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DIGITALLY VERIFIED RECORD

VIGNESH CONSULTING ENGINEERS

P.K.Chandran,M.E. (Struct)

"VEL AMRUTHA TOWERS"
15/7,Nallana Mudali Street,
Royapettah,Chennai–600014.
Phone:28130825
E-mail: vigneshchandran@yahoo.com

STABILITY CERTIFICATE

The detailed engineering and structure design of the proposed building comprising of **Stilt + Five** floors at **Prasanth Colony West Main Road, Rajakilpakkam, Chennai** S.No 165 /30 & 165 / 31 has been done by me based on the report of geotechnical investigation (soil test) done by **Mr. G. MANOJ KUMAR** Report No. **GS_APR24_DTN_A135_RAJAKILPAKKAM** Dated. **26.04.2024**. And considering the functional requirement of the building.

2. It is certified that among other factors, the proposed building has been designed to resist earthquake. I have checked various parameters and found that the proposed building would be safe.

3. I further certify that:

(i) The minimum grade of concrete is **M25**

(ii) The design and analysis has been done using the code of practice for plain and reinforced concrete as per IS 456, design loads as per IS Codes No **IS 875** and Design of earthquake resistant structure as per IS Code No **IS1893 (PART1):2016**

4. The building will be safe and sound when used for the purpose for which it is designed.

Enclosed. : Structural Design Calculation

Yours faithfully,

For VIGNESH CONSULTING ENGINEERS,

P.K.Chandran,M.E., (Struct)

P.K. CHANDRAN,B.E.,M.E.(Struct)
STRUCTURAL ENGINEER
SE/GR-1/19/04/092
No. 15/7, NALLANNA STREET,
ROYAPETTAH, CHENNAI-600 014.

VIGNESH CONSULTING ENGINEERS

P.K.Chandran, M.E. (Struct)

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Royapettah, Chennai – 600 014.
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E-mail : vigneshchandran@yahoo.com

STABILITY CERTIFICATE

This is to certify that the proposed Construction of **Residential Flat Building for M/S Sashangar Developers At Prasanth Colony West Main Road, Rajakilpakkam, Chennai** Which is structurally designed for Stilt Floor + Five Floors assuming a live load of 200 Kg/sq.m as per I.S. 875 and designed as per I.S. 456. Grade of concrete will be M25 for all structural members. The structure is also designed for seismic zone-III as per I.S code.

Yours faithfully,

For VIGNESH CONSULTING ENGINEERS,

P.K.Chandran, M.E., (Struct)

P.K. CHANDRAN, B.E., M.E.(Struct)
STRUCTURAL ENGINEER
SE/GR-1/19/04/092
No. 15/7, NALLANNA STREET,
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VIGNESH CONSULTING ENGINEERS

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PROCEDURE/BASIS FOR STRUCTURAL ANALYSIS AND DESIGN OF PROPOSED CONSTRUCTION OF RESIDENTIAL FLAT BUILDING FOR M/S SASHANGAR DEVELOPERS AT PRASANTH COLONY WEST MAIN ROAD, RAJAKILPAKKAM, CHENNAI

THE FOLLOWING PROCEDURE / BASIS IS ADOPTED FOR THE STRUCTURAL ANALYSIS AND DESIGN OF THE ABOVE SAID BUILDING:

THE CODES OF PRACTICE ADOPTED ARE:

1. I.S. 456 - 2000

   Code of practice for plain & reinforced concrete (Fourth edition)

2. SP:16 - 1980

   Design Aids for Reinforced Concrete to I.S:456-1978.

THE LOADING ASSUMED ARE AS FOLLOWS:

Live Load - 200 Kg/sq.m

Dead Load - 25KN/cu.m for reinforced concrete self weight

SCOPE OF DESIGN:

Building is designed for **Stilt + 5 Floors**

METHODOLOGY FOR ANALYSIS:

Frames are analyzed by STAAD _ PRO V8i

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STRUCTURAL ENGINEER
SE/GR-1/19/04/092
No. 15/7, NALLANNA STREET,
ROYAPETTAH, CHENNAI-600 014.

In the design, we have followed the limit state method with the following load factors:

Dead Load + Live Load	- 1.5
Dead Load + Live Load + wind load	- 1.2
Dead Load + Live Load + seismic load	- 1.2
Dead Load + Wind Load	- 1.5
Dead Load + seismic load	- 1.5
Dead Load 0.90 Wind Load	- 1.5
Dead Load 0.90 Earth Quake Load	- 1.5

WALL LOAD:-

i) 230mm Wall Load for ht of 3.0m = 6.25 kN/m

ii) 115mm Wall Load for ht of 3.0m = 3.5 kN/m

iii) Parapet Wall Load for ht of 1.2m = 3 kN/m

FLOOR LOAD CALCULATIONS:-

FLOOR SLAB CALCULATION:-

i) For Considering a Slab thickness of 125mm

Dead Load 0.125x25x1	=3.125kN/m2
Floor Finish	=1.25kN/m2
Total DL from Slab	= 4.375kN/m2

ROOF SLAB CALCULATION

ii) For Considering a Slab thickness of 125mm

Dead Load	= 0.125x25x1	= 3.125kN/m2
Weathering Course		= 2.5kN/m2
Total DL from Roof Slab		= 5.625kN/m2

PRECAUTIONS DURING CONSTRUCTION:

1. For foundation, Columns and plinth beams and the superstructure will be carried out in ordinary Portland cement. For structural members the minimum grade of concrete to be used will be M25.

2. The minimum cover to Main reinforcement in RCC members will be

   a) In foundations

      Footing -.50 mm.

b) In pedestal below ground level - 50 mm.

c) Columns in superstructure - 40 mm.

d) Beams - 30 mm.

e) Slab - 20 mm.

The grade of steel used for the design of all structural elements is FE -500 - steel bars confirming to IS: 1786 - 2008.

