247 335 TO 337 425 TO 427 515 TO 517 605 TO 607 -
54. 794 PRIS YD 0.45 ZD 0.23
55. UNIT INCHES KN
56. CONSTANTS
57. MATERIAL CONCRETE ALL
58. UNIT METER KN
59. DEFINE IS1893 2016 LOAD
60. ZONE 0.16 RF 5 I 1.2 SS 1 ST 1 DM 0.05 DT 2
61. SELFWEIGHT 1
62. MEMBER WEIGHT
63. 44 45 135 TO 137 245 TO 247 335 TO 337 425 TO 427 515 TO 517 605 TO 607 -
64. 794 UNI 12 0 0
65. 44 45 135 TO 137 245 TO 247 335 TO 337 425 TO 427 515 TO 517 605 TO 607 -
66. 794 UNI 25 0 0
67. 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.

68. TYPE 1 WIND 1
69. <! STAAD PRO GENERATED DATA DO NOT MODIFY !!!
70. CUSTOM:PARAMS
71. !> END GENERATED DATA BLOCK
72. INT 1.22 1.35 1.48 HEIG  10  15  18
73. EXP 1 JOINT 40 41 43 108 TO 111 161 TO 163 208 TO 211 273 TO 276 338 TO 341 -
74. 403 TO 406 468 TO 472
75. LOAD 1 LOADTYPE SEISMIC-H  TITLE EQX
76. 1893 LOAD X 1
77. LOAD 2 LOADTYPE SEISMIC-H  TITLE EQX
78. 1893 LOAD X -1.
79. LOAD 3 LOADTYPE SEISMIC-V  TITLE EQZ
80. 1893 LOAD Z 1
```

STAAD SPACE -- PAGE NO. 3

```
  81. LOAD 4 LOADTYPE SEISMIC-V  TITLE EQZ
  82. 1893 LOAD Z -1.
  83. LOAD 5 LOADTYPE WIND  TITLE WIND +X
  84. WIND LOAD X 1 TYPE 1
*WARNING- NO MEMBERS LOADED FOR A WIND LOAD GENERATION.
  85. LOAD 6 LOADTYPE WIND  TITLE WIND -X
  86. WIND LOAD -X 1 TYPE 1
*WARNING- NO MEMBERS LOADED FOR A WIND LOAD GENERATION.
  87. LOAD 7 LOADTYPE WIND  TITLE WIND +Z
  88. WIND LOAD Z 1 TYPE 1
  89. LOAD 8 LOADTYPE WIND  TITLE WIND -Z
  90. WIND LOAD -Z 1 TYPE 1
  91. LOAD 9 LOADTYPE LIVE  TITLE L.L
  92. MEMBER LOAD
  93. 44 45 135 TO 137 245 TO 247 335 TO 337 425 TO 427 515 TO 517 605 TO 607 -
  94. 794 UNI GY -12
  95. LOAD 10 LOADTYPE DEAD  TITLE D.L
  96. SELFWEIGHT Y -1 LIST ALL
  97. MEMBER LOAD
  98. 44 45 135 TO 137 245 TO 247 335 TO 337 425 TO 427 515 TO 517 605 TO 607 -
  99. 794 UNI GY -25
