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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

STRUCTURAL STABILITY CERTIFICATE

It is certified that the Proposed Residential Building at S. No. 167/9A, 167/9B, Of Pammal Village, Pallavaram Taluk, Chengalpattu District, Chennai, within the limit of Pammal City Municipal Corporation Limit. Having Basement plus 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 S. NO. 167/9A, 167/9B, OF PAMMAL VILLAGE, PALLAVARAM TALUK, CHENGALPATTU DISTRICT, CHENNAI, WITHIN THE LIMIT OF PAMMAL CITY MUNICIPAL CORPORATION LIMIT

GENERAL NOTE ON STRUCTURAL DESIGN.

1.0 GENERAL.

1.1 DESIGN BASIS

The proposed residential building consists of Basement plus 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

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

4.3 **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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PAGE NO. 1

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 **************************************************
 *                                                *
 *          STAAD.Pro CONNECT Edition             *
 *          Version  22.12.00.142                 *
 *          Proprietary Program of                *
 *          Bentley Systems, Inc.                 *
 *          Date=    MAY 20, 2024                 *
 *          Time=    10:26:16                     *
 *                                                *
 *  Licensed to: C.Kannan                         *
 **************************************************
```

```
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INPUT FILE: D:\LOGESH\STABILITY CERTIFICATE\DAC\DAC - HIS PAMMAL\DAC-HI.. .STD
    2. START JOB INFORMATION
    3. ENGINEER DATE 5/20/2024
    4. JOB NAME PROPOSED RESIDENTIAL BUILDING AT S. NO. 167/9A, 167/9B, OF PAMMAL -
    5. VILLAGE, PALLAVARAM TALUK, CHENGALPATTU DISTRICT, CHENNAI
    6. ENGINEER NAME KANNAN
    7. CHECKER NAME KANNAN
    8. APPROVED NAME KANNAN
    9. CHECKER DATE 5/20/2024
   10. APPROVED DATE 5/20/2024
   11. END JOB INFORMATION
   12. INPUT WIDTH 79
   13. UNIT MMS KN
   14. JOINT COORDINATES
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   17. 8 23850 0 -1.18744E-08; 9 26100 0 -1.11759E-08; 10 29700 0 -1.15251E-08
   18. 11 31250 0 -1.15251E-08; 12 0 3000 0; 13 5400 3000 -1.0943E-08
   19. 14 8350 3000 -1.0943E-08; 15 11950 3000 -1.0943E-08
   20. 16 15760.4 3000 -1.0943E-08; 17 19000 3000 -1.08266E-08
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   28. 33 31250 6000 -1.15251E-08; 34 0 9000 0; 35 5400 9000 -1.0943E-08
   29. 36 8350 9000 -1.0943E-08; 37 11950 9000 -1.0943E-08
   30. 38 15760.4 9000 -1.0943E-08; 39 19000 9000 -1.08266E-08
   31. 40 22001.1 9000 -1.08266E-08; 41 23850 9000 -1.18744E-08
   32. 42 26100 9000 -1.11759E-08; 43 29700 9000 -1.15251E-08
   33. 44 31250 9000 -1.15251E-08; 45 0 12000 0; 46 5400 12000 -1.0943E-08
   34. 47 8350 12000 -1.0943E-08; 48 11950 12000 -1.0943E-08
   35. 49 15760.4 12000 -1.0943E-08; 50 19000 12000 -1.08266E-08
   36. 51 22001.1 12000 -1.08266E-08; 52 23850 12000 -1.18744E-08
   37. 53 26100 12000 -1.11759E-08; 54 29700 12000 -1.15251E-08
   38. 55 31250 12000 -1.15251E-08; 56 0 15000 0; 57 5400 15000 -1.0943E-08
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STAAD SPACE -- PAGE NO. 2