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DEFINE 1893 LOAD
ZONE 0.16 RF 5 I 1 SS 2 ST 3 DM 0.05 DT 2.5
JOINT WEIGHT
1 WEIGHT 32
2 WEIGHT 39
3 WEIGHT 38
4 WEIGHT 62
5 WEIGHT 83
6 WEIGHT 83
8 WEIGHT 62
9 WEIGHT 67
10 WEIGHT 80
11 WEIGHT 79
12 WEIGHT 60
13 WEIGHT 60
14 WEIGHT 80
15 WEIGHT 81
16 WEIGHT 61
26 WEIGHT 58
27 WEIGHT 113
28 WEIGHT 26
29 WEIGHT 90
30 WEIGHT 99
31 WEIGHT 87
33 WEIGHT 67
34 WEIGHT 78
35 WEIGHT 109
36 WEIGHT 110
37 WEIGHT 61
38 WEIGHT 85
39 WEIGHT 111
40 WEIGHT 34
41 WEIGHT 43
42 WEIGHT 59
43 WEIGHT 86
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49 WEIGHT 42
50 WEIGHT 51
51 WEIGHT 130
52 WEIGHT 114
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54 WEIGHT 39
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55 WEIGHT 39
56 WEIGHT 43
57 WEIGHT 44
58 WEIGHT 73
59 WEIGHT 28
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70 WEIGHT 80
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159 WEIGHT 108
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161 WEIGHT 141
162 WEIGHT 108
163 WEIGHT 108
164 WEIGHT 139
165 WEIGHT 138
166 WEIGHT 103
175 WEIGHT 72
176 WEIGHT 127
177 WEIGHT 36
178 WEIGHT 171
179 WEIGHT 217
180 WEIGHT 168
182 WEIGHT 86
183 WEIGHT 142
184 WEIGHT 189
185 WEIGHT 159
186 WEIGHT 88
187 WEIGHT 138
188 WEIGHT 196
189 WEIGHT 53
190 WEIGHT 70
191 WEIGHT 121
192 WEIGHT 162
194 WEIGHT 105
195 WEIGHT 114
196 WEIGHT 100
198 WEIGHT 75
199 WEIGHT 104
200 WEIGHT 144
201 WEIGHT 164
202 WEIGHT 93
203 WEIGHT 58
204 WEIGHT 67
205 WEIGHT 77
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214 WEIGHT 162
215 WEIGHT 100
217 WEIGHT 151
218 WEIGHT 90

219 WEIGHT 143
220 WEIGHT 133
221 WEIGHT 106
222 WEIGHT 157
223 WEIGHT 79
224 WEIGHT 84
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226 WEIGHT 64
227 WEIGHT 63
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232 WEIGHT 81
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253 WEIGHT 127
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258 WEIGHT 149
259 WEIGHT 130
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261 WEIGHT 107
262 WEIGHT 112
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479 WEIGHT 119
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653 WEIGHT 192

654 WEIGHT 130
655 WEIGHT 129
656 WEIGHT 129
657 WEIGHT 166
667 WEIGHT 139
707 WEIGHT 87
711 WEIGHT 213
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765 WEIGHT 110
766 WEIGHT 13
768 WEIGHT 138
782 WEIGHT 93
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889 WEIGHT 93
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1165 WEIGHT 135
1166 WEIGHT 74
1167 WEIGHT 60
1169 WEIGHT 146
1178 WEIGHT 92
1218 WEIGHT 64
1222 WEIGHT 179
1272 WEIGHT 83
1286 WEIGHT 102
1326 WEIGHT 61
1330 WEIGHT 170
1395 WEIGHT 3
LOAD 1 SLX
1893 LOAD X 1

LOAD 2 SLZ
1893 LOAD Z 1
LOAD 3 LOADTYPE Dead TITLE DL(WALL)
SELFWEIGHT Y -1
MEMBER LOAD
502 TO 504 539 547 TO 549 687 689 UNI GY -7.25
463 TO 465 467 TO 470 472 TO 475 479 481 483 TO 499 501 506 TO 511 -
513 TO 538 540 TO 546 550 TO 559 561 TO 571 574 576 TO 578 580 TO 592 594 -
595 TO 605 607 608 610 611 613 614 617 620 623 626 629 633 TO 636 638 639 -
641 644 647 TO 650 652 TO 659 662 665 TO 668 670 672 674 TO 686 690 TO 702 -
704 TO 706 708 709 711 713 716 719 721 724 TO 728 736 743 744 1002 TO 1006 -
1009 UNI GY -5
745 747 749 751 752 754 TO 759 762 765 767 768 770 TO 772 774 TO 782 784 786 -
787 TO 792 795 798 TO 800 803 806 TO 810 812 TO 817 820 TO 822 826 -
828 TO 832 834 839 TO 841 844 845 849 852 858 TO 861 864 865 868 TO 873 878 -
881 890 893 900 TO 905 907 908 910 911 913 TO 918 920 921 923 924 927 934 -
937 940 942 945 947 TO 952 954 955 957 959 963 TO 967 970 TO 973 975 980 -
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1375 1376 1380 1382 1388 TO 1391 1394 1395 1398 TO 1403 1408 1411 1420 1423 -
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1544 1546 TO 1551 1554 1557 1559 1560 1562 TO 1564 1566 TO 1574 1576 TO 1583 -
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1780 1783 TO 1786 1788 TO 1790 1795 TO 1797 1874 1876 1877 1879 1880 1882 -
1883 TO 1887 1890 1893 1895 1896 1898 TO 1900 1902 TO 1910 1912 TO 1919 1922 -
1925 TO 1927 1930 1933 TO 1937 1939 TO 1944 1947 TO 1949 1953 1955 TO 1959 -
1961 1966 TO 1968 1971 1972 1976 1978 1984 TO 1987 1990 1991 1994 TO 1999 -
2004 2007 2016 2019 2026 TO 2031 2033 2034 2036 2037 2039 TO 2044 2046 2047 -
2049 2050 2053 2060 2063 2066 2068 2071 2073 TO 2078 2080 2081 2083 2085 -
2089 TO 2093 2096 TO 2099 2101 2106 2108 2110 2113 2115 2116 2119 TO 2122 -
2124 TO 2126 2131 TO 2133 UNI GY -6.25

