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**PROCEDURE/BASIS FOR STRUCTURAL ANALYSIS AND DESIGN OF PROPOSED
SHOP CUM OFFICE BUILDINGS IN PLOT NO.3641 TO 3643. EXISTING 14 SHOPS,
3RD AVENUE, MULLAM VILLAGE, 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 - 400 Kg/sq.m

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

SCOPE OF DESIGN:

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


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METHODOLOGY FOR ANALYSIS:

Frames are analyzed by STAAD _PRO V8i

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 3.6m = 7.5 kN/m
- ii) 115mm Wall Load for ht of 3.6 m = 4.5 kN/m
- iii) Parapet Wall Load for ht of 1.5m = 3 kN/m

FLOOR LOAD CALCULATIONS:-

FLOOR SLAB CALCULATION:-

- i) For Considering a Slab thickness of 125mm
 - Dead Load $0.125 \times 25 \times 1$ = 3.125kN/m²
 - Floor Finish = 1.25kN/m²
 - Total DL from Slab = 4.375kN/m²

ii) For Considering a Slab thickness of 150mm

Dead Load	$0.150 \times 25 \times 1$	$= 3.75 \text{ kN/m}^2$
Floor Finish		$= 1.25 \text{ kN/m}^2$
Total DL from Slab		$= 5.00 \text{ kN/m}^2$

ROOF SLAB CALCULATION

iii) For Considering a Slab thickness of 125mm

Dead Load	$= 0.125 \times 25 \times 1$	$= 3.125 \text{ kN/m}^2$
Weathering Course		$= 2.5 \text{ kN/m}^2$
Total DL from Roof Slab		$= 5.625 \text{ kN/m}^2$

iv) For Considering a Slab thickness of 150mm

Dead Load	$0.150 \times 25 \times 1$	$= 3.750 \text{ kN/m}^2$
Weathering Course		$= 2.5 \text{ kN/m}^2$
Total DL from Roof Slab		$= 6.25 \text{ kN/m}^2$

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 M30.
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.

STAAD INPUT

DEFINE 1893 LOAD

ZONE 0.16 RF 5 I 1 SS 2 ST 3 DM 0.05 DT 2.5

JOINT WEIGHT

1 WEIGHT 106

2 WEIGHT 140

3 WEIGHT 107

4 WEIGHT 75

5 WEIGHT 184

6 WEIGHT 234

7 WEIGHT 138

8 WEIGHT 103

9 WEIGHT 100

10 WEIGHT 122

11 WEIGHT 212

12 WEIGHT 115

13 WEIGHT 97

14 WEIGHT 99

15 WEIGHT 98

16 WEIGHT 107

17 WEIGHT 117

18 WEIGHT 134

19 WEIGHT 108

20 WEIGHT 91

21 WEIGHT 97

22 WEIGHT 117

23 WEIGHT 79

24 WEIGHT 162
25 WEIGHT 127
26 WEIGHT 176
27 WEIGHT 119
28 WEIGHT 93
29 WEIGHT 178
30 WEIGHT 130
31 WEIGHT 95
32 WEIGHT 228
33 WEIGHT 111
34 WEIGHT 101
35 WEIGHT 72
36 WEIGHT 192
37 WEIGHT 6
38 WEIGHT 6
39 WEIGHT 6
40 WEIGHT 6
41 WEIGHT 6
42 WEIGHT 6
43 WEIGHT 6
44 WEIGHT 6
45 WEIGHT 5
46 WEIGHT 5
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64 WEIGHT 6
65 WEIGHT 6
66 WEIGHT 6
67 WEIGHT 6
68 WEIGHT 6
69 WEIGHT 6

70 WEIGHT 6
71 WEIGHT 6
72 WEIGHT 6
73 WEIGHT 150
74 WEIGHT 247
75 WEIGHT 260
76 WEIGHT 163
77 WEIGHT 279
78 WEIGHT 384
79 WEIGHT 359
80 WEIGHT 255
81 WEIGHT 108
82 WEIGHT 166
83 WEIGHT 289
84 WEIGHT 346
85 WEIGHT 310
86 WEIGHT 95
87 WEIGHT 137
88 WEIGHT 105
89 WEIGHT 124
90 WEIGHT 262
91 WEIGHT 373
92 WEIGHT 287
93 WEIGHT 94
94 WEIGHT 130
95 WEIGHT 139
96 WEIGHT 181
97 WEIGHT 169
98 WEIGHT 224
99 WEIGHT 316
100 WEIGHT 228
101 WEIGHT 241
102 WEIGHT 372
103 WEIGHT 301
104 WEIGHT 382
105 WEIGHT 164
106 WEIGHT 279
107 WEIGHT 220
108 WEIGHT 275
109 WEIGHT 146
110 WEIGHT 242
111 WEIGHT 255
112 WEIGHT 159
113 WEIGHT 266
114 WEIGHT 378
115 WEIGHT 358

116 WEIGHT 254
117 WEIGHT 108
118 WEIGHT 167
119 WEIGHT 285
120 WEIGHT 343
121 WEIGHT 294
122 WEIGHT 95
123 WEIGHT 136
124 WEIGHT 106
125 WEIGHT 124
126 WEIGHT 258
127 WEIGHT 373
128 WEIGHT 283
129 WEIGHT 94
130 WEIGHT 130
131 WEIGHT 134
132 WEIGHT 177
133 WEIGHT 167
134 WEIGHT 222
135 WEIGHT 315
136 WEIGHT 223
137 WEIGHT 237
138 WEIGHT 366
139 WEIGHT 288
140 WEIGHT 381
141 WEIGHT 160
142 WEIGHT 277
143 WEIGHT 216
144 WEIGHT 273
145 WEIGHT 146
146 WEIGHT 242
147 WEIGHT 256
148 WEIGHT 159
149 WEIGHT 265
150 WEIGHT 378
151 WEIGHT 358
152 WEIGHT 253
153 WEIGHT 108
154 WEIGHT 167
155 WEIGHT 285
156 WEIGHT 342
157 WEIGHT 295
158 WEIGHT 95
159 WEIGHT 136
160 WEIGHT 106
161 WEIGHT 124

162 WEIGHT 258
163 WEIGHT 373
164 WEIGHT 283
165 WEIGHT 94
166 WEIGHT 130
167 WEIGHT 134
168 WEIGHT 177
169 WEIGHT 166
170 WEIGHT 222
171 WEIGHT 315
172 WEIGHT 223
173 WEIGHT 237
174 WEIGHT 367
175 WEIGHT 288
176 WEIGHT 381
177 WEIGHT 160
178 WEIGHT 277
179 WEIGHT 216
180 WEIGHT 273
181 WEIGHT 146
182 WEIGHT 243
183 WEIGHT 256
184 WEIGHT 160
185 WEIGHT 266
186 WEIGHT 377
187 WEIGHT 355
188 WEIGHT 253
189 WEIGHT 108
190 WEIGHT 167
191 WEIGHT 286
192 WEIGHT 342
193 WEIGHT 295
194 WEIGHT 96
195 WEIGHT 137
196 WEIGHT 105
197 WEIGHT 124
198 WEIGHT 259
199 WEIGHT 372
200 WEIGHT 283
201 WEIGHT 94
202 WEIGHT 130
203 WEIGHT 134
204 WEIGHT 177
205 WEIGHT 166
206 WEIGHT 223
207 WEIGHT 314