 100. LOAD COMB 11 1.5(DL+IL)
 101. 9 1.5 10 1.5
 102. LOAD COMB 12 1.2(DL+IL+ELX)
 103. 9 1.5 10 1.2 1 1.2
 104. LOAD COMB 13 1.2(DL+IL-ELX)
 105. 9 1.2 10 1.2 2 1.2
 106. LOAD COMB 14 1.2(DL+IL+ELZ)
 107. 9 1.2 10 1.2 3 1.2
 108. LOAD COMB 15 1.2(DL+IL-ELZ)
 109. 9 1.2 10 1.2 4 1.2
 110. LOAD COMB 16 1.2(DL+IL+WLX)
 111. 9 1.2 10 1.2 5 1.2
 112. LOAD COMB 17 1.2(DL+IL-WLX)
 113. 10 1.2 6 1.2
 114. LOAD COMB 18 1.2(DL+IL+WLZ)
 115. 9 1.2 10 1.2 7 1.2
 116. LOAD COMB 19 1.2(DL+IL-WLZ)
 117. 9 1.2 10 1.2 8 1.2
 118. LOAD COMB 20 1.5(DL+ELX)
 119. 9 1.5 10 1.5 1 1.5
```

```
120. LOAD COMB 21 1.5(DL-ELX)
121. 9 1.5 10 1.5 2 1.5
122. LOAD COMB 22 1.5(DL+ELZ)
123. 9 1.5 10 1.5 3 1.5
124. LOAD COMB 23 1.5(DL-ELZ)
125. 10 1.5 4 1.5
126. LOAD COMB 24 1.5(DL+WLX)
127. 10 1.5 5 1.5
128. LOAD COMB 25 1.5(DL-WLX)
129. 10 1.5 6 1.5
130. LOAD COMB 26 1.5(DL+WLZ)
131. 10 1.5 7 1.5
132. LOAD COMB 27 1.5(DL-WLZ)
133. 10 1.5 8 1.5
134. LOAD COMB 28 0.9 DL+ELX
135. 10 0.9 1 1.5
136. LOAD COMB 29 0.9 DL-ELX
137. 10 0.9 2 1.5
138. LOAD COMB 30 0.9 DL+ELZ
139. 10 0.9 3 1.5
140. LOAD COMB 31 0.9 DL-ELZ
141. 10 0.9 4 1.5
142. LOAD COMB 32 0.9 DL+WLX
143. 10 0.9 5 1.5
144. LOAD COMB 33 0.9 DL-WLX
145. 10 0.9 6 1.5
146. LOAD COMB 34 0.9 DL+WLZ
147. 10 0.9 7 1.5
148. LOAD COMB 35 0.9 DL-WLZ
149. 10 0.9 8 1.5
150. PERFORM ANALYSIS PRINT ALL
```

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

| | | | |
|---|---|---|---|
| NUMBER OF JOINTS | 31 | NUMBER OF MEMBERS | 42 |
| NUMBER OF PLATES | 0 | NUMBER OF SOLIDS | 0 |
| NUMBER OF SURFACES | 0 | NUMBER OF SUPPORTS | 3 |

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.

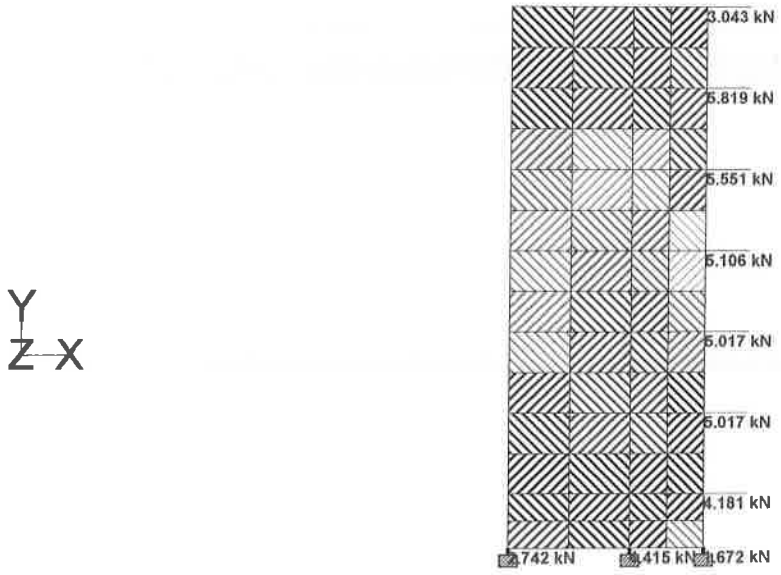
C. KANNAN, B.E., M.E, (Structure)
Structural Engineer,
CMDA Reg. No: SE/I/2024/2/0047
Door No: 21, 4th Main Road,
Indira Nagar, Chennai-600 020.