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1758 1764 1766 TO 1769 1771 1773 1778 1781 1782 1791 1794 1889 1891 1892 1901 -
1920 1921 1923 1924 1928 1929 1931 1932 1945 1946 1950 1951 1954 -
1962 TO 1965 1969 1970 1973 TO 1975 1977 1980 1982 1989 1992 1993 2000 2008 -
2010 2011 2013 TO 2015 2017 2018 2020 2022 2023 2025 2051 2052 2054 TO 2056 -
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2103 TO 2105 2107 2109 2114 2117 2118 2127 2130 UNI GY -3.5
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2193 TO 2196 2203 2215 TO 2221 2226 TO 2228 2231 2232 2239 2241 2243 2244 -
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2286 TO 2293 2296 2305 2307 2309 2310 2313 2317 2320 2323 2326 2328 2334 -
2337 2338 2340 TO 2342 2349 TO 2353 2355 2357 2359 2361 2376 2384 TO 2386 -
2391 2392 UNI GY -3
2394 TO 2407 2409 2425 UNI GY -3.5
2164 TO 2166 2199 2207 TO 2209 2343 2345 2410 TO 2424 2427 UNI GY -6
LOAD 4 LOADTYPE Dead TITLE DL(FLOOR)
MEMBER LOAD
504 688 778 958 1050 1228 1310 1488 1570 1748 1906 2084 2166 2344 UNI GY -20
FLOOR LOAD
_GR-1 FLOAD -4.375 GY
_GR-2 FLOAD -4.375 GY
_GR-3 FLOAD -4.375 GY

_GR-4 FLOAD -7.725 GY
_GR-5 FLOAD -4.375 GY
_GR-6 FLOAD -4.375 GY
_TR-1 FLOAD -5.625 GY
_TR-2 FLOAD -5.625 GY
_TR-3 FLOAD -5.625 GY
_TR-4 FLOAD -5.625 GY
_TR-5 FLOAD -5.625 GY
_TR-6 FLOAD -5.625 GY
_LF-1 FLOAD -5 GY
_HR-1 FLOAD -5 GY
_LF-2 FLOAD -6.25 GY
_HR-2 FLOAD -6.25 GY
LOAD 5 LOADTYPE Live TITLE LL(FLOOR)
MEMBER LOAD
504 688 778 958 1050 1228 1310 1488 1570 1748 1906 2084 2166 2344 UNI GY -8
FLOOR LOAD
_GR-1 FLOAD -2 GY
_GR-2 FLOAD -2 GY
_GR-3 FLOAD -3 GY
_GR-4 FLOAD -2 GY
_GR-5 FLOAD -3 GY
_GR-6 FLOAD -3 GY
_TR-1 FLOAD -1.5 GY
_TR-2 FLOAD -1.5 GY
_TR-3 FLOAD -1.5 GY
_TR-4 FLOAD -1.5 GY
_TR-5 FLOAD -1.5 GY
_TR-6 FLOAD -1.5 GY
_LF-1 FLOAD -5 GY
_HR-1 FLOAD -3 GY
_LF-2 FLOAD -5 GY
_HR-2 FLOAD -1.5 GY
****
LOAD 6 LOADTYPE Wind TITLE WIND(FX)
JOINT LOAD
447 FX 9
151 225 299 373 1094 FX 11
454 FX 19
158 232 306 380 1101 FX 24
497 1326 FX 23
201 275 349 423 707 822 929 1036 1144 1218 FX 29
498 FX 6
202 276 350 424 1145 FX 8
504 FX 10
208 282 356 430 1151 FX 12

210 284 358 432 506 1153 FX 4
500 FX 4
204 278 352 426 1147 FX 5
190 264 338 412 486 1133 FX 3
520 FX 6
224 298 372 446 1167 FX 8
531 FX 4
522 FX 5
532 FX 9
523 FX 11
534 FX 8
525 FX 9
527 536 FX 3
LOAD 7 LOADTYPE Wind TITLE WIND(FZ)
JOINT LOAD
447 FZ 8
151 225 299 373 1094 FZ 10
448 FZ 16
152 226 300 374 1095 FZ 20
449 FZ 16
153 227 301 375 1096 FZ 20
450 FZ 11
154 228 302 376 1097 FZ 14
476 FZ 5
180 254 328 402 1123 FZ 7
455 FZ 11
159 233 307 381 1102 FZ 14
456 FZ 18
160 234 308 382 1103 FZ 23
457 FZ 18
161 235 309 383 1104 FZ 22
458 FZ 11
162 236 310 384 1105 FZ 13
477 FZ 4
181 255 329 403 1124 FZ 5
459 FZ 11
163 237 311 385 1106 FZ 14
460 FZ 18
164 238 312 386 1107 FZ 23
461 FZ 18
165 239 313 387 1108 FZ 22
462 FZ 11
166 240 314 388 1109 FZ 13
471 FZ 20
175 249 323 397 1118 FZ 25
472 FZ 22

176 250 324 398 1119 FZ 27
473 FZ 8
177 251 325 399 1120 FZ 10
531 FZ 9
522 FZ 11
530 FZ 10
521 FZ 12
****
LOAD COMB 8 DL+LL
3 1.0 4 1.0 5 1.0
LOAD COMB 9 DL+LL(FOR SEISMIC LOAD CALCULATION)
3 1.0 4 1.0 5 0.25
LOAD COMB 10 DL+LL(FACT)
3 1.5 4 1.5 5 1.5
LOAD COMB 11 SEISMIC (FX)
3 1.2 4 1.2 5 1.2 1 1.2
LOAD COMB 12 SEISMIC (-FX)
3 1.2 4 1.2 5 1.2 1 -1.2
LOAD COMB 13 SEISMIC (FZ)
3 1.2 4 1.2 5 1.2 2 1.2
LOAD COMB 14 SEISMIC (-FZ)
3 1.2 4 1.2 5 1.2 2 -1.2
LOAD COMB 15 SEISMIC (FX)DL 1.5
3 1.5 4 1.5 1 1.5
LOAD COMB 16 SEISMIC (-FX)DL 1.5
3 1.5 4 1.5 1 -1.5
LOAD COMB 17 SEISMIC (FZ)DL 1.5
3 1.5 4 1.5 2 1.5
LOAD COMB 18 SEISMIC (-FZ)DL 1.5
3 1.5 4 1.5 2 -1.5
LOAD COMB 19 SEISMIC (FX)DL .9
3 0.9 4 0.9 1 1.5
LOAD COMB 20 SEISMIC (-FX)DL .9
3 0.9 4 0.9 1 -1.5
LOAD COMB 21 SEISMIC (FZ)DL .9
3 0.9 4 0.9 2 1.5
LOAD COMB 22 SEISMIC (-FZ)DL .9
3 0.9 4 0.9 2 -1.5
LOAD COMB 23 WIND (FX)
3 1.2 4 1.2 5 1.2 6 1.2
LOAD COMB 24 WIND (-FX)
3 1.2 4 1.2 5 1.2 6 -1.2
LOAD COMB 25 WIND (FZ)
3 1.2 4 1.2 5 1.2 7 1.2
LOAD COMB 26 WIND (-FZ)
3 1.2 4 1.2 5 1.2 7 -1.2