208 WEIGHT 224
209 WEIGHT 237
210 WEIGHT 365
211 WEIGHT 288
212 WEIGHT 379
213 WEIGHT 161
214 WEIGHT 278
215 WEIGHT 216
216 WEIGHT 274
217 WEIGHT 114
218 WEIGHT 219
219 WEIGHT 235
220 WEIGHT 125
221 WEIGHT 212
222 WEIGHT 407
223 WEIGHT 408
224 WEIGHT 225
225 WEIGHT 102
226 WEIGHT 133
227 WEIGHT 297
228 WEIGHT 359
229 WEIGHT 206
230 WEIGHT 38
231 WEIGHT 95
232 WEIGHT 53
233 WEIGHT 81
234 WEIGHT 242
235 WEIGHT 341
236 WEIGHT 194
237 WEIGHT 105
238 WEIGHT 206
239 WEIGHT 183
240 WEIGHT 175
241 WEIGHT 249
242 WEIGHT 286
243 WEIGHT 352
244 WEIGHT 204
245 WEIGHT 208
246 WEIGHT 405
247 WEIGHT 224
248 WEIGHT 406
249 WEIGHT 112
250 WEIGHT 232
251 WEIGHT 124
252 WEIGHT 216
253 WEIGHT 36

254 WEIGHT 70
 255 WEIGHT 169
 256 WEIGHT 72
 257 WEIGHT 127
 258 WEIGHT 71
 259 WEIGHT 111
 260 WEIGHT 193
 261 WEIGHT 72
 262 WEIGHT 116
 263 WEIGHT 80
 264 WEIGHT 58
 265 WEIGHT 87
 266 WEIGHT 58
 267 WEIGHT 28
 268 WEIGHT 58
 269 WEIGHT 173
 270 WEIGHT 63
 271 WEIGHT 133
 272 WEIGHT 65
 273 WEIGHT 107
 274 WEIGHT 207
 275 WEIGHT 64
 276 WEIGHT 118
 277 WEIGHT 69
 278 WEIGHT 51
 279 WEIGHT 85
 280 WEIGHT 51
 LOAD 1 SLX
 1893 LOAD X 1
 LOAD 2 SLZ
 1893 LOAD Z 1
 *UNIT MMS NEWTON
 *SUPPORTS
 *1 TO 280 PINNED
 *UNIT METER KN
 LOAD 3 LOADTYPE Dead TITLE DL(WALL)
 SELFWEIGHT Y -1
 MEMBER LOAD
 245 248 251 252 255 TO 257 260 TO 263 266 267 269 272 274 TO 277 279 280 295 -
 296 TO 300 302 TO 304 306 TO 308 311 313 314 317 TO 321 323 TO 331 402 -
 403 UNI GY -9
 246 247 249 250 253 254 258 259 264 265 268 270 271 273 278 282 TO 294 301 -
 305 309 310 312 315 316 322 332 742 743 UNI GY -3
 333 TO 335 339 TO 341 343 TO 351 357 TO 367 377 TO 383 385 TO 389 392 394 -
 395 397 399 400 404 TO 406 410 TO 412 414 TO 422 428 TO 438 448 TO 454 456 -
 457 TO 460 463 465 466 468 470 471 473 TO 475 479 TO 481 483 TO 491 -

497 TO 507 517 TO 523 525 TO 529 532 534 535 537 539 540 542 TO 544 -
 548 TO 550 552 TO 560 566 TO 576 586 TO 592 594 TO 598 601 603 604 606 608 -
 609 745 747 749 752 757 760 763 769 775 778 779 783 785 787 790 792 795 797 -
 811 812 816 818 820 823 825 828 830 844 845 849 851 853 856 858 861 -
 863 UNI GY -7.5
 611 TO 613 635 TO 639 644 645 655 TO 660 711 TO 726 728 TO 732 734 735 737 -
 739 740 UNI GY -3
 617 TO 619 621 TO 624 626 TO 629 640 TO 643 661 663 TO 667 670 673 675 677 -
 678 UNI GY -5
 680 TO 695 697 TO 701 703 704 706 708 709 UNI GY -4
 336 746 748 750 751 754 756 758 759 761 764 765 767 768 770 772 774 776 793 -
 794 796 799 TO 806 808 809 826 827 829 832 TO 839 841 842 859 860 862 865 -
 866 TO 872 874 875 UNI GY -4.5
 LOAD 4 LOADTYPE Dead TITLE DL(FLOOR)
 MEMBER LOAD
 275 277 312 315 363 365 398 401 434 436 469 472 503 505 538 541 572 574 607 -
 610 UNI GY -20
 FLOOR LOAD
 ***1ST TO 4TH FLOOR
 YRANGE 3.5 14.5 FLOAD -5 XRANGE 0 20.77 ZRANGE 0 6.32 GY
 YRANGE 3.5 14.5 FLOAD -4.375 XRANGE 2.88 7.53 ZRANGE 12.42 14.66 GY
 YRANGE 3.5 14.5 FLOAD -4.375 XRANGE 4.43 7.53 ZRANGE 14.66 18.04 GY
 YRANGE 3.5 14.5 FLOAD -4.375 XRANGE 7.53 9.76 ZRANGE 12.42 18.04 GY
 YRANGE 3.5 14.5 FLOAD -5 XRANGE 9.76 18.14 ZRANGE 12.42 18.04 GY
 YRANGE 3.5 14.5 FLOAD -4.375 XRANGE 3.28 7.53 ZRANGE 18.04 20.12 GY
 YRANGE 3.5 14.5 FLOAD -4.375 XRANGE 4.43 7.53 ZRANGE 20.12 23.5 GY
 YRANGE 3.5 14.5 FLOAD -5 XRANGE 7.53 20.77 ZRANGE 18.04 23.5 GY
 YRANGE 3.5 14.5 FLOAD -5 XRANGE 0 20.77 ZRANGE 23.5 29.65 GY
 YRANGE 3.5 14.5 FLOAD -4.375 XRANGE 0 3.465 ZRANGE 7.89 12.42 GY
 YRANGE 3.5 14.5 FLOAD -4.375 XRANGE 3.465 6.42 ZRANGE 6.32 12.42 GY
 YRANGE 3.5 14.5 FLOAD -4.375 XRANGE 19.155 20.77 ZRANGE 6.32 10.67 GY
 YRANGE 3.5 14.5 FLOAD -5 XRANGE 6.42 19.155 ZRANGE 6.32 12.42 GY
 YRANGE 3.5 14.5 FLOAD -5 XRANGE 6.42 13.61 ZRANGE 29.65 35.86 GY
 YRANGE 3.5 14.5 FLOAD -4.375 XRANGE 0 3.775 ZRANGE 29.65 35.86 GY
 YRANGE 3.5 14.5 FLOAD -4.375 XRANGE 3.775 6.42 ZRANGE 29.65 33.945 GY
 YRANGE 3.5 14.5 FLOAD -4.375 XRANGE 13.61 18.14 ZRANGE 29.65 34.245 GY
 YRANGE 3.5 14.5 FLOAD -4.375 XRANGE 13.61 16.275 ZRANGE 34.245 35.86 GY
 YRANGE 3.5 14.5 FLOAD -7.725 XRANGE 0.83 3.465 ZRANGE 6.32 7.89 GY
 YRANGE 3.5 14.5 FLOAD -7.725 XRANGE 19.155 20.77 ZRANGE 10.67 12.42 GY
 YRANGE 3.5 14.5 FLOAD -7.725 XRANGE 16.275 18.14 ZRANGE 34.245 35.86 GY
 YRANGE 3.5 14.5 FLOAD -7.725 XRANGE 18.14 20.77 ZRANGE 12.42 18.04 GY
 YRANGE 3.5 14.5 FLOAD -7.725 XRANGE 3.775 6.42 ZRANGE 33.945 35.86 GY
 YRANGE 3.5 14.5 FLOAD -7.725 XRANGE 18.14 20.77 ZRANGE 29.65 35.86 GY
 ****PARTITION WALL
 YRANGE 3.5 14.5 FLOAD -2 XRANGE 18.14 20.77 ZRANGE 12.42 18.04 GY
 YRANGE 3.5 14.5 FLOAD -2 XRANGE 18.14 20.77 ZRANGE 29.65 35.86 GY