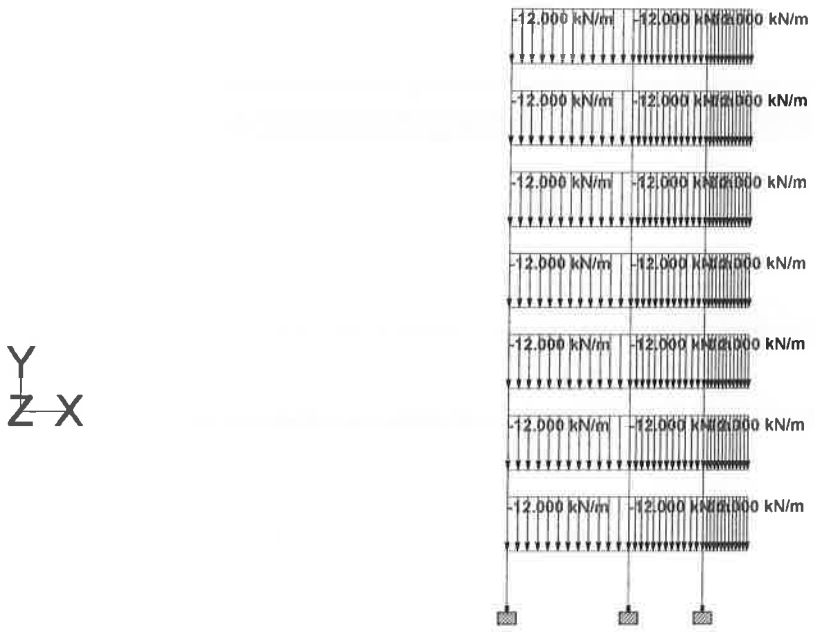

Y
Z X

Load 1

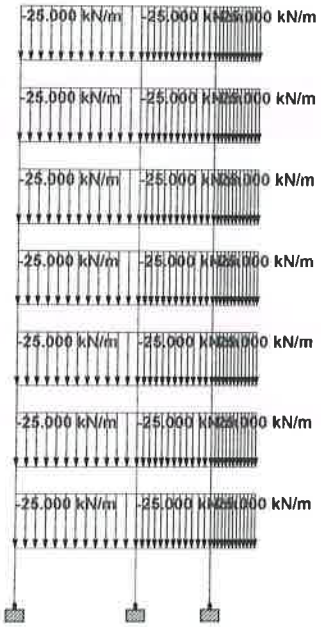
C. KANNAN, B.E., M.E, (Structure)
Structural Engineer,
CMDA Reg. No: SE/I/2024/2/0047
Door No: 21, 4th Main Road,
Indira Nagar, Chennai-600 020.


3.043 kN
5.819 kN
5.551 kN
5.106 kN
5.017 kN
5.017 kN
4.181 kN
742 kN
415 kN
672 kN
Y
Z
X

Load 7




Load 9




Y
Z X

Load 10

C. KANNAN, B.E., M.E, (Structure)
Structural Engineer,
CMDA Reg. No: SE/[illegible]/2024/2/0047
Door No: 21, [illegible] Road,
Indira Nagar, Chennai - 600 020.



## our services doesn't just end there

### Buying & Selling Services

Property Buying Assistance, Property Selling Support, Market Price Analysis, Owner Outreach and Negotiation.

### Legal & Documentation Services

Certified EC, Patta, legal opinions, property verification, due diligence, litigation solutions, and legal heir certificates.

### Property Development & Approvals

Building plan approvals, construction, layout and sub-division approvals, zone conversion, and occupancy certification.

### NRI & Investment Services

Escrow Services, Rentals, Litigation Solutions, Property Valuation and Property Management

### Compliance & Special Services

Demolition, Vaasthu checks, regularization of unauthorized buildings, and office space solutions.



# empowering your real estate decisions with smart tools

## Property Valuation & Cost Estimation

Guideline Value, Apartment Composite Value, Stamp Duty & Registration Fees Calculator, Building Value Calculator, Capital Gains Calculator, Area Unit Converter, Length Unit Converter

## Ownership, Compliance & Legal Verification

Encumbrance Certificate (EC) Search, Find Your SRO, Temple Property Check, WAQF Property Check, View Patta/Chitta, View FMB, Patta Analyzer, EC Analyzer

## Zoning & Land Use Analysis

Land Use Zone Finder, CRZ Zone Check, Aquifer Zone Check, CBA Check, EWS Check, Road Width Check, Proposed Road Widening Check, FSI Calculator

## Property Documentation & Workflow Tools

Forms & Templates, Document Generator, Document Translation, Dictionary

## Vastu & Property Management Tools

Home Vastu Shastra, Plot Vastu Shastra, Property Management

Verified RealEstate™

We're honored to be part of your real estate journey

3/350/2 Mettukuppam,
OMR Thoraipakkam,
Chennai, India

hello@verified.realestate
+91 9996 12 9996
www.verified.realestate