LOAD COMB 27 WIND (FX)DL 1.5
3 1.5 4 1.5 6 1.5
LOAD COMB 28 WIND (-FX)DL 1.5
3 1.5 4 1.5 6 -1.5
LOAD COMB 29 WIND (FZ)DL 1.5
3 1.5 4 1.5 7 1.5
LOAD COMB 30 WIND (-FZ)DL 1.5
3 1.5 4 1.5 7 -1.5
LOAD COMB 31 WIND (FX)DL .9
3 0.9 4 0.9 6 1.5
LOAD COMB 32 WIND (-FX)DL .9
3 0.9 4 0.9 6 -1.5
LOAD COMB 33 WIND (FZ)DL .9
3 0.9 4 0.9 7 1.5
LOAD COMB 34 WIND (-FZ)DL .9
3 0.9 4 0.9 7 -1.5
****
PERFORM ANALYSIS PRINT ALL
LOAD LIST 8 TO 34
START CONCRETE DESIGN
CODE INDIAN
UNIT MMS NEWTON
FC 25 MEMB 1 TO 36 43 TO 96 145 TO 252 259 TO 408 415 TO 465 467 TO 470 472 -
473 TO 475 479 481 483 TO 499 501 TO 504 506 TO 511 513 TO 559 561 TO 571 -
574 576 TO 578 580 TO 592 594 TO 605 607 608 610 611 613 614 617 620 623 -
626 629 633 TO 636 638 639 641 644 647 TO 650 652 TO 659 662 665 TO 668 670 -
672 674 TO 702 704 TO 706 708 709 711 713 716 719 721 724 TO 728 731 TO 734 -
736 739 TO 747 749 TO 784 786 TO 850 852 TO 1000 1002 TO 1006 1008 TO 1803 -
1805 TO 1813 1822 TO 1839 1841 TO 1862 1864 TO 2407 2409 TO 2428
FYMAIN 500 MEMB 1 TO 36 43 TO 96 145 TO 252 259 TO 408 415 TO 465 467 TO 470 -
472 TO 475 479 481 483 TO 499 501 TO 504 506 TO 511 513 TO 559 561 TO 571 -
574 576 TO 578 580 TO 592 594 TO 605 607 608 610 611 613 614 617 620 623 -
626 629 633 TO 636 638 639 641 644 647 TO 650 652 TO 659 662 665 TO 668 670 -
672 674 TO 702 704 TO 706 708 709 711 713 716 719 721 724 TO 728 731 TO 734 -
736 739 TO 747 749 TO 784 786 TO 850 852 TO 1000 1002 TO 1006 1008 TO 1803 -
1805 TO 1813 1822 TO 1839 1841 TO 1862 1864 TO 2407 2409 TO 2428
RATIO 6 MEMB 1 TO 36 43 TO 96 145 TO 252 259 TO 408 415 TO 462 731 TO 734 -
739 TO 742 1008 1010 1798 TO 1803 1805 TO 1813 1822 TO 1839 1841 TO 1862 -
1864 TO 1873 2429 TO 2435
DESIGN COLUMN 1 TO 36 43 TO 96 145 TO 252 259 TO 408 415 TO 462 731 TO 734 -
739 TO 742 1008 1010 1798 TO 1803 1805 TO 1813 1822 TO 1839 1841 TO 1862 -
1864 TO 1873 2429 TO 2435
DESIGN BEAM 463 TO 465 467 TO 470 472 TO 475 479 481 483 TO 499 501 TO 504 -
506 TO 511 513 TO 559 561 TO 571 574 576 TO 578 580 TO 592 594 TO 605 607 -
608 610 611 613 614 617 620 623 626 629 633 TO 636 638 639 641 644 -
647 TO 650 652 TO 659 662 665 TO 668 670 672 674 TO 702 704 TO 706 708 709 -

711 713 716 719 721 724 TO 728 736 743 TO 747 749 TO 784 786 TO 850 - 852 TO 1000 1002 TO 1006 1009 1011 TO 1797 1874 TO 2407 2409 TO 2428
END CONCRETE DESIGN
FINISH

STAAD OUTPUT

DESIGN FOOTING

GRID dd27:

$$= \frac{\text{COLUMN LOAD}}{\text{AREA}} < \text{SOIL BEARING CAPACITY}$$

$$= \frac{76*1.1}{1.5 \text{ X } 2.1} < 35$$

$$= 26.5 < \text{SBC (35 TONNES / M}^2\text{)}$$

HENCE O.K

GRID u27:

$$= \frac{\text{COLUMN LOAD}}{\text{AREA}} < \text{SOIL BEARING CAPACITY}$$

$$= \frac{106*1.1}{1.8 \text{ X } 2.4} < 35$$

$$= 27 < \text{SBC (35 TONNES / M}^2\text{)}$$

HENCE O.K

HENCE O.K

DESIGN COLUMN



IS-456 LIMIT STATE DESIGN
COLUMN NO. 62 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3600.0 mm CROSS SECTION: 600.0 mm X 300.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 19 BRACED LONG(Z) /SHORT(Y)

PROVIDED
4-Y20+4-Y16
HENCE O.K.

REQD. STEEL AREA : 1010.61 Sq.mm.
REQD. CONCRETE AREA: 126326.36 Sq.mm.
MAIN REINFORCEMENT : Provide 12 - 12 dia. (0.75%, 1357.17 Sq.mm.)
(Equally distributed)
TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 2392.61 Muz1 : 92.27 Muy1 : 199.94

INTERACTION RATIO: 0.99 (as per Cl. 39.6, IS456:2000)

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 19
Puz : 2518.67 Muz : 104.04 Muy : 230.38 IR: 0.88

IS-456 LIMIT STATE DESIGN
COLUMN NO. 63 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3150.0 mm CROSS SECTION: 600.0 mm X 230.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 16 BRACED LONG(Z) /SHORT(Y)

REQD. STEEL AREA : 1755.92 Sq.mm.
REQD. CONCRETE AREA: 136244.09 Sq.mm.
MAIN REINFORCEMENT : Provide 12 - 16 dia. (1.75%, 2412.74 Sq.mm.)
(Equally distributed)
TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 230 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 2191.22 Muz1 : 70.25 Muy1 : 235.67

INTERACTION RATIO: 0.99 (as per Cl. 39.6, IS456:2000)

PROVIDED
4-Y20+4-Y16
HENCE O.K.