YRANGE 3.5 14.5 FLOAD -1 XRANGE 0 3.775 ZRANGE 29.65 35.86 GY
 ***TERRACE FLOOR
 YRANGE 17.9 18.1 FLOAD -6.25 XRANGE 0 20.77 ZRANGE 0 12.42 GY
 YRANGE 17.9 18.1 FLOAD -5.625 XRANGE 2.88 7.53 ZRANGE 12.42 14.66 GY
 YRANGE 17.9 18.1 FLOAD -5.625 XRANGE 4.43 7.53 ZRANGE 14.66 18.04 GY
 YRANGE 17.9 18.1 FLOAD -5.625 XRANGE 7.53 9.76 ZRANGE 12.42 18.04 GY
 YRANGE 17.9 18.1 FLOAD -6.25 XRANGE 9.76 20.77 ZRANGE 12.42 18.04 GY
 YRANGE 17.9 18.1 FLOAD -5.625 XRANGE 3.28 7.53 ZRANGE 18.04 20.12 GY
 YRANGE 17.9 18.1 FLOAD -5.625 XRANGE 4.43 7.53 ZRANGE 20.12 23.5 GY
 YRANGE 17.9 18.1 FLOAD -6.25 XRANGE 7.53 20.77 ZRANGE 18.04 23.5 GY
 YRANGE 17.9 18.1 FLOAD -6.25 XRANGE 0 20.77 ZRANGE 23.5 35.86 GY
 *****HEAD ROOM
 YRANGE 20.7 20.9 FLOAD -5 XRANGE 0 9.76 ZRANGE 12.42 18.04 GY
 YRANGE 20.7 20.9 FLOAD -5 XRANGE 0 7.53 ZRANGE 18.04 23.5 GY
 *****LIFT ROOM
 YRANGE 22.9 23.1 FLOAD -6.25 XRANGE 0 9.76 ZRANGE 12.42 18.04 GY
 YRANGE 22.9 23.1 FLOAD -6.25 XRANGE 0 7.53 ZRANGE 18.04 23.5 GY
 JOINT LOAD
 237 239 240 242 FY -60
 238 241 FY -120
 LOAD 5 LOADTYPE Live TITLE LL(FLOOR)
 MEMBER LOAD
 275 277 312 315 363 365 398 401 434 436 469 472 503 505 538 541 572 574 607 -
 610 UNI GY -15
 FLOOR LOAD
 ***1ST TO 4TH FLOOR
 YRANGE 3.5 14.5 FLOAD -4 XRANGE 0 20.77 ZRANGE 0 6.32 GY
 YRANGE 3.5 14.5 FLOAD -4 XRANGE 2.88 7.53 ZRANGE 12.42 14.66 GY
 YRANGE 3.5 14.5 FLOAD -4 XRANGE 4.43 7.53 ZRANGE 14.66 18.04 GY
 YRANGE 3.5 14.5 FLOAD -4 XRANGE 7.53 9.76 ZRANGE 12.42 18.04 GY
 YRANGE 3.5 14.5 FLOAD -4 XRANGE 9.76 18.14 ZRANGE 12.42 18.04 GY
 YRANGE 3.5 14.5 FLOAD -4 XRANGE 3.28 7.53 ZRANGE 18.04 20.12 GY
 YRANGE 3.5 14.5 FLOAD -4 XRANGE 4.43 7.53 ZRANGE 20.12 23.5 GY
 YRANGE 3.5 14.5 FLOAD -4 XRANGE 7.53 20.77 ZRANGE 18.04 23.5 GY
 YRANGE 3.5 14.5 FLOAD -4 XRANGE 0 20.77 ZRANGE 23.5 29.65 GY
 YRANGE 3.5 14.5 FLOAD -4 XRANGE 0 3.465 ZRANGE 7.89 12.42 GY
 YRANGE 3.5 14.5 FLOAD -4 XRANGE 3.465 6.42 ZRANGE 6.32 12.42 GY
 YRANGE 3.5 14.5 FLOAD -4 XRANGE 19.155 20.77 ZRANGE 6.32 10.67 GY
 YRANGE 3.5 14.5 FLOAD -4 XRANGE 6.42 19.155 ZRANGE 6.32 12.42 GY
 YRANGE 3.5 14.5 FLOAD -4 XRANGE 6.42 13.61 ZRANGE 29.65 35.86 GY
 YRANGE 3.5 14.5 FLOAD -4 XRANGE 0 3.775 ZRANGE 29.65 35.86 GY
 YRANGE 3.5 14.5 FLOAD -4 XRANGE 3.775 6.42 ZRANGE 29.65 33.945 GY
 YRANGE 3.5 14.5 FLOAD -4 XRANGE 13.61 18.14 ZRANGE 29.65 34.245 GY
 YRANGE 3.5 14.5 FLOAD -4 XRANGE 13.61 16.275 ZRANGE 34.245 35.86 GY
 YRANGE 3.5 14.5 FLOAD -2 XRANGE 0.83 3.465 ZRANGE 6.32 7.89 GY
 YRANGE 3.5 14.5 FLOAD -2 XRANGE 19.155 20.77 ZRANGE 10.67 12.42 GY