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39. 58 8350 15000 -1.0943E-08; 59 11950 15000 -1.0943E-08
40. 60 15760.4 15000 -1.0943E-08; 61 19000 15000 -1.08266E-08
41. 62 22001.1 15000 -1.08266E-08; 63 23850 15000 -1.18744E-08
42. 64 26100 15000 -1.11759E-08; 65 29700 15000 -1.15251E-08
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44. 69 8350 18000 -1.0943E-08; 70 11950 18000 -1.0943E-08
45. 71 15760.4 18000 -1.0943E-08; 72 19000 18000 -1.08266E-08
46. 73 22001.1 18000 -1.08266E-08; 74 23850 18000 -1.18744E-08
47. 75 26100 18000 -1.11759E-08; 76 29700 18000 -1.15251E-08
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51. 84 22001.1 -2000 -1.08266E-08; 85 23850 -2000 -1.18744E-08 ,
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53. 89 5400 21000 -1.0943E-08; 90 8350 21000 -1.0943E-08
54. 91 11950 21000 -1.0943E-08; 92 15760.4 21000 -1.0943E-08
55. 93 19000 21000 -1.08266E-08; 94 22001.1 21000 -1.08266E-08
56. 95 23850 21000 -1.18744E-08; 96 26100 21000 -1.11759E-08
57. 97 29700 21000 -1.15251E-08; 98 31250 21000 -1.15251E-08
58. MEMBER INCIDENCES
59. 1 1 2; 2 2 3; 3 3 4; 4 4 5; 5 5 6; 6 6 7; 7 7 8; 8 8 9; 9 9 10; 10 10 11
60. 11 1 12; 12 2 13; 13 3 14; 14 4 15; 15 5 16; 16 6 17; 17 7 18; 18 8 19
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78. 153 73 94; 154 74 95; 155 75 96; 156 76 97; 157 88 89; 158 89 90; 159 90 91
79. 160 91 92; 161 92 93; 162 93 94; 163 94 95; 164 95 96; 165 96 97; 166 97 98
80. DEFINE MATERIAL START
81. ISOTROPIC CONCRETE
82. E 21.7185
83. POISSON 0.17
84. DENSITY 2.35616E-05
85. ALPHA 1E-05
86. DAMP 0.05
87. G 9.28139
88. TYPE CONCRETE
89. STRENGTH FCU 0.027579
90. END DEFINE MATERIAL
91. MEMBER PROPERTY
92. 1 TO 10 22 TO 31 43 TO 52 64 TO 73 85 TO 94 106 TO 115 127 TO 136 157 TO 165 -
93. 166 PRIS YD 500 ZD 200
94. 11 TO 20 32 TO 41 53 TO 62 74 TO 83 95 TO 104 116 TO 125 137 TO 155 -
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STAAD SPACE -- PAGE NO. 3

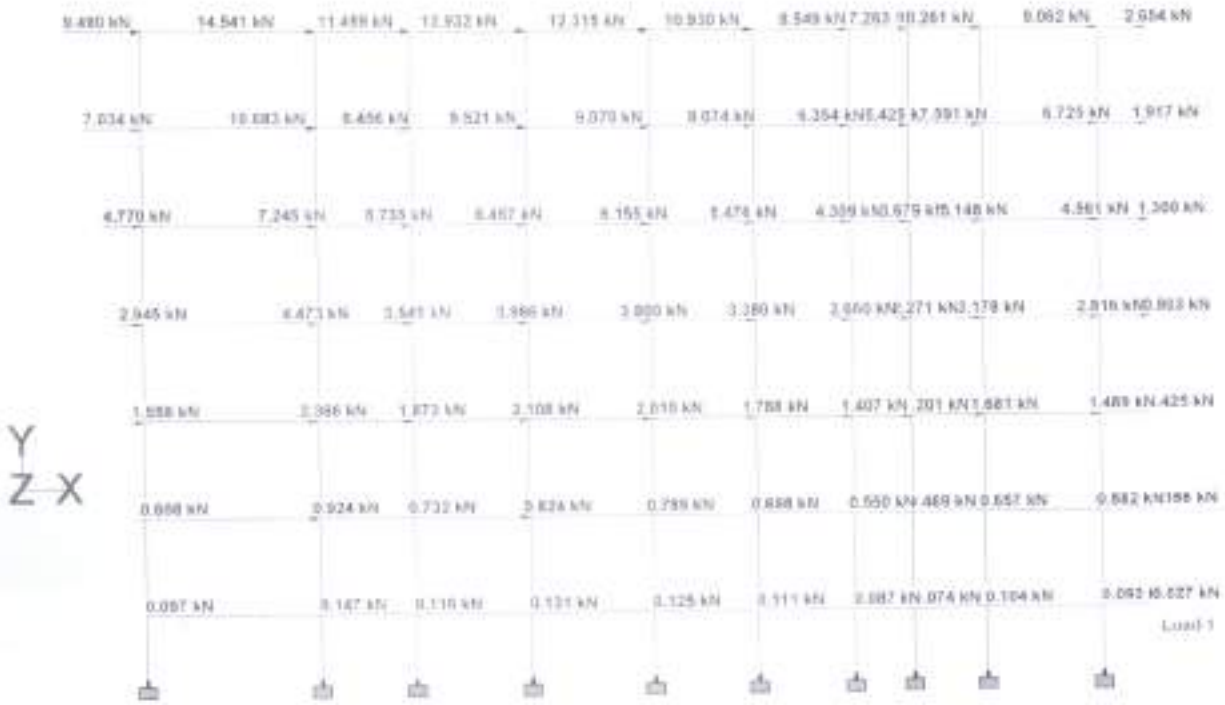
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 95. 156 PRIS YD 500 ZD 200
 96. CONSTANTS
 97. MATERIAL CONCRETE ALL
 98. SUPPORTS
 99. 78 TO 87 FIXED
100. UNIT METER KN
101. DEFINE IS1893 2016 LOAD
102. ZONE 0.16 RF 5 I 1.2 SS 1 ST 1 DM 0.05 DT 2
103. SELFWEIGHT 1
104. MEMBER WEIGHT
105. 1 TO 10 22 TO 31 43 TO 52 64 TO 73 85 TO 94 106 TO 115 127 TO 136 157 TO 165 -
106. 166 UNI 12 0 0
107. 1 TO 10 22 TO 31 43 TO 52 64 TO 73 85 TO 94 106 TO 115 127 TO 136 157 TO 165 -
108. 166 UNI 35 0 0
109. DEFINE WIND LOAD