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 16
Puz : 2430.14 Muz : 79.70 Muy : 284.70 IR: 0.86

IS-456 LIMIT STATE DESIGN
COLUMN NO. 64 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3150.0 mm CROSS SECTION: 600.0 mm X 230.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 19 BRACED LONG(Z) /SHORT(Y)

REQD. STEEL AREA : 1477.59 Sq.mm.
REQD. CONCRETE AREA: 136522.42 Sq.mm.
MAIN REINFORCEMENT : Provide 8 - 16 dia. (1.17%, 1608.50 Sq.mm.)
(Equally distributed)
TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 230 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 2089.97 Muz1 : 63.99 Muy1 : 205.78

INTERACTION RATIO: 1.00 (as per Cl. 39.6, IS456:2000)

PROVIDED
8-Y16
HENCE O.K.

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 19
Puz : 2137.59 Muz : 66.46 Muy : 221.49 IR: 0.96

IS-456 LIMIT STATE DESIGN
COLUMN NO. 65 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3150.0 mm CROSS SECTION: 600.0 mm X 230.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 19 BRACED LONG(Z) /SHORT(Y)

REQD. STEEL AREA : 1330.05 Sq.mm.
REQD. CONCRETE AREA: 136669.97 Sq.mm.
MAIN REINFORCEMENT : Provide 12 - 12 dia. (0.98%, 1357.17 Sq.mm.)
(Equally distributed)
TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 2036.30 Muz1 : 58.58 Muy1 : 185.38

INTERACTION RATIO: 0.99 (as per Cl. 39.6, IS456:2000)

PROVIDED
8-Y16
HENCE O.K.

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 19
Puz : 2046.17 Muz : 59.23 Muy : 189.21 IR: 0.98

IS-456 LIMIT STATE DESIGN
COLUMN NO. 66 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3150.0 mm CROSS SECTION: 600.0 mm X 230.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 20 BRACED LONG(Z) /SHORT(Y)

REQD. STEEL AREA : 1034.25 Sq.mm.
REQD. CONCRETE AREA: 136965.77 Sq.mm.
MAIN REINFORCEMENT : Provide 12 - 12 dia. (0.98%, 1357.17 Sq.mm.)
(Equally distributed)
TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 1928.71 Muz1 : 48.07 Muy1 : 148.04

INTERACTION RATIO: 0.98 (as per Cl. 39.6, IS456:2000)

PROVIDED
4-Y16+4-Y12
HENCE O.K.

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 16
Puz : 2046.17 Muz : 60.52 Muy : 193.59 IR: 0.85

IS-456 LIMIT STATE DESIGN
COLUMN NO. 1808 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3150.0 mm CROSS SECTION: 600.0 mm X 230.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 16 BRACED LONG(Z) /SHORT(Y)

REQD. STEEL AREA : 1147.38 Sq.mm.
REQD. CONCRETE AREA: 136852.64 Sq.mm.
MAIN REINFORCEMENT :
Provide 12 - 12 dia. (0.98%, 1357.17 Sq.mm.)
(Equally distributed)
TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

PROVIDED
4-Y16+4-Y12
HENCE O.K.

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS)

Puz : 1969.86 KNS

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 16
Puz : 2046.17 Muz : 54.58 Muy : 174.77 IR: 0.88

IS-456 LIMIT STATE DESIGN
COLUMN NO. 268 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3600.0 mm CROSS SECTION: 530.0 mm X 300.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 20 BRACED LONG(Z) /SHORT(Y)

REQD. STEEL AREA : 1030.07 Sq.mm.
REQD. CONCRETE AREA: 157969.92 Sq.mm.
MAIN REINFORCEMENT : Provide 12 - 12 dia. (0.85%, 1357.17 Sq.mm.)
(Equally distributed)
TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 2163.44 Muz1 : 80.87 Muy1 : 154.62

INTERACTION RATIO: 0.99 (as per Cl. 39.6, IS456:2000)

PROVIDED
4-Y20+2-Y16
HENCE O.K.

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 20
Puz : 2282.42 Muz : 92.33 Muy : 180.02 IR: 0.86

IS-456 LIMIT STATE DESIGN
COLUMN NO. 269 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3150.0 mm CROSS SECTION: 530.0 mm X 230.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 16 BRACED LONG(Z) /SHORT(Y)

REQD. STEEL AREA : 1262.57 Sq.mm.
REQD. CONCRETE AREA: 120637.42 Sq.mm.
MAIN REINFORCEMENT : Provide 12 - 12 dia. (1.11%, 1357.17 Sq.mm.)
(Equally distributed)
TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 1830.64 Muz1 : 59.12 Muy1 : 165.28

INTERACTION RATIO: 1.00 (as per Cl. 39.6, IS456:2000)

PROVIDED
4-Y20+2-Y16
HENCE O.K.

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 16
Puz : 1865.04 Muz : 60.67 Muy : 172.40 IR: 0.96

IS-456 LIMIT STATE DESIGN
COLUMN NO. 270 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3150.0 mm CROSS SECTION: 530.0 mm X 230.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 16 BRACED LONG(Z) /SHORT(Y)

REQD. STEEL AREA : 1171.57 Sq.mm.
REQD. CONCRETE AREA: 120728.42 Sq.mm.
MAIN REINFORCEMENT : Provide 12 - 12 dia. (1.11%, 1357.17 Sq.mm.)
(Equally distributed)
TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 1797.53 Muz1 : 57.18 Muy1 : 158.12

INTERACTION RATIO: 1.00 (as per Cl. 39.6, IS456:2000)

PROVIDED
4-Y20+2-Y16
HENCE O.K.