YRANGE 3.5 14.5 FLOAD -2 X RANGE 16.275 18.14 ZRANGE 34.245 35.86 GY
 YRANGE 3.5 14.5 FLOAD -2 X RANGE 18.14 20.77 ZRANGE 12.42 18.04 GY
 YRANGE 3.5 14.5 FLOAD -2 X RANGE 3.775 6.42 ZRANGE 33.945 35.86 GY
 YRANGE 3.5 14.5 FLOAD -2 X RANGE 18.14 20.77 ZRANGE 29.65 35.86 GY
 ***TERRACE FLOOR
 YRANGE 17.9 18.1 FLOAD -3 X RANGE 0 20.77 ZRANGE 0 12.42 GY
 YRANGE 17.9 18.1 FLOAD -3 X RANGE 2.88 7.53 ZRANGE 12.42 14.66 GY
 YRANGE 17.9 18.1 FLOAD -3 X RANGE 4.43 7.53 ZRANGE 14.66 18.04 GY
 YRANGE 17.9 18.1 FLOAD -3 X RANGE 7.53 9.76 ZRANGE 12.42 18.04 GY
 YRANGE 17.9 18.1 FLOAD -3 X RANGE 9.76 20.77 ZRANGE 12.42 18.04 GY
 YRANGE 17.9 18.1 FLOAD -3 X RANGE 3.28 7.53 ZRANGE 18.04 20.12 GY
 YRANGE 17.9 18.1 FLOAD -3 X RANGE 4.43 7.53 ZRANGE 20.12 23.5 GY
 YRANGE 17.9 18.1 FLOAD -3 X RANGE 7.53 20.77 ZRANGE 18.04 23.5 GY
 YRANGE 17.9 18.1 FLOAD -3 X RANGE 0 20.77 ZRANGE 23.5 35.86 GY
 *****HEAD ROOM
 YRANGE 20.7 20.9 FLOAD -5 X RANGE 0 9.76 ZRANGE 12.42 18.04 GY
 YRANGE 20.7 20.9 FLOAD -5 X RANGE 0 7.53 ZRANGE 18.04 23.5 GY
 *****LIFT ROOM
 YRANGE 22.9 23.1 FLOAD -5 X RANGE 0 9.76 ZRANGE 12.42 18.04 GY
 YRANGE 22.9 23.1 FLOAD -5 X RANGE 0 7.53 ZRANGE 18.04 23.5 GY
 LOAD 6 LOADTYPE Wind TITLE WIND(FX)
 JOINT LOAD
 217 FX 18
 73 109 145 181 FX 23
 221 FX 35
 77 113 149 185 FX 45
 225 FX 23
 81 117 153 189 FX 30
 230 FX 16
 86 122 158 194 FX 20
 232 FX 15
 88 124 160 196 FX 20
 237 240 FX 27
 93 96 129 132 165 168 201 204 FX 34
 245 FX 35
 101 137 173 209 FX 44
 249 FX 17
 105 141 177 213 FX 22
 267 FX 5
 253 FX 6
 270 FX 12
 256 FX 14
 272 275 FX 11
 258 261 FX 14
 278 FX 7
 264 FX 8

```

LOAD 7 LOADTYPE Wind TITLE WIND(FZ)
JOINT LOAD
217 FZ 18
73 109 145 181 FZ 23
218 FZ 38
74 110 146 182 FZ 49
219 FZ 40
75 111 147 183 FZ 52
220 FZ 20
76 112 148 184 FZ 26
267 FZ 6
253 FZ 7
268 FZ 16
254 FZ 19
269 FZ 14
255 FZ 17
*****
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

```

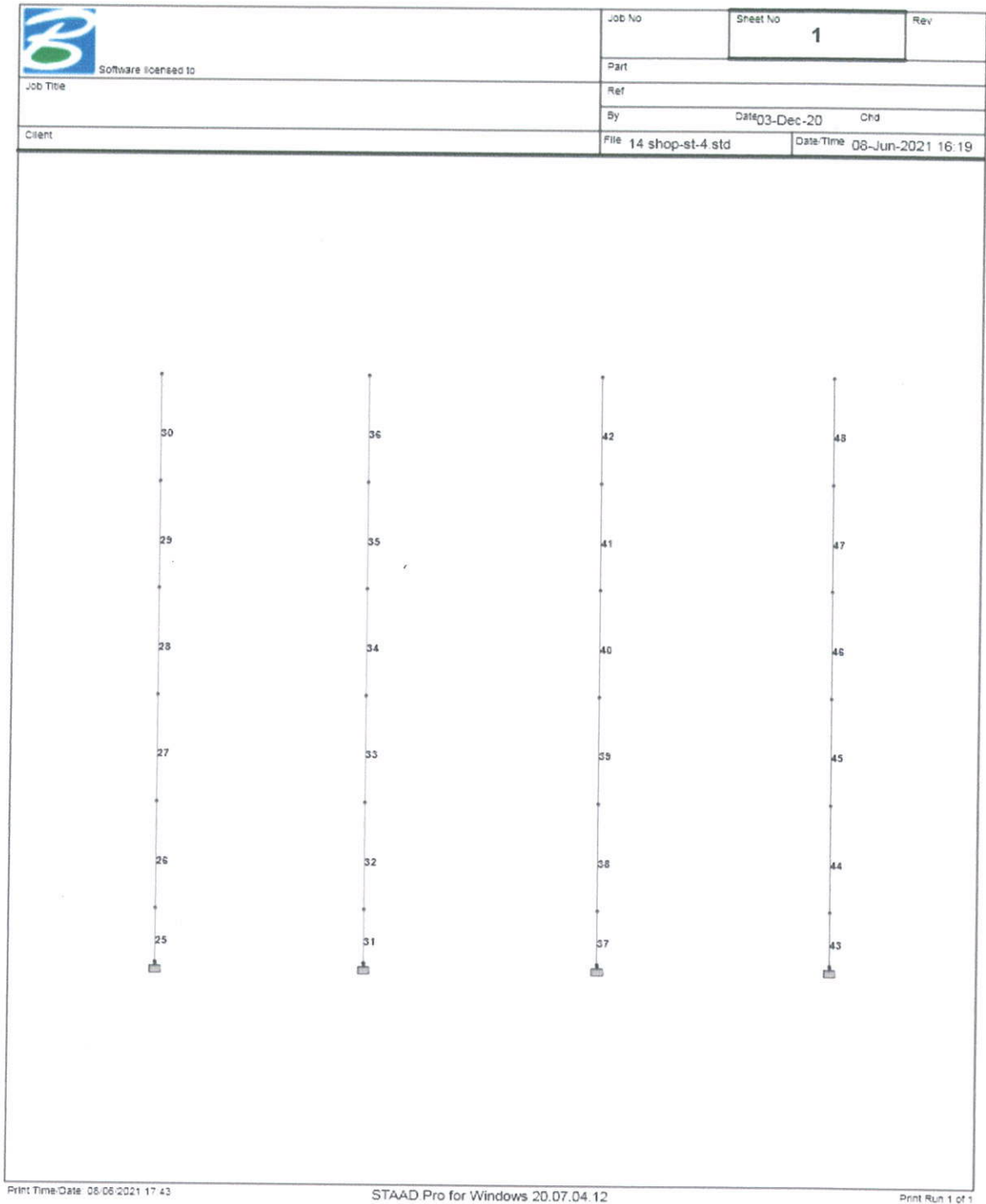
```

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 ALL
FYMAIN 500 ALL
DESIGN COLUMN 1 TO 244
DESIGN BEAM 245 TO 280 282 TO 875
END CONCRETE DESIGN
FINISH