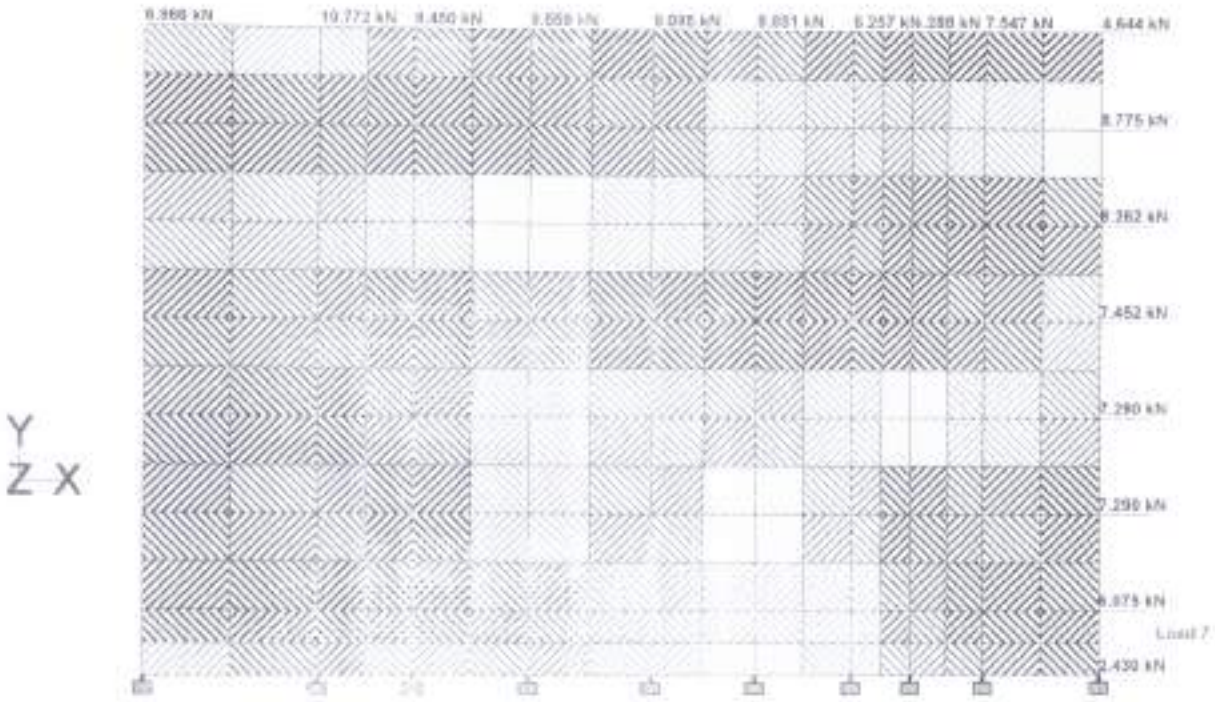
*** NOTE: If any floor diaphragm is present in the model Wind Load definition
          should be defined after Floor Diaphragm definition. Otherwise wind
          load generation may be unsuccessful during analysis.