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 16
Puz : 1865.04 Muz : 60.34 Muy : 170.88 IR: 0.93

IS-456 LIMIT STATE DESIGN
COLUMN NO. 271 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3150.0 mm CROSS SECTION: 530.0 mm X 230.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 16 BRACED LONG(Z) /SHORT(Y)

REQD. STEEL AREA : 1120.51 Sq.mm.
REQD. CONCRETE AREA: 120779.48 Sq.mm.
MAIN REINFORCEMENT : Provide 12 - 12 dia. (1.11%, 1357.17 Sq.mm.)
(Equally distributed)
TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 1778.96 Muz1 : 54.50 Muy1 : 149.34

INTERACTION RATIO: 0.99 (as per Cl. 39.6, IS456:2000)

PROVIDED
4-Y20+2-Y16
HENCE O.K.

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 16
Puz : 1865.04 Muz : 58.81 Muy : 167.48 IR: 0.89

IS-456 LIMIT STATE DESIGN
COLUMN NO. 272 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3150.0 mm CROSS SECTION: 530.0 mm X 230.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 16 BRACED LONG(Z) /SHORT(Y)

REQD. STEEL AREA : 962.85 Sq.mm.
REQD. CONCRETE AREA: 120937.14 Sq.mm.
MAIN REINFORCEMENT : Provide 12 - 12 dia. (1.11%, 1357.17 Sq.mm.)
(Equally distributed)
TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 1721.61 Muz1 : 47.74 Muy1 : 128.53

PROVIDED
4-Y20+2-Y16
HENCE O.K.

INTERACTION RATIO: 1.00 (as per Cl. 39.6, IS456:2000)

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 16
Puz : 1865.04 Muz : 56.28 Muy : 158.86 IR: 0.82

IS-456 LIMIT STATE DESIGN
COLUMN NO. 1842 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3150.0 mm CROSS SECTION: 530.0 mm X 230.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 16 BRACED LONG(Z) /SHORT(Y)

REQD. STEEL AREA : 1074.23 Sq.mm.
REQD. CONCRETE AREA: 120825.77 Sq.mm.
MAIN REINFORCEMENT : Provide 12 - 12 dia. (1.11%, 1357.17 Sq.mm.)
(Equally distributed)
TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 1762.13 Muz1 : 44.82 Muy1 : 122.38

PROVIDED
4-Y20+2-Y16
HENCE O.K.

INTERACTION RATIO: 1.00 (as per Cl. 39.6, IS456:2000)

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 16
Puz : 1865.04 Muz : 51.47 Muy : 145.21 IR: 0.85

DESIGN BEAM



IS-456 LIMIT STATE DESIGN
BEAM NO. 749 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3470.0 mm SIZE: 230.0 mm X 450.0 mm COVER: 30.0 mm

SUMMARY OF REINF. AREA (Sq.mm)

SECTION	0.0 mm	867.5 mm	1735.0 mm	2602.5 mm	3470.0 mm
TOP REINF.	603.82 (Sq. mm)	232.60 (Sq. mm)	0.00 (Sq. mm)	167.43 (Sq. mm)	578.43 (Sq. mm)
BOTTOM REINF.	469.75 (Sq. mm)	318.54 (Sq. mm)	162.27 (Sq. mm)	198.34 (Sq. mm)	329.27 (Sq. mm)

SUMMARY OF PROVIDED REINF. AREA

SECTION	0.0 mm	867.5 mm	1735.0 mm	2602.5 mm	3470.0 mm
TOP REINF.	2-20d 1 layer(s)	2-20d 1 layer(s)	2-20d 1 layer(s)	2-20d 1 layer(s)	2-20d 1 layer(s)
BOTTOM REINF.	6-10d 2 layer(s)	5-10d 1 layer(s)	3-10d 1 layer(s)	3-10d 1 layer(s)	5-10d 1 layer(s)
SHEAR REINF.	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c

PROVIDED
TOP 4-Y16
MID SPAN 2-Y16
BOTTOM
3-Y16
HENCE O.K.

SHEAR DESIGN RESULTS AT DISTANCE d (EFFECTIVE DEPTH) FROM FACE OF THE SUPPORT

SHEAR DESIGN RESULTS AT 560.0 mm AWAY FROM START SUPPORT
VY = 64.56 MX = 0.01 LD= 16
Provide 2 Legged 8d @ 140 mm c/c

SHEAR DESIGN RESULTS AT 560.0 mm AWAY FROM END SUPPORT
VY = -71.45 MX = 0.20 LD= 15
Provide 2 Legged 8d @ 140 mm c/c

IS-456 LIMIT STATE DESIGN
BEAM NO. 750 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3580.0 mm SIZE: 230.0 mm X 450.0 mm COVER: 30.0 mm

SUMMARY OF REINF. AREA (Sq.mm)

SECTION	0.0 mm	895.0 mm	1790.0 mm	2685.0 mm	3580.0 mm
TOP REINF.	462.99 (Sq. mm)	171.48 (Sq. mm)	0.00 (Sq. mm)	176.55 (Sq. mm)	484.37 (Sq. mm)
BOTTOM REINF.	307.01 (Sq. mm)	181.22 (Sq. mm)	162.27 (Sq. mm)	170.63 (Sq. mm)	293.88 (Sq. mm)

SUMMARY OF PROVIDED REINF. AREA

SECTION	0.0 mm	895.0 mm	1790.0 mm	2685.0 mm	3580.0 mm
TOP REINF.	6-10d 2 layer(s)	3-10d 1 layer(s)	3-10d 1 layer(s)	3-10d 1 layer(s)	7-10d 2 layer(s)
BOTTOM REINF.	4-10d 1 layer(s)	3-10d 1 layer(s)	3-10d 1 layer(s)	3-10d 1 layer(s)	4-10d 1 layer(s)
SHEAR REINF.	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c

PROVIDED
TOP 3-Y16
MID SPAN 2-Y16
BOTTOM
2-Y16
HENCE O.K.