```

STAAD OUTPUT

DESIGN COLUMN



COLUMN NO. 26 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3600.0 mm CROSS SECTION: 600.0 mm X 450.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 18 END JOINT: 5 SHORT COLUMN

REQD. STEEL AREA : 2443.27 Sq.mm.

REQD. CONCRETE AREA: 267556.72 Sq.mm.

MAIN REINFORCEMENT :

Provide 8 - 20 dia. (0.93%, 2513.27 Sq.mm.)
(Equally distributed)

PROVIDED 8-Y25+4-Y20 HENCE O.K.
--

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 300 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 3926.24 Muz1 : 267.58 Muy1 : 371.33

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

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 18

END JOINT: 5 Puz : 3951.70 Muz : 275.58 Muy : 383.89 IR: 0.96

COLUMN NO. 27 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3600.0 mm CROSS SECTION: 450.0 mm X 450.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 18 END JOINT: 113 SHORT COLUMN

REQD. STEEL AREA : 2726.09 Sq.mm.

REQD. CONCRETE AREA: 199773.91 Sq.mm.

MAIN REINFORCEMENT :

Provide 28 - 12 dia. (1.56%, 3166.73 Sq.mm.)
(Equally distributed)

PROVIDED 8-Y25+4-Y20 HENCE O.K.
--

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 3269.74 Muz1 : 240.69 Muy1 : 240.69

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

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 18

END JOINT: 113 Puz : 3430.02 Muz : 261.78 Muy : 261.78 IR: 0.91

COLUMN NO. 28 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3600.0 mm CROSS SECTION: 450.0 mm X 450.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 18 END JOINT: 149 SHORT COLUMN

REQD. STEEL AREA : 2637.67 Sq.mm.

REQD. CONCRETE AREA: 199862.33 Sq.mm.

MAIN REINFORCEMENT :

Provide 24 - 12 dia. (1.34%, 2714.34 Sq.mm.)
(Equally distributed)

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

PROVIDED 8-Y25+4-Y20 HENCE O.K.
--

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 3237.58 Muz1 : 252.54 Muy1 : 252.54

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

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 18

END JOINT: 149 Puz : 3265.46 Muz : 256.43 Muy : 256.43 IR: 0.97

COLUMN NO. 29 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3600.0 mm CROSS SECTION: 450.0 mm X 450.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 18 END JOINT: 185 SHORT COLUMN

REQD. STEEL AREA : 2723.99 Sq.mm.
REQD. CONCRETE AREA: 199776.00 Sq.mm.
MAIN REINFORCEMENT :
 Provide 28 - 12 dia. (1.56%, 3166.73 Sq.mm.)
 (Equally distributed)

PROVIDED 8-Y25+4-Y20 HENCE O.K.
--

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 3268.98 Muzl : 254.13 Muyl : 254.13

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

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 18

END JOINT: 185 Puz : 3430.02 Muz : 277.64 Muy : 277.64 IR: 0.91

C O L U M N N O . 3 0 D E S I G N R E S U L T S

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3600.0 mm CROSS SECTION: 450.0 mm X 450.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 17 END JOINT: 221 SHORT COLUMN

REQD. STEEL AREA : 3047.96 Sq.mm.
REQD. CONCRETE AREA: 199452.03 Sq.mm.
MAIN REINFORCEMENT :
 Provide 28 - 12 dia. (1.56%, 3166.73 Sq.mm.)
 (Equally distributed)

PROVIDED 12-Y20 HENCE O.K.

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 3386.82 Muzl : 251.59 Muyl : 251.59

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

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 17

END JOINT: 221 Puz : 3430.02 Muz : 258.48 Muy : 258.48 IR: 0.97

COLUMN NO. 32 DESIGN RESULTS

M25

Fe500 (Main)

Fe415 (Sec.)

LENGTH: 3600.0 mm CROSS SECTION: 600.0 mm X 450.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 10 END JOINT: 6 SHORT COLUMN

REQD. STEEL AREA : 3888.00 Sq.mm.

REQD. CONCRETE AREA: 266112.00 Sq.mm.

MAIN REINFORCEMENT :

Provide 8 - 25 dia. (1.45%, 3926.99 Sq.mm.)
(Equally distributed)

PROVIDED

12-Y25

HENCE O.K.

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 300 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 4451.76 Muz1 : 118.81 Muy1 : 166.34

INTERACTION RATIO: 0.88 (as per Cl. 39.6, IS456:2000)

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 10

END JOINT: 6 Puz : 3976.27 Muz : 0.00 Muy : 0.00 IR: 0.95

COLUMN NO. 33 DESIGN RESULTS

M25

Fe500 (Main)

Fe415 (Sec.)

LENGTH: 3600.0 mm CROSS SECTION: 450.0 mm X 450.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 10 END JOINT: 78 SHORT COLUMN

REQD. STEEL AREA : 3572.69 Sq.mm.
REQD. CONCRETE AREA: 198927.31 Sq.mm.

MAIN REINFORCEMENT :

Provide 32 - 12 dia. (1.79%, 3619.11 Sq.mm.)
(Equally distributed)

PROVIDED
12-Y25
HENCE O.K.

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 3577.69 Muz1 : 102.91 Muy1 : 102.91

INTERACTION RATIO: 0.84 (as per Cl. 39.6, IS456:2000)

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 10

END JOINT: 78 Puz : 3201.21 Muz : 0.00 Muy : 0.00 IR: 0.94

COLUMN NO. 34 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3600.0 mm CROSS SECTION: 450.0 mm X 450.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 18 END JOINT: 150 SHORT COLUMN

REQD. STEEL AREA : 2006.84 Sq.mm.
REQD. CONCRETE AREA: 200493.16 Sq.mm.