110. TYPE 1 WIND 1
111. INT 1.35 1.53 1.72 HEIG  10  15  18
112. EXP 1 JOINT 1 TO 98
113. LOAD 1 LOADTYPE SEISMIC-H  TITLE EQ +X
114. 1893 LOAD X 1
115. LOAD 2 LOADTYPE SEISMIC-H  TITLE EQ -X
116. 1893 LOAD X -1.
117. LOAD 3 LOADTYPE SEISMIC-H  TITLE EQ +Z
118. 1893 LOAD Z 1
119. LOAD 4 LOADTYPE SEISMIC-H  TITLE EQ -Z
120. 1893 LOAD Z -1.
121. LOAD 5 LOADTYPE WIND  TITLE WIND +X
122. WIND LOAD X 1 TYPE 1
*WARNING- NO MEMBERS LOADED FOR A WIND LOAD GENERATION.
123. LOAD 6 LOADTYPE WIND  TITLE WIND -X
124. WIND LOAD -X 1 TYPE 1
*WARNING- NO MEMBERS LOADED FOR A WIND LOAD GENERATION.
125. LOAD 7 LOADTYPE WIND  TITLE WID +Z
```

```
126. WIND LOAD Z 1 TYPE 1
127. LOAD 8 LOADTYPE WIND  TITLE WIND -Z
128. WIND LOAD -Z 1 TYPE 1
129. LOAD 9 LOADTYPE LIVE  TITLE LIVE LOAD
130. MEMBER LOAD
131. 1 TO 10 22 TO 31 43 TO 52 64 TO 73 85 TO 94 106 TO 115 127 TO 136 157 TO 165 -
132. 166 UNI GY -12
133. LOAD 10 LOADTYPE DEAD  TITLE DEAD LOAD
134. SELFWEIGHT Y -1
135. MEMBER LOAD
136. 1 TO 10 22 TO 31 43 TO 52 64 TO 73 85 TO 94 106 TO 115 127 TO 136 157 TO 165 -
137. 166 UNI GY -30
138. LOAD COMB 11 1.5(DL+IL)
139. 9 1.5 10 1.5
140. LOAD COMB 12 1.2(DL+IL+ELX)
141. 9 1.5 10 1.2 1 1.2
142. LOAD COMB 13 1.2(DL+IL-ELX)
143. 9 1.2 10 1.2 2 1.2
144. LOAD COMB 14 1.2(DL+IL+ELZ)
145. 9 1.2 10 1.2 3 1.2
146. LOAD COMB 15 1.2(DL+IL-ELZ)
147. 9 1.2 10 1.2 4 1.2
148. LOAD COMB 16 1.2(DL+IL+WLX)
149. 9 1.2 10 1.2 5 1.2
150. LOAD COMB 17 1.2(DL+IL-WLX)
151. 10 1.2 6 1.2
152. LOAD COMB 18 1.2(DL+IL+WLZ)
153. 9 1.2 10 1.2 7 1.2
154. LOAD COMB 19 1.2(DL+IL-WLZ)
155. 9 1.2 10 1.2 8 1.2
156. LOAD COMB 20 1.5(DL+ELX)
157. 9 1.5 10 1.5 1 1.5
158. LOAD COMB 21 1.5(DL-ELX)
159. 9 1.5 10 1.5 2 1.5
160. LOAD COMB 22 1.5(DL+ELZ)
161. 9 1.5 10 1.5 3 1.5
162. LOAD COMB 23 1.5(DL-ELZ)
163. 10 1.5 4 1.5
164. LOAD COMB 24 1.5(DL+WLX)
165. 10 1.5 5 1.5
166. LOAD COMB 25 1.5(DL-WLX)
167. 10 1.5 6 1.5
168. LOAD COMB 26 1.5(DL+WLZ)
169. 10 1.5 7 1.5
170. LOAD COMB 27 1.5(DL-WLZ)
171. 10 1.5 8 1.5
172. LOAD COMB 28 0.9 DL+ELX
173. 10 0.9 1 1.5
174. LOAD COMB 29 0.9 DL-ELX
175. 10 0.9 2 1.5
```

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Door No: 21, 4th Main Road,
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9.480 kN
14.541 kN
11.459 kN
12.932 kN
12.315 kN
10.930 kN
8.549 kN
7.283 kN
10.261 kN
9.092 kN
2.954 kN
7.034 kN
10.883 kN
8.456 kN
9.521 kN
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8.074 kN
6.354 kN
5.425 kN
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4.770 kN
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6.457 kN
6.155 kN
5.476 kN
4.309 kN
3.679 kN
5.148 kN
4.561 kN
1.300 kN
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1.788 kN
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0.924 kN
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0.824 kN
0.789 kN
0.698 kN
0.550 kN
0.469 kN
0.657 kN
0.582 kN
0.166 kN
0.097 kN
0.147 kN
0.116 kN
0.131 kN
0.125 kN
0.111 kN
0.087 kN
0.074 kN
0.104 kN
0.093 kN
0.027 kN
Load 1
Y
Z X


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9.450 kN
9.559 kN
9.035 kN
8.831 kN
8.257 kN
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8.775 kN
8.382 kN
7.452 kN
7.280 kN
7.290 kN
6.875 kN
Load 7
2.430 kN
Y
Z X



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