SHEAR DESIGN RESULTS AT DISTANCE d (EFFECTIVE DEPTH) FROM FACE OF THE SUPPORT

SHEAR DESIGN RESULTS AT 560.8 mm AWAY FROM START SUPPORT

VY = 49.16 MX = -0.26 LD= 16
Provide 2 Legged 8d @ 140 mm c/c

SHEAR DESIGN RESULTS AT 557.9 mm AWAY FROM END SUPPORT
VY = -51.14 MX = -0.26 LD= 15
Provide 2 Legged 8d @ 140 mm c/c

IS-456 LIMIT STATE DESIGN
BEAM NO. 751 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3280.0 mm SIZE: 230.0 mm X 450.0 mm COVER: 30.0 mm

SUMMARY OF REINF. AREA (Sq.mm)

SECTION	0.0 mm	820.0 mm	1640.0 mm	2460.0 mm	3280.0 mm
TOP REINF.	534.75 (Sq. mm)	164.90 (Sq. mm)	0.00 (Sq. mm)	250.17 (Sq. mm)	644.49 (Sq. mm)
BOTTOM REINF.	363.17 (Sq. mm)	212.04 (Sq. mm)	162.27 (Sq. mm)	303.40 (Sq. mm)	468.00 (Sq. mm)

SUMMARY OF PROVIDED REINF. AREA

SECTION	0.0 mm	820.0 mm	1640.0 mm	2460.0 mm	3280.0 mm
TOP REINF.	5-12d 1 layer(s)	2-12d 1 layer(s)	2-12d 1 layer(s)	3-12d 1 layer(s)	6-12d 2 layer(s)
BOTTOM REINF.	5-10d 1 layer(s)	3-10d 1 layer(s)	3-10d 1 layer(s)	4-10d 1 layer(s)	6-10d 2 layer(s)
SHEAR REINF.	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c

PROVIDED
TOP 4-Y16
MID SPAN 2-Y16
BOTTOM
3-Y16
HENCE O.K.

SHEAR DESIGN RESULTS AT DISTANCE d (EFFECTIVE DEPTH) FROM FACE OF THE SUPPORT

SHEAR DESIGN RESULTS AT 564.0 mm AWAY FROM START SUPPORT

VY = 68.96 MX = -0.40 LD= 16
Provide 2 Legged 8d @ 140 mm c/c

SHEAR DESIGN RESULTS AT 559.5 mm AWAY FROM END SUPPORT
VY = -68.31 MX = -0.35 LD= 15
Provide 2 Legged 8d @ 140 mm c/c

IS-456 LIMIT STATE DESIGN
BEAM NO. 752 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3470.0 mm SIZE: 230.0 mm X 450.0 mm COVER: 30.0 mm

SUMMARY OF REINF. AREA (Sq.mm)

SECTION	0.0 mm	867.5 mm	1735.0 mm	2602.5 mm	3470.0 mm
TOP REINF.	655.12 (Sq. mm)	247.86 (Sq. mm)	0.00 (Sq. mm)	162.63 (Sq. mm)	562.62 (Sq. mm)
BOTTOM REINF.	456.41 (Sq. mm)	302.32 (Sq. mm)	162.27 (Sq. mm)	205.65 (Sq. mm)	344.68 (Sq. mm)

SUMMARY OF PROVIDED REINF. AREA

SECTION	0.0 mm	867.5 mm	1735.0 mm	2602.5 mm	3470.0 mm
TOP REINF.	6-12d 2 layer(s)	3-12d 1 layer(s)	2-12d 1 layer(s)	2-12d 1 layer(s)	5-12d 1 layer(s)
BOTTOM REINF.	6-10d 2 layer(s)	4-10d 1 layer(s)	3-10d 1 layer(s)	3-10d 1 layer(s)	5-10d 1 layer(s)
SHEAR REINF.	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c

PROVIDED
TOP 4-Y16
MID SPAN 2-Y16
BOTTOM
3-Y16
HENCE O.K.

SHEAR DESIGN RESULTS AT DISTANCE d (EFFECTIVE DEPTH) FROM FACE OF THE SUPPORT

SHEAR DESIGN RESULTS AT 559.5 mm AWAY FROM START SUPPORT
VY = 67.25 MX = 0.23 LD= 16
Provide 2 Legged 8d @ 140 mm c/c

SHEAR DESIGN RESULTS AT 564.0 mm AWAY FROM END SUPPORT
VY = -69.84 MX = 0.03 LD= 15
Provide 2 Legged 8d @ 140 mm c/c

IS-456 LIMIT STATE DESIGN
BEAM NO. 753 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3580.0 mm SIZE: 230.0 mm X 450.0 mm COVER: 30.0 mm

SUMMARY OF REINF. AREA (Sq.mm)

SECTION	0.0 mm	895.0 mm	1790.0 mm	2685.0 mm	3580.0 mm
TOP REINF.	490.40 (Sq. mm)	176.45 (Sq. mm)	0.00 (Sq. mm)	175.31 (Sq. mm)	476.67 (Sq. mm)
BOTTOM REINF.	307.09 (Sq. mm)	177.09 (Sq. mm)	161.87 (Sq. mm)	186.75 (Sq. mm)	319.36 (Sq. mm)

SUMMARY OF PROVIDED REINF. AREA

SECTION	0.0 mm	895.0 mm	1790.0 mm	2685.0 mm	3580.0 mm
TOP REINF.	7-10d 2 layer(s)	3-10d 1 layer(s)	3-10d 1 layer(s)	3-10d 1 layer(s)	7-10d 2 layer(s)
BOTTOM REINF.	3-12d 1 layer(s)	2-12d 1 layer(s)	2-12d 1 layer(s)	2-12d 1 layer(s)	3-12d 1 layer(s)
SHEAR REINF.	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c

PROVIDED
TOP 3-Y16
MID SPAN 2-Y16
BOTTOM
2-Y16
HENCE O.K.