MAIN REINFORCEMENT :

Provide 20 - 12 dia. (1.12%, 2261.95 Sq.mm.)
(Equally distributed)

PROVIDED
12-Y20
HENCE O.K.

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 3008.11 Muz1 : 202.62 Muy1 : 202.62

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

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 18

END JOINT: 150 Puz : 3100.91 Muz : 214.16 Muy : 214.16 IR: 0.91

COLUMN NO. 35 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3600.0 mm CROSS SECTION: 450.0 mm X 450.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 22 END JOINT: 186 SHORT COLUMN

REQD. STEEL AREA : 1518.32 Sq.mm.

REQD. CONCRETE AREA: 189789.38 Sq.mm.

MAIN REINFORCEMENT :

Provide 8 - 16 dia. (0.79%, 1608.50 Sq.mm.)
(Equally distributed)

PROVIDED 12-Y20 HENCE O.K.

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 255 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 2830.41 Muzl : 184.64 Muyl : 184.64

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

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 22

END JOINT: 186 Puz : 2863.22 Muz : 192.84 Muy : 192.84 IR: 0.96

COLUMN NO. 36 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3600.0 mm CROSS SECTION: 450.0 mm X 450.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 22 END JOINT: 222 SHORT COLUMN

REQD. STEEL AREA : 1398.61 Sq.mm.
REQD. CONCRETE AREA: 174826.14 Sq.mm.
MAIN REINFORCEMENT :
Provide 8 - 16 dia. (0.79%, 1608.50 Sq.mm.)

PROVIDED
12-Y16
HENCE O.K.

(Equally distributed)

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 255 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 2786.87 Muz1 : 154.62 Muy1 : 154.62

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

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 22

END JOINT: 222 Puz : 2863.22 Muz : 173.74 Muy : 173.74 IR: 0.88

COLUMN NO. 38 DESIGN RESULTS

M25

Fe500 (Main)

Fe415 (Sec.)

LENGTH: 3600.0 mm CROSS SECTION: 600.0 mm X 450.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 10 END JOINT: 7 SHORT COLUMN

REQD. STEEL AREA : 3672.00 Sq.mm.
REQD. CONCRETE AREA: 266328.00 Sq.mm.
MAIN REINFORCEMENT :

Provide 12 - 20 dia. (1.40%, 3769.91 Sq.mm.)
(Equally distributed)

PROVIDED
12-Y25
HENCE O.K.

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 300 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 4373.19 Muz1 : 122.08 Muy1 : 170.43

INTERACTION RATIO: 0.79 (as per Cl. 39.6, IS456:2000)

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 10

END JOINT: 7 Puz : 3925.22 Muz : 0.00 Muy : 0.00 IR: 0.94
=====

COLUMN NO. 39 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3600.0 mm CROSS SECTION: 450.0 mm X 450.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 10 END JOINT: 115 SHORT COLUMN

REQD. STEEL AREA : 3274.34 Sq.mm.

REQD. CONCRETE AREA: 199225.66 Sq.mm.

MAIN REINFORCEMENT :

Provide 32 - 12 dia. (1.79%, 3619.11 Sq.mm.)
(Equally distributed)

PROVIDED 12-Y25 HENCE O.K.

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 3469.17 Muz1 : 99.91 Muy1 : 99.91

INTERACTION RATIO: 0.83 (as per Cl. 39.6, IS456:2000)

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 10

END JOINT: 79 Puz : 3201.21 Muz : 0.00 Muy : 0.00 IR: 0.92
=====

COLUMN NO. 40 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

PROVIDED 12-Y20 HENCE O.K.

LENGTH: 3600.0 mm CROSS SECTION: 450.0 mm X 450.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 17 END JOINT: 151 SHORT COLUMN

REQD. STEEL AREA : 1875.47 Sq.mm.

REQD. CONCRETE AREA: 200624.53 Sq.mm.

MAIN REINFORCEMENT :

Provide 20 - 12 dia. (1.12%, 2261.95 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 : 2960.33 Muz1 : 193.44 Muy1 : 193.44

INTERACTION RATIO: 0.97 (as per Cl. 39.6, IS456:2000)

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 17

END JOINT: 151 Puz : 3100.91 Muz : 210.91 Muy : 210.91 IR: 0.87

COLUMN NO. 41 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3600.0 mm CROSS SECTION: 450.0 mm X 450.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 22 END JOINT: 187 SHORT COLUMN

REQD. STEEL AREA : 1097.12 Sq.mm.

REQD. CONCRETE AREA: 137139.38 Sq.mm.

MAIN REINFORCEMENT :

Provide 12 - 12 dia. (0.67%, 1357.17 Sq.mm.)
(Equally distributed)

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

PROVIDED 12-Y20 HENCE O.K.

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 2677.20 Muz1 : 162.76 Muy1 : 162.76

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

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 22

END JOINT: 187 Puz : 2771.79 Muz : 179.17 Muy : 179.17 IR: 0.91

COLUMN NO. 42 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3600.0 mm CROSS SECTION: 450.0 mm X 450.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 21 END JOINT: 223 SHORT COLUMN

REQD. STEEL AREA : 742.15 Sq.mm.
REQD. CONCRETE AREA: 92768.66 Sq.mm.
MAIN REINFORCEMENT :
 Provide 8 - 12 dia. (0.45%, 904.78 Sq.mm.)
 (Equally distributed)

PROVIDED 12-Y16 HENCE O.K.

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 2548.08 Muz1 : 114.06 Muy1 : 114.06

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

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 21
END JOINT: 223 Puz : 2607.24 Muz : 127.88 Muy : 127.88 IR: 0.89

COLUMN NO. 44 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3600.0 mm CROSS SECTION: 600.0 mm X 450.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 10 END JOINT: 8 SHORT COLUMN

REQD. STEEL AREA : 1688.40 Sq.mm.
REQD. CONCRETE AREA: 211050.12 Sq.mm.
MAIN REINFORCEMENT :
 Provide 16 - 12 dia. (0.67%, 1809.56 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 : 3651.66 Muz1 : 189.47 Muy1 : 258.40

INTERACTION RATIO: 0.23 (as per Cl. 39.6, IS456:2000)

PROVIDED
4-Y25+8-Y20
HENCE O.K.

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 15

END JOINT: 8 Puz : 3695.73 Muz : 228.55 Muy : 313.83 IR: 0.75

COLUMN NO. 45 DESIGN RESULTS

M25

Fe500 (Main)

Fe415 (Sec.)

LENGTH: 3600.0 mm CROSS SECTION: 450.0 mm X 450.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 11 END JOINT: 80 SHORT COLUMN

REQD. STEEL AREA : 2292.41 Sq.mm.

REQD. CONCRETE AREA: 200207.58 Sq.mm.

MAIN REINFORCEMENT :

Provide 12 - 16 dia. (1.19%, 2412.74 Sq.mm.)

(Equally distributed)

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 255 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 3111.99 Muz1 : 202.54 Muy1 : 202.54

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

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 11

END JOINT: 80 Puz : 3155.76 Muz : 208.22 Muy : 208.22 IR: 0.95

PROVIDED
4-Y25+8-Y20
HENCE O.K.

COLUMN NO. 46 DESIGN RESULTS

M25

Fe500 (Main)

Fe415 (Sec.)

LENGTH: 3600.0 mm CROSS SECTION: 450.0 mm X 450.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 11 END JOINT: 152 SHORT COLUMN

REQD. STEEL AREA : 1738.39 Sq.mm.

REQD. CONCRETE AREA: 200761.61 Sq.mm.

MAIN REINFORCEMENT :

Provide 16 - 12 dia. (0.89%, 1809.56 Sq.mm.)
(Equally distributed)

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

PROVIDED

12-Y20

HENCE O.K.

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 2910.46 Muz1 : 202.89 Muy1 : 202.89

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

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 17

END JOINT: 152 Puz : 2936.35 Muz : 211.93 Muy : 211.93 IR: 0.97

COLUMN NO. 47 DESIGN RESULTS

M25

Fe500 (Main)

Fe415 (Sec.)

LENGTH: 3600.0 mm CROSS SECTION: 450.0 mm X 450.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 13 END JOINT: 188 SHORT COLUMN

REQD. STEEL AREA : 1662.52 Sq.mm.

REQD. CONCRETE AREA: 200837.48 Sq.mm.

MAIN REINFORCEMENT :

Provide 16 - 12 dia. (0.89%, 1809.56 Sq.mm.)
(Equally distributed)

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

PROVIDED

12-Y20

HENCE O.K.

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 2882.87 Muz1 : 200.62 Muy1 : 200.62

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

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 13

END JOINT: 188 Puz : 2936.35 Muz : 208.94 Muy : 208.94 IR: 0.96

C O L U M N N O . 4 8 D E S I G N R E S U L T S

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 3600.0 mm CROSS SECTION: 450.0 mm X 450.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 13 END JOINT: 224 SHORT COLUMN

REQD. STEEL AREA : 2410.20 Sq.mm.

REQD. CONCRETE AREA: 200089.80 Sq.mm.

MAIN REINFORCEMENT :

Provide 12 - 16 dia. (1.19%, 2412.74 Sq.mm.)

(Equally distributed)

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 255 mm c/c

PROVIDED 12-Y20 HENCE O.K.

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 3154.83 Muz1 : 217.83 Muy1 : 217.83

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

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 13

END JOINT: 224 Puz : 3155.76 Muz : 219.25 Muy : 219.25 IR: 0.99

DESIGN BEAM

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	By Date 03-Dec-20 Chd		
Client	File 14 shop-st-4 std		Date-Time 08-Jun-2021 16:19

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STAAD Pro for Windows 20.07.04.12
Print Run 1 of 1

BEAM NO. 336 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 830.0 mm SIZE: 300.0 mm X 600.0 mm COVER: 25.0 mm

SUMMARY OF REINF. AREA (Sq.mm)

SECTION	0.0 mm	207.5 mm	415.0 mm	622.5 mm	830.0 mm
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TOP	1762.29	1574.25	1306.23	1066.20	860.30
REINF.	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)
BOTTOM	353.24	383.72	412.70	439.96	465.30
REINF.	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)

SUMMARY OF PROVIDED REINF. AREA

SECTION	0.0 mm	207.5 mm	415.0 mm	622.5 mm	830.0 mm
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TOP	9-16i	8-16i	7-16i	6-16i	5-16i
REINF.	2 layer(s)	2 layer(s)	2 layer(s)	1 layer(s)	1 layer(s)
BOTTOM	5-10i	5-10i	6-10i	6-10i	6-10i
REINF.	1 layer(s)	1 layer(s)	1 layer(s)	1 layer(s)	1 layer(s)

PROVIDED TOP 2-Y25+2-Y25 MID SPAN 2-Y25 BOTTOM 4-Y25

SHEAR	2 legged 8i	2 legged 8i	2 legged 8i	2 legged 8i	2 legged 8i	2 legged 8i
REINF.	@ 190 mm c/c	@ 190 mm c/c	@ 190 mm c/c	@ 190 mm c/c	@ 190 mm c/c	@ 190 mm c/c

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

SHEAR DESIGN RESULTS AT 790.0 mm AWAY FROM START SUPPORT

VY = 190.14 MX = -0.16 LD = 12

Provide 2 Legged 8i @ 190 mm c/c

BEAM NO. 744 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 2955.0 mm SIZE: 300.0 mm X 600.0 mm COVER: 25.0 mm

SUMMARY OF REINF. AREA (Sq.mm)

SECTION	0.0 mm	738.7 mm	1477.5 mm	2216.2 mm	2955.0 mm
TOP	0.00	0.00	345.62	1019.62	1829.35
REINF.	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)

BOTTOM	1050.92	588.73	363.28	290.19	290.19
REINF.	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)

STAAD SPACE

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SUMMARY OF PROVIDED REINF. AREA

SECTION	0.0 mm	738.7 mm	1477.5 mm	2216.2 mm	2955.0 mm
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TOP	2-20í	2-20í	3-20í	4-20í	6-20í
REINF.	1 layer(s)	1 layer(s)	1 layer(s)	1 layer(s)	1 layer(s)
BOTTOM	10-12í	6-12í	4-12í	3-12í	3-12í
REINF.	2 layer(s)	1 layer(s)	1 layer(s)	1 layer(s)	1 layer(s)

PROVIDED TOP 2-Y25+2-Y25 MID SPAN 2-Y25 BOTTOM 4-Y25

SHEAR	2 legged 8í	2 legged 8í	2 legged 8í	2 legged 8í	2 legged 8í
REINF.	@ 190 mm c/c	@ 190 mm c/c	@ 190 mm c/c	@ 170 mm c/c	@ 190 mm c/c

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

SHEAR DESIGN RESULTS AT 790.0 mm AWAY FROM END SUPPORT

VY = -208.48 MX = -0.24 LD= 11

Provide 2 Legged 8í @ 170 mm c/c

BEAM NO. 337 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 7190.0 mm SIZE: 300.0 mm X 600.0 mm COVER: 25.0 mm

SUMMARY OF REINF. AREA (Sq.mm)

SECTION	0.0 mm	1797.5 mm	3595.0 mm	5392.5 mm	7190.0 mm
TOP	1700.32	290.70	0.00	290.70	1733.93
REINF.	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)

BOTTOM	290.70	352.50	735.05	363.08	290.70
REINF.	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)