SHEAR DESIGN RESULTS AT DISTANCE d (EFFECTIVE DEPTH) FROM FACE OF THE SUPPORT

SHEAR DESIGN RESULTS AT 557.9 mm AWAY FROM START SUPPORT
VY = 51.69 MX = 0.00 LD= 16
Provide 2 Legged 8d @ 140 mm c/c

SHEAR DESIGN RESULTS AT 557.9 mm AWAY FROM END SUPPORT
VY = -50.67 MX = 0.10 LD= 15
Provide 2 Legged 8d @ 140 mm c/c

IS-456 LIMIT STATE DESIGN
BEAM NO. 754 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3280.0 mm SIZE: 230.0 mm X 450.0 mm COVER: 30.0 mm

SUMMARY OF REINF. AREA (Sq.mm)

SECTION	0.0 mm	820.0 mm	1640.0 mm	2460.0 mm	3280.0 mm
TOP REINF.	570.06 (Sq. mm)	174.24 (Sq. mm)	0.00 (Sq. mm)	244.55 (Sq. mm)	627.15 (Sq. mm)
BOTTOM REINF.	362.38 (Sq. mm)	208.16 (Sq. mm)	162.27 (Sq. mm)	310.94 (Sq. mm)	487.95 (Sq. mm)

SUMMARY OF PROVIDED REINF. AREA

SECTION	0.0 mm	820.0 mm	1640.0 mm	2460.0 mm	3280.0 mm
TOP REINF.	2-20d 1 layer(s)	2-20d 1 layer(s)	2-20d 1 layer(s)	2-20d 1 layer(s)	2-20d 1 layer(s)
BOTTOM REINF.	5-10d 1 layer(s)	3-10d 1 layer(s)	3-10d 1 layer(s)	4-10d 1 layer(s)	7-10d 2 layer(s)
SHEAR REINF.	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c	2 legged 8d @ 140 mm c/c

PROVIDED
TOP 4-Y16
MID SPAN 2-Y16
BOTTOM
3-Y16
HENCE O.K.

SHEAR DESIGN RESULTS AT DISTANCE d (EFFECTIVE DEPTH) FROM FACE OF THE SUPPORT

SHEAR DESIGN RESULTS AT 560.0 mm AWAY FROM START SUPPORT
VY = 71.26 MX = 0.19 LD= 16
Provide 2 Legged 8d @ 140 mm c/c

SHEAR DESIGN RESULTS AT 560.0 mm AWAY FROM END SUPPORT
VY = -67.54 MX = 0.06 LD= 15
Provide 2 Legged 8d @ 140 mm c/c

DESIGN SLAB

			S1		
Panel Size	**Lx**	**3240**	mm		
	Ly	**3410**	mm		
Load Calculations					
Dead Load		3.125	KN/m^2		
Live Load		2	KN/m^2		
Finishes / Partions / Sunk / Weathering Course		1.25	KN/m^2		
Total Load		6.375	KN/m^2		
Factored Load		9.563	KN/m^2		
Assume Slab Thickness		125	mm		
Ly/Lx		1.05	TWO WAY SLAB		
Condition of the Slab is Two Adjacent Edges Discontinous.					
Negative Moment at Continuous Edge(shorter span)		**0.047**	4.72	KN-m	
Positive Moment at Mid Span(shorter span)		**0.035**	3.51	KN-m	
Negative Moment For Dead Load (at Mid Span)(longer)		**0.047**	4.72	KN-m	
Positive Moment For Live Load (at Mid Span)(longer)		**0.035**	3.51	KN-m	
		At Support	**At Mid Span**	**Longer Span**	
Mu		4.72	3.51	4.72	KN-m
Mu / b*d^2		0.472	0.351	0.472	
Pt		**0.118**	**0.082**	**0.118**	
Ast		**118**	**82.00**	**118.00**	mm^2
As Per Design Aids SP:16 (S&T) 1980 Fck=25N/mm2; Fy=500 N/mm2;					
Reinforcement Details					
Requireed	At Supports	**8**	**426**	c/c	

	At Mid Span	8	613	c/c	0.82
	Longer Span	8	426	c/c	
Provided	At Supports	8	200	c/c	
	At Mid Span	8	200	c/c	2.51
	Longer Span	8	200	c/c	
Effective Depth		100	mm		
Pt		0.25			
fs		95			
From IS456 - 2000 Modification Factor		**2.00**			
Actual Deflection		32.40			
Allowable Deflection		52.00			
Check					

Provided Thickness of the Slab		**125**	
Reinforcement Provided at the Support	**8**	**200**	**c/c**
Reinforcement Provided at the Midspan	**8**	**200**	**c/c**
Reinforcement Provided at the Longer span	**8**	**200**	**c/c**

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THE LANDLENS SUITE

Eight ways to know a piece of land before you pay for it.

This report covers one part of the picture. These cover the rest, drawn from the same government records, for any property in Tamil Nadu.

LandLens One
Ask anything about a property and get an answer grounded in live government records, with the sources shown.
/landlens/one

Verify My Land
Every record check run on one property and returned as a single report.
/landlens/verify-my-land

Legal Opinion
An advocate's written opinion on the title, built on the records we pull for it.
/landlens

One Map
Every layer on one map: the parcel, its boundary, zoning, water bodies and what sits around it.
/landlens/one/map

PriceMap
What land actually changed hands for around this plot, taken from the registered deeds.
/landlens/pricemap

Build Scope
What you are allowed to build here: floor space, height, coverage and setbacks.
/landlens/build-scope

Property Tracker
Watch a property and hear about it when something new is registered against it.
/landlens/property-tracker

Deal Room
Run the transaction in one place: documents, stamping, signatures and the parties.
/landlens/deal-room

FREE TOOLS · NO ACCOUNT NEEDED

Twenty-four checks you can run yourself, at no cost.

Records and verification

The registers themselves, read for you.

- Encumbrance Certificate
- Patta and Chitta
- Field Measurement Sketch
- EC Analyzer
- Bank charge check
- Court case search
- Seller background check
- Approval check by survey

Value and duty

What it is worth and what it costs to register.

- Guideline value by street
- Guideline value by survey
- Stamp duty and registration fees
- Capital gains
- Floor space index
- Area unit converter

Zoning and land use

What the plan says can happen on this land.

- Land use zone finder
- CMDA land use check
- Coastal regulation zone
- Master plan check
- Water bodies finder
- Airport height clearance

Registers and directories

Who holds it, and which office keeps the record.

- Find your registering office
- Temple property check
- Waqf property check
- RERA register

Every free tool
/tools

Services we run for you
/services

The LandLens suite
/landlens/one

Verified RealEstate™

Every claim in this document traces back to a government record.

- Legal opinions, due diligence and title verification
- Building plan, layout and sub-division approvals
- Completion and occupancy certificates, regularisation
- Escrow, negotiation and NRI property management
- Land survey, soil testing, architecture and construction

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Prepared from the registers named on the page each finding sits on. Where a register could not be read, this document says so in its place rather than leaving the gap to be read as a clean result.