SUMMARY OF PROVIDED REINF. AREA

SECTION	0.0 mm	1797.5 mm	3595.0 mm	5392.5 mm	7190.0 mm
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TOP	9-16i	3-16i	2-16i	3-16i	9-16i
REINF.	2 layer(s)	1 layer(s)	1 layer(s)	1 layer(s)	2 layer(s)
BOTTOM	4-10i	5-10i	10-10i	5-10i	4-10i
REINF.	1 layer(s)	1 layer(s)	2 layer(s)	1 layer(s)	1 layer(s)

PROVIDED
TOP 2-Y25+2-Y25
MID SPAN 2-Y25
BOTTOM
4-Y25

SHEAR	2 legged 8i	2 legged 8i	2 legged 8i	2 legged 8i	2 legged 8i	2 legged 8i
REINF.	@ 190 mm c/c	@ 190 mm c/c	@ 190 mm c/c	@ 190 mm c/c	@ 190 mm c/c	@ 190 mm c/c

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

SHEAR DESIGN RESULTS AT 790.0 mm AWAY FROM START SUPPORT

VY = 179.85 MX = 0.34 LD= 10

Provide 2 Legged 8i @ 190 mm c/c

SHEAR DESIGN RESULTS AT 790.0 mm AWAY FROM END SUPPORT

VY = -195.05 MX = 0.34 LD= 10

Provide 2 Legged 8i @ 190 mm c/c

BEAM NO. 338 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 5545.0 mm SIZE: 300.0 mm X 600.0 mm COVER: 25.0 mm

SUMMARY OF REINF. AREA (Sq.mm)

SECTION	0.0 mm	1386.2 mm	2772.5 mm	4158.7 mm	5545.0 mm
TOP	1799.58	485.06	0.00	0.00	289.17

REINF.	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)
BOTTOM	290.70	333.31	622.12	794.29	675.41
REINF.	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)

SUMMARY OF PROVIDED REINF. AREA

SECTION	0.0 mm	1386.2 mm	2772.5 mm	4158.7 mm	5545.0 mm
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TOP	9-16i	3-16i	2-16i	2-16i	3-16i
REINF.	2 layer(s)	1 layer(s)	1 layer(s)	1 layer(s)	1 layer(s)
BOTTOM	4-10i	5-10i	8-10i	11-10i	9-10i
REINF.	1 layer(s)	1 layer(s)	2 layer(s)	2 layer(s)	2 layer(s)

PROVIDED TOP 2-Y25+2-Y25 MID SPAN 2-Y25 BOTTOM 5-Y25

SHEAR 2 legged 8i 2 legged 8i 2 legged 8i 2 legged 8i 2 legged 8i
REINF. @ 190 mm c/c @ 190 mm c/c @ 190 mm c/c @ 190 mm c/c @ 190 mm c/c

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

SHEAR DESIGN RESULTS AT 790.0 mm AWAY FROM START SUPPORT

VY = 187.37 MX = 0.37 LD= 10

Provide 2 Legged 8i @ 190 mm c/c

BEAM NO. 753 DESIGN RESULTS

M25 Fe500 (Main) Fe415 (Sec.)

LENGTH: 1615.0 mm SIZE: 300.0 mm X 600.0 mm COVER: 25.0 mm

SUMMARY OF REINF. AREA (Sq.mm)

SECTION	0.0 mm	403.8 mm	807.5 mm	1211.3 mm	1615.0 mm
TOP	290.19	493.25	840.82	1278.83	1778.87
REINF.	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)
BOTTOM	661.26	505.90	436.48	364.82	290.19
REINF.	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)	(Sq. mm)

SUMMARY OF PROVIDED REINF. AREA

SECTION	0.0 mm	403.8 mm	807.5 mm	1211.3 mm	1615.0 mm
TOP REINF.	3-16i 1 layer(s)	3-16i 1 layer(s)	5-16i 1 layer(s)	7-16i 2 layer(s)	9-16i 2 layer(s)
BOTTOM REINF.	6-12i 1 layer(s)	5-12i 1 layer(s)	4-12i 1 layer(s)	4-12i 1 layer(s)	3-12i 1 layer(s)

PROVIDED
 TOP 2-Y25+2-Y25
 MID SPAN 2-Y25
 BOTTOM 5-Y25

SHEAR REINF. 2 legged 8i @ 190 mm c/c 2 legged 8i @ 140 mm c/c 2 legged 8i @ 150 mm c/c 2 legged 8i @ 150 mm c/c 2 legged 8i @ 190 mm c/c

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

SHEAR DESIGN RESULTS AT 790.0 mm AWAY FROM END SUPPORT

VY = -223.14 MX = 0.37 LD= 10

Provide 2 Legged 8i @ 150 mm c/c

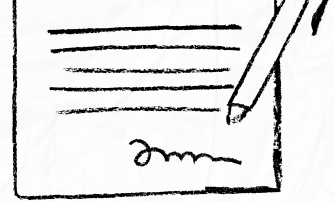
DESIGN SLAB

Panel Size	Lx	6320	mm
	Ly	7190	mm
Load Calculations			
Dead Load		3.75	KN/m ²
Live Load		4	KN/m ²
Finishes / Partions / Sunk / Weathering Course		1.25	KN/m ²
Total Load		9	KN/m ²
Factored Load		13.500	KN/m ²
Assume Slab Thickness		150	mm
Ly/Lx		1.14	TWO WAY SLAB
Condition of the Slab is Interior Panels.			
Negative Moment at Continuous Edge(shorter span)		0.037	19.95 KN-m
Positive Moment at Mid Span(shorter span)		0.028	15.10 KN-m
Negative Moment For Dead Load (at Mid Span)(longer)		0.032	17.26 KN-m
Positive Moment For Live Load (at Mid Span)(longer)		0.024	12.94 KN-m

	At Support	At Mid Span	Longer Span	
Mu	19.95	15.10	17.26	KN-m
Mu / b*d ²	1.277	0.966	1.104	
Pt	0.316	0.227	0.265	
Ast	395	283.75	331.25	mm ²
As Per Design Aids SP:16 (S&T) 1980				
Fck=25N/mm2; Fy=500 N/mm2;				
Reinforcement Details				
Required	At Supports	12	286	c/c
	At Mid Span	12	398	c/c
	Longer Span	12	341	c/c
Provided	At Supports	12	125	c/c
	At Mid Span	12	125	c/c
	Longer Span	12	125	c/c
Effective Depth	125	mm		
Pt	0.72			
fs	91			
From IS456 - 2000 Modification Factor	2.00			
Actual Deflection	50.56			
Allowable Deflection	52.00			
Check	O.K			

Provided Thickness of the Slab	150		
Reinforcement Provided at the Support	12	125	c/c
Reinforcement Provided at the Midspan	12	125	c/c
Reinforcement Provided at the Longer span	12	125	c/c


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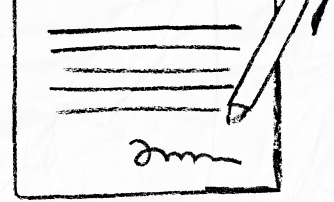
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